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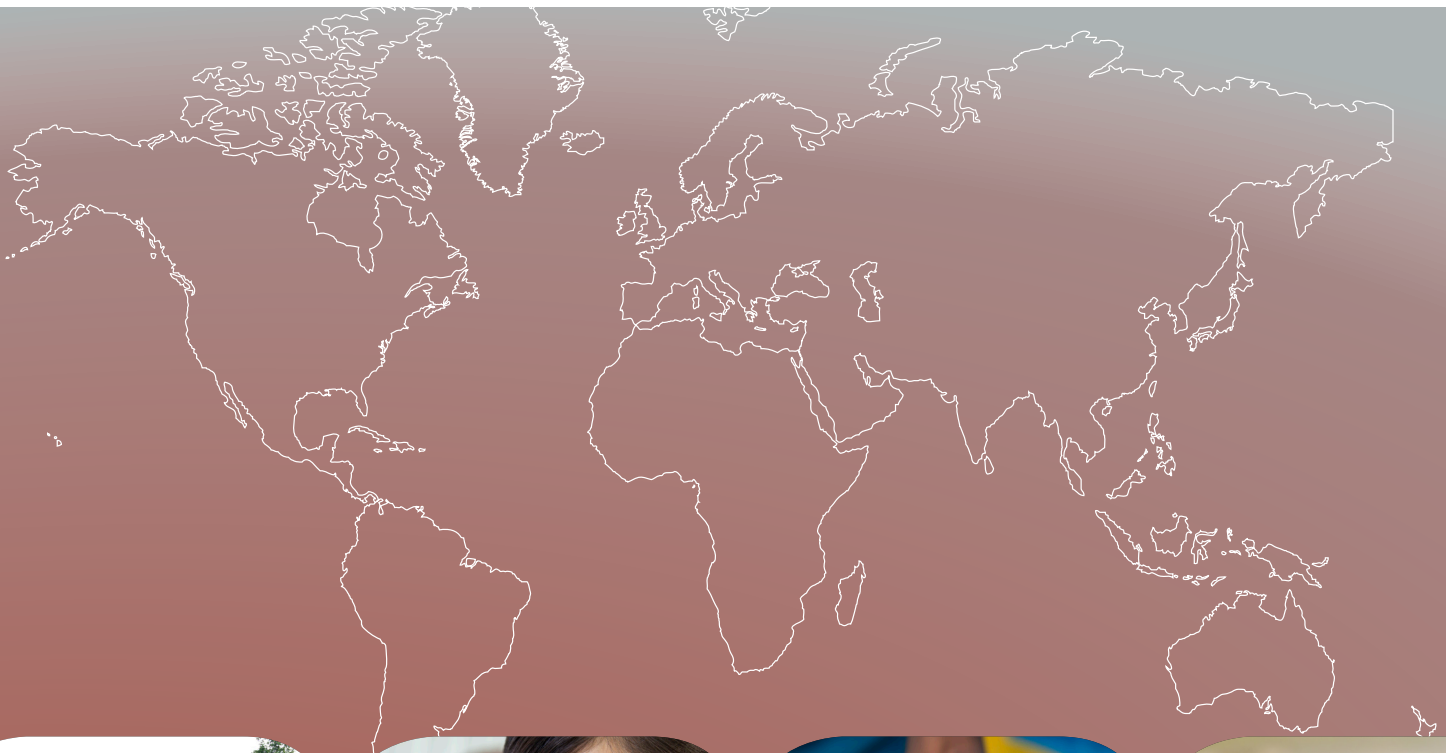
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The Global Innovation Index 2015

Effective Innovation Policies for Development



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The Global Innovation Index 2015

Effective Innovation Policies for Development

Soumitra Dutta, Bruno Lanvin, and Sacha Wunsch-Vincent
Editors



Confederation of Indian Industry



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The Global Innovation Index 2015: Effective Innovation Policies for Development is the result of a collaboration between Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO) as co-publishers, and their Knowledge Partners.

The terms 'country', 'economy', and 'nation' as used in this report do not in all cases refer to a territorial entity that is a state as understood by international law and practice. The terms cover well-defined, geographically self-contained economic areas that may not be states but for which statistical data are maintained on a separate and independent basis.

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Releasing the Global Innovation Index 2015: Effective Innovation Policies for Development



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We are pleased to present the 2015 Global Innovation Index (GII) with this year's theme of 'Effective Innovation Policies for Development'.

Innovation-driven growth is no longer the prerogative of high-income countries alone. Developing countries increasingly design policies intended to increase their innovation capacity. Innovation policies have taken different forms, depending on countries' perceived needs; their impact has also varied across countries at similar levels of development. Certain developing countries have managed to continually improve their innovation inputs and outputs. Others still struggle.

The difference in the impact of innovation policies raises a number of questions, including: Which developing countries outperform in innovation relative to their level of development and their peers? How do the innovation actors of these countries meaningfully design and implement effective innovation policies and practices?

One objective of this year's GII is to seek answers to these questions by taking advantage of the rich time-series dataset it has produced since 2011. Independent from the yearly changes in rankings, our analysis identifies economies that consistently overperform when compared with those of a similar level of development. Although not even a decade ago many of these low- and middle-income economies were not on the innovation map, they are now increasingly part of a more globalized innovation landscape. Their experience holds lessons for other countries and for the global distribution of innovation more broadly.

Over the last eight years, the GII has established itself as a leading reference on innovation, providing a tool for action for decision makers. In 2013 the GII was launched by the United Nations (UN) Secretary-General Ban Ki-moon in Geneva at the High-Level Segment of the UN Economic and Social Council. In 2014, as part of Australia's preparations to host the annual Group of Twenty (G20) Leaders' Summit, we joined Australia's Minister for Industry Ian Macfarlane at a gathering of international business leaders in Sydney to launch the

GII. The discussion centred on how innovation can help achieve the G20's growth targets. In addition, GII-related meetings took place in Africa, Asia, the Middle East, and North and Latin America, with the aim of improving data availability, innovation performance, and policy. In 2015 our goal is to intensify the use of the GII to assist developing countries to further improve their innovation systems.

This year we welcome A.T. Kearney and its IMP³rove – European Innovation Management Academy as a new Knowledge Partner. We thank our other current Knowledge Partners—the Confederation of Indian Industry and du—for their continued support. We also thank Huawei, in particular Ken Hu, its Rotating CEO, for making key contributions as a Knowledge Partner over the last two years.

Likewise, we thank our prominent Advisory Board, which has been enriched by five new members this year: Yuko Harayama, Executive Member, Council for Science, Technology and Innovation, Cabinet Office, Government of Japan, Japan; Hugo Hollanders, Senior Researcher, United Nations University – Maastricht Economic and Social Research Institute on Innovation and Technology (UNU-MERIT), the Netherlands; Beethika Khan, Program Director, National Science Foundation (NSF), United States of America; Mary O'Kane, Professor, NSW Chief Scientist and Engineer, Australia; and Houlin Zhao, Secretary-General, International Telecommunication Union (ITU).

We hope that the collective efforts of innovation actors using the GII will continue to pave the way for better innovation policies around the world.

SOUMITRA DUTTA

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The Innovation Imperative



In advising the world's leading private- and public-sector organizations, providing innovative solutions that deliver sustained value to our clients is central to our success. While our firm has a long history—nearly 90 years—of being innovative, we also recognize that innovation can all too easily slip into the background. Supporting innovation is one thing; actively driving and creating an innovative culture is quite another.

As a result, a few years ago, as part of A.T. Kearney's broader strategic vision, we launched a new innovation initiative. Through a series of related initiatives that encourage colleagues to collaborate and advance innovative ideas, we have seen a remarkable surge of enthusiasm, passion, and results. Indeed, the first ideas sparked by the initiative are already bearing fruit.

Our experience in fostering innovation is on a small scale, but it also speaks to the key theme of the *Global Innovation Index 2015*: Innovation requires the right policies to actively support and sustain it. As countries and regions develop economic growth strategies, the imperative to put innovation at the top of the agenda has never been stronger.

Our 2015 Foreign Direct Investment Confidence Index, which assesses likely foreign investment decisions by global business leaders, finds that investors are readily looking past emerging countries that boast low labour costs in favour of developed countries that are committed to—and can demonstrably show—continuous innovation. In fact, three-quarters of the top investment destinations are still developed economies.

The question is: How can a developing country make—and sustain—the shift to an innovation-driven economy? The lessons in these pages provide invaluable insights from some of the world's leading authorities. Certainly there are many nuances to consider, but some of the basics are remarkably consistent: Address and engage all stakeholders and support them in developing a strong ecosystem of innovation. Nurture an environment that strives for and values collaboration. Engage new partners from diverse and varied backgrounds.

Keep pace with the moving targets of new technologies and market opportunities. Develop policies to attract international talent, young entrepreneurs, and investors. Set clear goals and develop appropriate measures to track progress. Learn from, and be inspired by, the best.

As my colleagues Kai Engel, Violetka Dirlea, and Jochen Graff discuss in their new book, *Masters of Innovation*, even with the best ideas, speed and agility are paramount. Ever-shrinking innovation cycles pose a constant threat of falling behind, while complex decision structures can stall innovation. Effective strategies for combatting both must be woven into every new policy.

I would like to thank the GII team for their dedication and passion in their ongoing efforts to advance innovation—and we are delighted to be an active partner and regular contributor to this endeavour. We also remain committed to advancing innovation through our nonprofit subsidiary, IMP³rove – European Innovation Management Academy, which builds on our international experience, on a global network of IMP³rove-trained business advisors, and on the largest database on innovation management with close to 5,000 companies worldwide. We encourage you to participate and join us.

Finally, I encourage everyone to keep the conversation going—to reach across traditional boundaries and divides to support the policies that drive innovation, benefitting both our own communities and, more broadly, society at large.

JOHAN AURIK
Managing Partner and Chairman of the Board
A.T. Kearney

Leveraging Policies to Trigger Innovation



Innovation is gaining prominence in all kinds of economic activity around the world. Not only advanced economies but also developing nations are finding that innovation is one of the main drivers of economic growth. This renewed understanding of the significance of innovation is having a growing impact on the course of policy formulation in many countries.

A closer look suggests that developing nations are no longer lagging behind high-income ones in their efforts to introduce policies that will increase their innovation capacity. On the contrary, in many cases developing nations are taking the lead in embracing innovation to boost their industrial and economic growth.

Over the years the Global Innovation Index (GII) has measured the innovation capacity of nations across the world and presented a comparative analysis to help in understanding the variation in national competencies. The findings of the last five years of GII rankings in its innovation input and output pillars demonstrate that certain countries are consistently doing better than their peers in the same income and region categories. Although multiple factors are involved in this superior innovation performance, policy presents a major differentiating factor in the majority of cases.

This year the GII has taken steps to understand precisely how policy has been leveraged by some of the innovation achievers among the developing nations, allowing them to outperform their peers. This is an important aspect to study because it not only helps to inform the peer group of the best policy practices, but it also identifies gaps in policy that stagnate further growth prospects for the achiever.

This year India has been chosen as an example of an innovation achiever in Central and Southern Asia in the group of lower-middle-income countries. Chapter 8 in this report presents India as a representative innovation achiever by providing a narrative of how the country has shaped its innovation policy over the years and a perspective on what has worked for India and what not. The chapter also outlines lessons that can be

useful for its peers in this area and considers ways that India can overcome its policy bottlenecks to become an innovation-driven nation.

The GII 2015 also includes insightful chapters from other innovation achievers among developing countries. These chapters analyse the evolution of innovation policy in these countries in more detail and try to establish a link between good business practices and smart innovation policies. They also provide information about how effective these policies have been in developing an environment that supports innovation in these countries.

As always, the GII team has been outstanding in its professionalism and approach to bring out this year's report, and I congratulate them for their consistency and dedication. The current edition will be a very useful reference for policy makers across the globe who wish to leverage the strengths of innovation for sustaining economic growth.

CHANDRAJIT BANERJEE
Director General
Confederation of Indian Industry

Government Policies: A Catalyst for a Nation's Innovation Growth



People have been innovating around the world for centuries—either inventing or challenging the status quo. Although inventions have been successful in silos or pockets, far-reaching and scalable innovation has most frequently occurred within organized and government-supported frameworks.

The United Arab Emirates (UAE) has always been a supporter of innovation, evidenced not only by the Burj Khalifa and other engineering marvels, but also by the country's high level of entrepreneurial ventures. A collaborative effort among public and private stakeholders is driving a move towards diversification where entrepreneurs and small- and medium-sized enterprises play a huge role, encouraging the entrepreneurial aspirations of UAE millennials.

Over the past years, the UAE's leaders have worked to diversify the country's economy and move into a new phase of growth. Their ambition of fostering innovation and knowledge-driven growth is clearly documented in the country's Vision 2021 national strategy. The pioneering Mars Mission is only one of the many examples showing that the UAE is on track to achieve its objectives.

With the rollout of the National Innovation Strategy in late 2014, the UAE government has provided a framework for innovation to flourish even further. This strategy underpins the government's ambition for Vision 2021 and is a concrete step to further long-term, creative, and sustainable gains rather than short-term wins.

It is this sort of cohesive and interconnected approach to innovation policies—with an emphasis on addressing grassroots issues—that may find resonance and success and that can truly contribute to the nation's development. This year's GII theme 'Effective Innovation Policies for Development' in particular underscores a great resource for helping to understand what policies have worked and how they can be implemented in different countries. The UAE, for instance, has recently introduced innovation policy in the education sector that aims at improving the technology standard in

schools and universities to disrupt and rebuild the system with innovation as the driving force, nurturing the thought leaders of tomorrow.

We at du have long been advocates of change and innovation, and are extremely proud to be a partner to the government in achieving this ambition. Core to this position is the delivery of better, faster, and smarter communication solutions to ensure knowledge diffusion and seamless innovation. Our Smart City initiatives are paving the way with innovative digital solutions that will in turn enable innovation by the UAE's residents. We have a dream of connected innovation and are working hand in hand with national and international players to enjoy the benefits of a knowledge-based economy, powered by connectedness and mobility.

The *Global Innovation Index* report is a useful barometer on an economy's innovation performance, and provides tools that we, and every economy wanting to enhance its innovation capacity, can use.

OSMAN SULTAN
Chief Executive Officer
du

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The Global Innovation Index 2015: Effective Innovation Policies for Development was developed under the general direction of Francis GURRY (Director General, World Intellectual Property Organization) and the editors of the report, Soumitra DUTTA, Bruno LANVIN, and Sacha WUNSCH-VINCENT.

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PwC Global entertainment and media outlook 2013-2017, www.pwc.com/outlook

Advisory Board to the Global Innovation Index

In 2011, an Advisory Board was set up to provide advice on the research underlying the Global Innovation Index (GII), generate synergies at its stages of development, and assist with the dissemination of its messages and results. The Advisory Board is a select group of leading international practitioners and experts with unique knowledge and skills in the realm of innovation. Its members, while coming from diverse geographical and institutional backgrounds (international organizations, the public sector, non-governmental organizations, business, and academia), participate in their personal capacity. We are grateful for the time and support provided by the Advisory Board members.

In 2015, we welcome five new members to the Advisory Board: Yuko Harayama, Hugo Hollanders, Beethika Khan, Mary O’Kane, and Houlin Zhao.

We would like to express our gratitude to Daniele Archibugi, Research Director at the Italian National Research Council; Robert Bell, former Program Director at the National Science Foundation of the United States of America; Lynn St. Amour, former President and Chief Executive Officer of the Internet Society; and Hamadoun Touré, former Secretary-General of the International Telecommunication Union, for their collective thoughtful contributions to the previous editions of the GII as members of the Advisory Board.

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Executive Summary

The Global Innovation Index (GII) 2015 covers 141 economies around the world and uses 79 indicators across a range of themes. Thus GII 2015 presents us with a rich dataset to identify and analyse global innovation trends. The theme for this year's GII is 'Effective Innovation Policies for Development'. Taking advantage of the wealth of information produced by the GII analysis in its past editions, the outcome of various innovation policies can be reviewed to support their claims to effectiveness and to determine the impact that an economy's degree of development has on their efficacy.

This report presents chapters that discuss different aspects of the index and the theme, followed by appendices that provide a profile for each of the countries/economies covered this year, the data from individual data tables for each indicator, detailed information about the sources and definitions of each indicator, and technical notes about the composition of the index.

Below we provide a summary of the chapters.

Chapter 1, 'The Global Innovation Index 2015: Effective Innovation Policies for Development', written by Soumitra Dutta, Rafael Escalona Reynoso, and Alexandra L. Bernard from Cornell University; Bruno Lanvin from INSEAD; and Sacha Wunsch-Vincent from WIPO, introduces the idea that innovation-driven growth is no longer the prerogative of high-income countries alone, while providing tangible examples of effective innovation policies undertaken by developing countries with corresponding positive results in the GII rankings. Furthermore, this chapter discusses the results of this year's rankings. The key findings from the chapter are summarized below:

- Switzerland, the United Kingdom (UK), Sweden, the Netherlands, and the United States of America (USA) are the world's five most-innovative nations; at the same time, China, Malaysia, Viet Nam, India, Jordan, Kenya, Uganda, and a group of other countries are outpacing their economic peers in 2015.
- The GII leaders have created well-linked innovation ecosystems where investments in human capital, combined with strong innovation infrastructures, contribute to high levels of creativity. In particular, the top 25 countries in the GII consistently score well in most indicators and have strengths in areas such as information and communication technologies and business sophistication, which includes knowledge workers, innovation linkages, and knowledge absorption; they also create high levels of measurable outputs including creative goods and services.
- But innovation is not only about volume: Quality counts, too. In terms of innovation quality—as measured by university performance, the reach of scholarly articles, and the international dimension of patent applications—the USA holds the top place within the high-income group, followed by the UK, Japan, Germany, and Switzerland. Top-scoring middle-income economies are narrowing the gap on innovation quality: China leads this group, followed by Brazil and India, fuelled by an improvement in the quality of higher-education institutions.
- The GII 2015 confirms the persistence of global innovation divides. Among the top 10 and top 25, rankings have changed but the set of economies remains unaltered (the only exceptions being the Czech Republic, which has made its way into the top 25, and Malta, which has dropped from this list).
- For the purposes of this report, economies that perform at least 10 percent better than their peers for their level of gross domestic product (GDP) are called 'innovation achievers'.
- The 14 middle-income countries outperforming others in their income group—in order of performance—are the Republic of Moldova,

- China, Viet Nam, Armenia, Senegal, Mongolia, Malaysia, Montenegro, Ukraine, India, Bulgaria, Thailand, Morocco, and Jordan. The eight low-income countries outperforming others in their income group are Malawi, Mozambique, Rwanda, Kenya, Mali, Burkina Faso, Cambodia, and Uganda. These innovation achievers demonstrate rising levels of innovation input and output results because of improvements made to institutional frameworks, a skilled labour force with expanded tertiary education, better innovation infrastructures, a deeper integration with global credit investment and trade markets, and a sophisticated business community—even if progress on these dimensions is not uniform across their economies.
- On average, the technology gap between developing and developed countries is narrowing. One explanation for this phenomenon is that more and more developing countries outperform in innovation inputs and outputs relative to their level of development. The GII 2015 studies these ‘outperformers’—namely Armenia, China, Georgia, India, Jordan, Kenya, Malaysia, the Republic of Moldova, Mongolia, Uganda, and Viet Nam—analysing them in more detail and establishing links between performance and good business practices or innovation policies. They and other countries have realized that technology adoption alone is no longer sufficient to maintain a high-growth scenario; rather, investment in innovation is now crucial to spur further catch-up. As a result, national innovation policy programmes and the corresponding institutional arrangements have flourished in low- and middle-income countries.
 - The top three economies in the GII rankings for each region are as follows: in Sub-Saharan Africa, the top three are Mauritius, South Africa, and Senegal; in Central and Southern Asia, these are India, Kazakhstan, and Sri Lanka; in Latin America and the Caribbean, these are Chile, Costa Rica, and Mexico; in Northern Africa and Western Asia, these are Israel, Cyprus, and Saudi Arabia; in Southeast Asia and Oceania, these are Singapore, Hong Kong (China), and the Republic of Korea; in Europe, these are Switzerland, the UK, and Sweden; in Northern America, there are only two—the USA and Canada.
 - Encouraging signs continue to emerge in Sub-Saharan Africa. Following the trend identified in the GII last year, driven by selected countries, the Sub-Saharan Africa region has caught up significantly. In addition to South Africa, some African countries—in particular, Burkina Faso, Kenya, Malawi, Rwanda, and Senegal—stand out for having made important progress.
 - Although Latin America and the Caribbean region’s GII rankings have been slow to improve, Brazil, Argentina, and Mexico stand out as economies performing above the region’s average GII score. The consistent overperformance of Chile, Costa Rica, and Colombia—in both regional terms and as compared to their peers of similar economic development—is also noteworthy, as is the emergent role of Peru and Uruguay.
- Chapter 2, ‘Benchmarking Innovation Outperformance at the Global and Country Levels’,** written by Rafael Escalona Reynoso and Alexandra L. Bernard from Cornell University; Michaela Saisana from the Joint Research Centre at the European Commission; Martin Schaaper from UNESCO Institute for Statistics; and Sacha Wunsch-Vincent and Francesca Guadagno from WIPO, assesses the list of innovation achievers and pillar outperformers over the period 2011–14 and identifies a select group of 11 innovation outperformer economies. The chapter stresses that, at the country level—especially in developing countries—the emphasis on fostering innovation has increased and national innovation policies and programmes are flourishing.
- Although tracking absolute levels of innovation over time is difficult, measuring such progress has become a priority for policy makers who are seeking ways to assess the effectiveness of their innovation policies and innovation systems. This interest has also been permeated by high-level international development-related discussions.
 - By tracking global progress in innovation and focusing on those developing countries that outperform in innovation compared to countries at similar levels of development, the GII can be used to monitor progress in innovation and identify areas of strengths and weaknesses in innovation efforts.
 - The analysis within the chapter finds a growing percentage of countries with above-par performance (those that outperform their peers with a similar

level of economic development). The number of these innovation achievers continues to increase through the period under study here, namely 2011–14.

- Eight economies (China, India, Jordan, Kenya, the Republic of Moldova, Mongolia, Malaysia, and Viet Nam) can be signalled as innovation achievers, outperforming their peers on the overall GII score during 2011–14.
- Fifteen economies (China, Costa Rica, Georgia, Ghana, Hungary, India, Kenya, the Republic of Moldova, Mongolia, Malaysia, Rwanda, Serbia, Thailand, Ukraine, and Viet Nam) outperformed their peers in at least four innovation input or output pillars during 2011–14.
- Eleven developing countries (Armenia, China, Georgia, India, Jordan, Kenya, Malaysia, the Republic of Moldova, Mongolia, Uganda, and Viet Nam) are labelled ‘innovation outperformers’ because they conform to the following two more stringent rules: (1) their GII score relative to their GDP is significantly higher than it is for other economies (they attain ‘innovation achiever’ status) for two or more recent years (including at least 2013 and 2014); and (2) they outperform their income-group peers in a minimum of four innovation input or output pillars (they are designated ‘pillar outperformers’) for two or more years (including at least 2013 and 2014).
- Innovation achievers seem to perform the strongest in Market sophistication and Knowledge and technology outputs. At low income levels, countries that outperform their peers focus on removing structural obstacles to innovation, such as poor access to finance and poor linkages within the innovation systems. At higher income levels, efforts concentrate on increasing investments, spurring growth in innovation outputs, and improving human capital.
- Although the innovation system literature puts great emphasis on the role of human capital and institutions for innovation and development, these innovation input factors seem to be the most difficult of all inputs in which to achieve good scores, both in general and for low-income countries in particular. These results do not necessarily imply a lack of policy interest in these areas, but they might suggest that it is easier to outperform peers in certain inputs, either because

efforts to improve these inputs bring more immediate benefits or because peer countries perform particularly poorly in these areas.

- Research and development (R&D) is one of the key policy areas that can secure technological potential and, therefore, innovation and economic growth. In order to reach the income levels of high-income countries, low- and middle-income countries need to expand their access to technology and their capacity to use it.
- Countries at higher income levels, instead, can benefit from more developed innovation systems, where education and research can effectively provide the knowledge and skills to boost innovation. This allows them to more effectively translate innovation efforts into knowledge and technology outputs.

Chapter 3, ‘Innovation Policies for Development,’ written by Micheline Goedhuys, Hugo Hollanders, and Pierre Mohnen from UNU-MERIT (United Nations University and Maastricht University), emphasizes that the competitiveness of both companies and countries depends on their ability to innovate and move in the direction of frontier technology and knowledge. Innovation policies have been recently introduced in most emerging economies. Even in developing and least-developed countries, innovation is at the core of the political debate, but the focus of innovation policies in these countries differs from that of policies in more advanced economies.

- There is a wide heterogeneity among enterprises in emerging economies. Besides top-performing companies, emerging economies also host large groups of micro and small businesses, operating far below the frontier of innovation, with basic technologies and low levels of human capital. Raising the productivity of these smaller producers through innovation and the adoption of better technologies will have a substantial aggregate impact on a country’s economic growth, employment, poverty alleviation, and sustainable development.
- At the aggregate level and in comparison with data from developed economies, innovation in developing countries is more incremental than radical and takes place in an informal setting more often than it does in formal R&D laboratories.

- For emerging countries that are catching up, experience shows that technology adoption alone is no longer sufficient to maintain a high-growth scenario. These countries too must invest in innovation, and governmental support is crucial for promoting it.
- In developing and emerging economies, the importance of innovation is widely recognized and innovation policies occupy a central role in their development plans and strategies.
- In emerging countries, innovation is seen as key to addressing pressing societal problems such as pollution, health issues, poverty, and unemployment. The role and significance of innovation goes beyond the objective of economic success. Rather it should be seen through the lens of inclusive development because it can address poverty and health issues, and through the lens of environmental sustainable development because it can address problems of pollution and energy provision.
- Since innovation processes are also more oriented towards knowledge diffusion and absorption, instead of investing in R&D, to a large extent firms in emerging economies try to reap the benefits of catching up through adoption and international technology transfer, and favour tax incentives over direct R&D support grants.
- Emphasis in emerging countries should be placed on gaining knowledge as much as on providing the right framework conditions that stimulate a process of innovation and knowledge diffusion: political stability and supportive institutions; good and widespread technical and tertiary education to enhance absorptive capacity; reliable and widespread basic infrastructure; excellent provision of information and communication technology (ICT) property rights; and stronger links and interaction between publicly funded research institutes and private companies.
- The ultimate policy mix will depend on a country's broader development objectives, and will have to be made in collaboration with all the stakeholders to maximize the chances of success. Good coordination between ministries and between the private and the government sectors is therefore essential.
- It is also essential to monitor the impact of innovation policies in order to determine whether policies have worked and which policies might be most effective.
- Countries need to invest in research and innovation to develop products that address their particular needs. Governments are therefore developing innovation-support policies that take into account the specificities of their domestic industries. A few emerging countries have successfully introduced such policies and provide interesting cases from which lessons can be learned on a diverse range of innovation policies.

Chapter 4, 'Principles for National Innovation Success,' written by Robert D. Atkinson and Stephen Ezell from the Information Technology and Innovation Foundation, discusses the growing recognition that innovation is something in which all nations, including developed and developing, can, and indeed should, be engaged. The chapter presents six key principles all nations need to consider in order to design and implement the most effective innovation policies:

- **Principle 1:** Innovation policy should focus on maximizing innovation in all industries. Although manufacturing generally, and high-tech manufacturing specifically, is an important component of innovation, maximizing innovation requires maximizing innovation across all industries.
- **Principle 2:** Innovation policy should support all types and phases of innovation. One of the biggest mistakes countries make with their innovation strategies is to define innovation too narrowly, focusing mainly on developing and manufacturing high-tech products. Countries should focus more on across-the-board productivity growth strategies than on trying to grow primarily by shifting the compositional mix of their economy from lower- to higher-value-added sectors.
- **Principle 3:** Enable churn and creative destruction. To succeed in innovation, nations need to do more than merely enable some value-added innovation to supplement what is already going on in other, leading economies. They need to enable disruptive innovation, which is often generated by new market entrants, especially those emerging in their own economies.

- Principle 4: Keep the price of capital goods imports, especially information and communications technology (ICT) imports, low. Without new capital investment refreshing a nation's capital stock, innovation loses its power, productivity growth stagnates, and business competitiveness declines. The easiest and most important way countries can keep the cost of capital goods low is to limit tariffs and other trade barriers.
 - » ICTs represent a general purpose technology that are a foundational driver of modern economic growth, accounting themselves for as much as one-quarter of economic growth in many developing nations today.
 - » Although many nations impose high taxes and tariffs on ICT products in an attempt to either boost government revenue or to create a competitive domestic ICT industry or both, many nations—including China, Georgia, Malaysia, and Viet Nam—do a reasonably good job of limiting government-imposed costs on ICT products.
 - Principle 5: Support the creation of key innovation inputs. Firms not only need access to best-in-class, affordable ICT inputs, they also need access to other key innovation inputs, including digital infrastructure, a skilled workforce, and knowledge—both its production and its transfer. Examples of such support include:
 - » Kenya's National ICT Master Plan 2013/14–2017/18, introduced in April 2014, has played a vital role in developing a strategy to comprehensively deploy digital infrastructure, notably wireless and broadband Internet, throughout Kenya and to complement that availability of infrastructure with demand for it generated by popular applications such as mobile money and mobile government services.
 - » Countries increasingly recognize talent as a vital source of competitive advantage and thus have made education and training a core component of their innovation strategies.
 - » Because entrepreneurship is so risky and often involves first-time entrepreneurs, initiatives to help entrepreneurs learn from each other can be critical.
 - Principle 6: Develop a national innovation and productivity strategy and organizations to support it. In addition to national strategies, many successful nations have also established national innovation agencies specifically dedicated to spurring domestic innovation.
 - » For example, Kenya, India, Malaysia, Thailand, and Viet Nam have each established a National Innovation Agency.
 - » National innovation foundations also create national innovation strategies that constitute a game plan for how their countries can compete and win in a modern, innovation-based global economy. For instance, Kenya's National Science, Technology and Innovation Policy underscores the importance of mainstreaming science, technology, and innovation across all sectors of the economy.
- The chapter concludes:
- Countries attempting to achieve national innovation success need to envision a four-level pyramid as the path to prosperity that is based on key framework conditions; these support an effective tax, trade, and investment environment; these in turn support key factor inputs; and finally, at the top of the pyramid, is a group of innovation and productivity policies.
 - Countries must think holistically about how a wide variety of public policies impact the ability of their enterprises and industries to compete in the increasingly innovation-based global economy.
- Chapter 5, 'Innovation and Policy: A Business Perspective,'** written by Kai Engel and Justin Shepherd from A.T. Kearney and Martin Ruppert from the IMP³rove – European Innovation Management Academy, presents the findings of a survey of over 400 business leaders across several different countries to provide a business perspective on innovation policies. The results are as follows:
- Managers were generally positive and confident when evaluating their own innovation capabilities. Over half of those surveyed rated their performance as 'excellent' or 'very good' across all areas.

- Delivering radical innovation and collaborating with external partners were the two areas where companies saw the greatest need for improvement.
- Eighty percent of respondents answered that conditions in their countries permit them to pursue strategic objectives for innovation. This outcome suggests that policy environments are currently broadly supportive of innovation.
- The responses also reflected the need for policy makers to maintain a forward-looking orientation and to create policy frameworks that will support innovation in the future, not only in the present.
- More than 60% of survey respondents consider policy measures to be ‘important’ or ‘highly important’ to support different models of internal or collaborative innovation.
- Sixty-nine percent of survey respondents see policy measures to support internal innovation models as having either ‘high’ or ‘very high’ importance. By generating an increasingly complex innovation environment, current mega trends—such as digitization and connectivity—will make policy supports even more vital.
- When asked about future policy needs to support innovation, respondents suggested adopting forward-thinking legislation to ensure sustainability in the innovation environment; providing market participants with the tools to anticipate regulation; and improving regulatory harmonization to ensure smooth implementation into the international marketplace.
- Survey participants were further asked to name up to three specific actions that would develop enhanced conditions for innovation in their country: (1) to enhance innovation and entrepreneurship-related skills, (2) to provide large R&D infrastructure support (e.g., lab space and equipment), and (3) to provide direct financial R&D support. These priorities reflect the findings of the GII 2014, which indicated room for improvement in Human capital and Market sophistication-related factors such as access to finance, innovation linkages, and infrastructure.
- Encouraging policy that supports the development of an environment in which innovation can thrive should be a focus of efforts from the business community.

Chapter 6, ‘The Impact of Science and Technology Policies on Rapid Economic Development in China,’ written by Dongmin Chen, Shilin Zheng, and Lei Guo from Peking University, details how science and technology (S&T) policy reform and innovation have been the important drivers for China’s remarkable GDP achievement and have accelerated progress in higher education and research and development (R&D):

- A Medium- and Long-Term National S&T Development Plan for 2006–2020 (the 2006 National Plan) was issued in 2006. The plan emphasizes achieving sustainable economic growth, seeking innovation-driven growth strategies, and further enhancing independent innovation capacity. Objectives of national policies shifted from promoting R&D to building an innovation ecosystem.
- Following the 2006 National Plan, Chinese R&D investment clearly stepped up and the rate of local government investment in R&D surpassed that of the central government. Moreover, the positive market response encouraged the industrial sector to steadily increase R&D investment.
- To further push talent mobility, particularly in critical S&T fields, a very effective Thousand Talents Recruitment Program was launched by the central government. This has so far drawn more than 2,000 overseas Chinese scholars and leading industrial innovators back to China.
- The wide range of S&T policies implemented and adjusted over the past three decades has effectively advanced the development of an innovation ecosystem, as well as significantly increasing the size of the educated workforce, laying out a solid foundation for China’s future development.
- The strategy of ‘rejuvenating the nation’s economy with science and education’ has accelerated the development of China’s top education system, increased the quantity of undergraduates and Master’s graduates, and increased investment in talented researchers, leading to an increase of both the quality and quantity of researchers.
- Over the last two years, the Chinese government issued the 2014–2020 Action Plan on the Implementation of National Intellectual Property Strategy to ease the market processes for transactions pertaining to intellectual properties. It has

also overhauled the entire S&T funding processes to improve efficiency, launched a special stock market to allow technology start-up companies to have more avenues through which to raise development capital, and published *A Guideline for the Development of Public Incubation Space* to promote grassroots entrepreneurship to encourage the participation of multi-level capital markets, including crowdfunding.

- China has set a national target of becoming a leading innovative country by 2020. Reaching this target depends on continuing policy reform to further improve a balanced relationship between the government and market forces; to establish a more comprehensive innovation ecosystem; to nurture a legal and regulatory system that encourages investment in innovation and entrepreneurship by all sectors; and to foster open and fair competition among private, state-owned, and foreign enterprises.

Chapter 7, 'Radical Institutional Change: Enabling the Transformation of Georgia's Innovation System', written by Cristina Chaminade and Maria Moskovko from CIRCLE, Lund University, discusses the key institutional changes that are enabling Georgia to drive a rapid and positive change in its innovation performance.

- Since the collapse of the Soviet Union, Georgia has undertaken a process of deep transformation of its institutional framework enabled by the Association Agreement with the European Union. These reforms have improved tax administration and reduced corruption, progress that explains its exceptional performance in the GII rankings in Institutions and the significant increase of foreign direct investment inflows. The institutional change has led to a sizeable improvement in its innovation system. Further institutional change is necessary, however, to strengthen its education and research systems and improve firms' capabilities.
- Soft institutions, represented by societal practices, are harder to change. Intellectual property rights (IPR) protection is one of the areas in which soft institutions are making it difficult to implement new formal institutions.
- Despite the overall good performance in Human capital and research, Georgia is still facing the challenge of a fragmented research system and the loss of researchers who left the country after

the collapse of the Soviet Union. To solve these issues, the Georgian government has increased salaries for researchers, offered incentives to high-skilled Georgians who return to the country, and reformed the education system to bring it closer to the European standard.

- The Georgian business sector suffers from low capitalization, lack of training, low levels of patenting activity, and low levels of knowledge-intensive industries, which are reflected in its low levels of intangible assets and a poor use of ICTs, which severely hampers innovation capacity. The business sector is also poorly linked to university and research organizations. Investments in firms' innovation capabilities are needed—a major challenge for countries with very limited resources.
- The Association Agreement with the European Union (signed in 2014) could become a way to address some of the weaknesses outlined above. The agreement covers a large number of sectors and policy areas, including education, research and technological development, and ICT development. Moreover, access to the European market is expected to increase firms' incentives to be competitive.
- Links to multinational corporations are very important, but they need time and absorptive capacity to develop. Intermediate organizations such as non-governmental organizations and measuring and testing centres can play a crucial role in translating the knowledge of multinational corporations to the local actors.
- Especially given the current unstable situation in Eastern Europe and other external factors, it is essential for its continued development that Georgia stay on course on the innovation policy front.

Chapter 8, 'Policies to Drive Innovation in India,' written by Senapathy 'Kris' Gopalakrishnan and Jibak Dasgupta from the Confederation of Indian Industry, discusses the innovation performance of India, highlighting the strengths and weaknesses of its innovation system and the government interventions associated with them. Despite its achievements, especially in its scientific base and information technology (IT) and telecommunications industries, India still needs to implement substantial reforms in its innovation policy in order to further improve its innovation performance.

- India has consistently performed poorly during the last four years in political stability, ease of starting a business, tertiary inbound mobility, and environmental performance.
- Over the years, India has developed a stable foundation for scientific, technological, and business education by setting up centres of excellence. This contributed to its 66% average growth rate in scientific publications over the period 2006–10.
- The National Telecom Policy of 1994 and subsequent policy on broadband in 2004 lay the foundation for the rise of the Indian IT and telecommunications (mobile) industry. The National Telecom policy and IT Policy of 2012 is expected to further accelerate the growth of this industry by encouraging innovation and R&D in cutting-edge technologies, provide benefits to small- and medium-sized enterprises (SMEs) and start-ups, create a pool of 10 million skilled workers, and make at least one individual in every household e-literate.
- The SME sector has a high growth potential. This potential, however, has not yet materialized because of low credit availability. Government intervention in this area has focused on cluster development through various schemes and programmes of the Ministry of Micro, Small & Medium Enterprises and the National Innovation Council. Despite these efforts, SME cluster development in India is still not satisfactory.
- The Indian IPR regime has been crafted to strike a balance between protecting IPRs to support the commercialization of innovation and catering to social needs. This resulted in a relatively weaker IPR regime and a lower propensity to filing patents in India.
- With a population of more than 1.2 billion, and with 50% of that population under the age of 25, India faces a huge demand for higher education. This problem is exacerbated by low teacher quality, constraints in research capacity, and huge socioeconomic disparities.
- Despite their success, the Indian IT and telecommunications industries could contribute even more to economic growth and development in the country. For this to happen, higher education, IPR, institutional reforms, regulatory environment, infrastructure, and incentives

for entrepreneurship and R&D (especially for SMEs) should receive increased support of the government.

- As a partial response to these challenges, the newly elected government established a Ministry for Skill Development and Entrepreneurship, created financial schemes for SMEs and incubation programmes for start-ups, launched Intellectual Property Facilitation Centres to spread an intellectual property culture within SMEs, and announced increased expenditures on infrastructure.

Chapter 9, 'Effective Innovation Policies for Development: The Case of Kenya', written by Bitange Ndemo from the University of Nairobi, discusses how Kenya improved its innovation performance thanks to local innovators and a long R&D history in some key sectors, such as agriculture and health care. However, this rapid increase in new innovations is not strictly associated with the innovation policies in place in the country. These, therefore, need to improve to stimulate further innovation by guaranteeing stability and adequacy of funds for innovation, strengthening linkages between all the actors of the innovation system, and better communicating government plans to firms and innovation actors. The chapter explains:

- Pressure from a rapidly growing population, scarcity of resources, and soaring unemployment are driving the Kenyan government to push innovation as a new source of jobs. Successful commercialization of locally developed innovations has led to increased understanding of its potential to create employment and deal with local problems. Multinational corporations are also setting up research facilities in Kenya to get closer to this new potential market.
- Relative to other African countries, some of Kenya's strengths lie in its governance system and political stability as well as its levels of expenditures on education and R&D, access to credit, microfinance gross loans, royalty and fees receipts, and intensity of local competition.
- Innovations in the financial sector (e.g., the diffusion of mobile banking) facilitate access to credit and explain the improvements in market and business sophistication.
- Since 2006 the government has created a number of ministries and organizations to stimulate human capital development, R&D

expenditures, and improve science and technology infrastructures.

- An emphasis was also placed on pursuing more and better collaborations and partnerships and encouraging entrepreneurship through start-up and accelerator programmes, incubation, and the creation of a technology park.
- Despite the existence of a policy framework, challenges hindering the adoption of innovation as a key driver of economic growth still exist. As a consequence, resource allocation to R&D is often not guaranteed and the little that is allocated to research organizations is spent on recurrent expenditures.
- Actors within the innovation system are still weakly linked, leading to capacity underutilization, disconnection between industry and research organizations, and obstacles to innovate for SMEs.
- In terms of future challenges, the education system needs to place more emphasis on science, technology, engineering, and mathematics (STEM); create more technical, industrial and vocational education training institutions; and move to business-friendly educational programmes. These issues are currently being tackled by creating a number of institutions. This proliferation of institutions, however, is not expected to solve these issues.
- The chapter also views lessons for Kenya from other countries. The USA has much to offer in its new approach to building a community of innovators—the TechShop concept—which is being explored through a collaboration between the University of Nairobi and MIT. The chapter then takes a look at an approach to encouraging start-up creation and SME growth from the Republic of Korea, which begins in reforms to the education system, coupled with military service. Together these may foster a culture of risk-taking and innovation, and may be a useful model for Kenya to consider.

Chapter 10, ‘Innovation Performance of the Malaysian Economy’, written by Rajah Rasiah and Xiao-Shan Yap from the University of Malaya, details how Malaysia offers an excellent example of a middle-income country that has done well in areas such as business financing of innovation and commercialization as

well as in Market sophistication and Business sophistication, but at the same time still has considerable progress yet to make in areas such as knowledge-based activities and technological dependence. The chapter details:

- Despite strong commercialization in business R&D, including in business financing, the country’s relatively poor performance in innovation efficiency shows a need to review government policies on the execution of government-sponsored R&D funds.
- Government support of innovation in Malaysia is primarily through science, technology, and innovation policies (STI) that began in the 1980s. The Ministry of Science, Technology and Innovation (MOSTI) supports the creation, research, development, and commercialization of innovative activities in Malaysia.
- After 2006, following efforts by the government to stimulate R&D in the country, the number of projects approved and the amounts involved rose. Stimulating R&D is viewed as key to making Malaysia a developed country by 2020.
- The Intensification of Research in Priority Areas grant was launched in 1988 under MOSTI, which was targeted at government organizations such as universities and public research institutes to stimulate research. At the same time, the government introduced the double deduction tax incentive for firms undertaking approved R&D. The Industrial R&D Grant Scheme to support R&D in the private sector was introduced in 1997.
- The increasing focus by the government on research funding has helped stimulate expansion in innovation input and output, as can be seen from the rise in R&D expenditure as a share of GDP, R&D researchers and scientists per million persons, and the output of doctoral graduates and scientific publications. Both the leadership at MOSTI and the National Science Research Council have systematically tried to address the fundamental aspects of targeting expenditure to the priority areas that can best generate innovation.
- Since the promotion of export-oriented industrialization from 1971, high-tech production has become a major pillar of manufacturing in Malaysia. Strong basic infrastructure

and consistent promotion incentives that are well coordinated by the Malaysian Industrial Development Authority have ensured that foreign capital continues to remain in Malaysia to assemble and test electronics products for the export market.

- Recognizing that private R&D cannot be a substitute for government funding—especially where the benefits share strong public goods characteristics—in 2010 the government increased R&D expenditure with a focus on increasing R&D scientists and engineers, commercialization, the filing of intellectual property, scientific publications, and postgraduates, and began to emphasize innovation through substantially improved products and processes.
- The Malaysian government has managed to expand scientific input and output through the coordination of MOSTI with the meso-organizations of the Malaysia Industry-Government Group for High Technology, the Multimedia Development Corporation, the Malaysian Technology Development Corporation, the National Science Research Council and the five research universities: Universiti Malaya, Universiti Kebangsaan Malaysia, Universiti Sains Malaysia, University Putra Malaysia, and Universiti Teknologi Malaysia.
- The chronic deficit in royalty and licensing fee receipts and payments demonstrates that Malaysia still relies heavily on foreign technology and services. Policies are needed to transform Malaysia from a technology-importing to a technology-exporting country.
- In 2012 the Collaborative Research in Engineering, Science & Technology (CREST) was established to drive growth in the electrical-electronics industry, focusing on bringing together the three key stakeholders (industry, academia, and the government) in collaborative R&D, talent development, and commercialization. Because each research project granted by CREST conditions the participation of both universities and industrial firms, it is directly targeted at building university-industry linkages in the country.
- The main shortcomings that have restricted Malaysia's GII ranking from rising above 33rd place relate to the efficiency of the innovation inputs and outputs. As a consequence Malaysia

has remained a net technology and services importer with net receipts and licensing fees remaining negative for many years. There should be greater effort made to improve institutional support and knowledge-based activities and turn Malaysia into a net exporter of technology and services.

Chapter 11, 'Effective Innovation Policies for Development: Uganda', written by Julius Ecuru from the Uganda National Council for Science and Technology and Dick Kawooya from the University of South Carolina, School of Library and Information Science, discusses the case of Uganda and how it has changed dramatically in both economic terms and in other areas as a result of its relative political and economic stability. Uganda's rapidly growing population requires simultaneously expanding the economy to accommodate the people's needs and adopting more sustainable practices in natural resource management. For this reason, Uganda should turn to innovation and the creative use of resources across all sectors of the economy in order to build a sustainable future. The chapter explains:

- The Uganda government is deepening private-sector investment by improving its business environment and competitiveness through innovation.
- Uganda's GII strength in areas such as strong foreign direct investment net inflows is a direct result of the relative stability of the economy.
- Innovations in agro-processing and value addition may be essential for creating new sources of growth and agribusiness.
- The new Ministry of Education, Science, Technology, and Sports is a consequence of policy discussions over the last decade that identified a need for a standalone ministry for science and technology.
- Universities and other research organizations need to have internal policies that address and encourage research and intellectual property management.
- Uganda has a solid institutional foundation for developing the private sector. However, the private sector must be competitive domestically and internationally.
- Implementing the Uganda Registration Services Bureau's Strategic Investment Plan for 2012–17

may remove institutional bottlenecks involved in business registration, which in turn would improve Uganda's current low score on the ease of starting and cost of running a business.

- One important dimension of innovation in Uganda is its learning-by-doing aspect, especially in the informal sector, which constitutes about two-thirds of the country's businesses.
- To foster productivity in the informal sector, efforts have been made to improve the skills of youth and women so they can either start or improve their businesses.
- The rapid growth of universities in the country is an opportunity to harness young talent by supporting creative work, research, and innovation.
- Streamlining the financing policy for research and innovation is a vital next step.
- Creating new businesses through active business incubation should be pursued.
- Government's sustained support and commitment to research and innovation activities in universities, research institutes, and other centres is needed through direct as well as annual competitive grants.
- Uganda's experiences provide lessons that can be valuable for other low-income countries that need to improve their ranking in the GII. The most important lesson is that policy formulation and institutional capacity development around STI must be addressed concurrently. Strong leadership can also provide an essential component of successful progress in bridging the gap between research and innovation centres and industry.

Rankings

Global Innovation Index rankings

| Country/Economy | Score (0–100) | Rank | Income | Rank | Region | Rank | Efficiency Ratio | Rank | Median: 0.71 |
|--------------------------|---------------|------|--------|------|--------|------|------------------|------|--------------|
| Switzerland | 68.30 | 1 | HI | 1 | EUR | 1 | 1.01 | 2 | |
| United Kingdom | 62.42 | 2 | HI | 2 | EUR | 2 | 0.86 | 18 | |
| Sweden | 62.40 | 3 | HI | 3 | EUR | 3 | 0.86 | 16 | |
| Netherlands | 61.58 | 4 | HI | 4 | EUR | 4 | 0.92 | 8 | |
| United States of America | 60.10 | 5 | HI | 5 | NAC | 1 | 0.79 | 33 | |
| Finland | 59.97 | 6 | HI | 6 | EUR | 5 | 0.77 | 41 | |
| Singapore | 59.36 | 7 | HI | 7 | SEAO | 1 | 0.65 | 100 | |
| Ireland | 59.13 | 8 | HI | 8 | EUR | 6 | 0.88 | 12 | |
| Luxembourg | 59.02 | 9 | HI | 9 | EUR | 7 | 1.00 | 3 | |
| Denmark | 57.70 | 10 | HI | 10 | EUR | 8 | 0.75 | 49 | |
| Hong Kong (China) | 57.23 | 11 | HI | 11 | SEAO | 2 | 0.69 | 76 | |
| Germany | 57.05 | 12 | HI | 12 | EUR | 9 | 0.87 | 13 | |
| Iceland | 57.02 | 13 | HI | 13 | EUR | 10 | 0.98 | 4 | |
| Korea, Republic of | 56.26 | 14 | HI | 14 | SEAO | 3 | 0.80 | 27 | |
| New Zealand | 55.92 | 15 | HI | 15 | SEAO | 4 | 0.77 | 40 | |
| Canada | 55.73 | 16 | HI | 16 | NAC | 2 | 0.71 | 70 | |
| Australia | 55.22 | 17 | HI | 17 | SEAO | 5 | 0.70 | 72 | |
| Austria | 54.07 | 18 | HI | 18 | EUR | 11 | 0.77 | 37 | |
| Japan | 53.97 | 19 | HI | 19 | SEAO | 6 | 0.69 | 78 | |
| Norway | 53.80 | 20 | HI | 20 | EUR | 12 | 0.73 | 63 | |
| France | 53.59 | 21 | HI | 21 | EUR | 13 | 0.75 | 51 | |
| Israel | 53.54 | 22 | HI | 22 | NAWA | 1 | 0.83 | 20 | |
| Estonia | 52.81 | 23 | HI | 23 | EUR | 14 | 0.86 | 17 | |
| Czech Republic | 51.32 | 24 | HI | 24 | EUR | 15 | 0.89 | 11 | |
| Belgium | 50.91 | 25 | HI | 25 | EUR | 16 | 0.74 | 59 | |
| Malta | 50.48 | 26 | HI | 26 | EUR | 17 | 0.95 | 7 | |
| Spain | 49.07 | 27 | HI | 27 | EUR | 18 | 0.72 | 67 | |
| Slovenia | 48.49 | 28 | HI | 28 | EUR | 19 | 0.82 | 22 | |
| China | 47.47 | 29 | UM | 1 | SEAO | 7 | 0.96 | 6 | |
| Portugal | 46.61 | 30 | HI | 29 | EUR | 20 | 0.73 | 62 | |
| Italy | 46.40 | 31 | HI | 30 | EUR | 21 | 0.74 | 57 | |
| Malaysia | 45.98 | 32 | UM | 2 | SEAO | 8 | 0.74 | 56 | |
| Latvia | 45.51 | 33 | HI | 31 | EUR | 22 | 0.81 | 26 | |
| Cyprus | 43.51 | 34 | HI | 32 | NAWA | 2 | 0.66 | 90 | |
| Hungary | 43.00 | 35 | UM | 3 | EUR | 23 | 0.78 | 35 | |
| Slovakia | 42.99 | 36 | HI | 33 | EUR | 24 | 0.76 | 48 | |
| Barbados | 42.47 | 37 | HI | 34 | LCN | 1 | 0.81 | 25 | |
| Lithuania | 42.26 | 38 | HI | 35 | EUR | 25 | 0.70 | 74 | |
| Bulgaria | 42.16 | 39 | UM | 4 | EUR | 26 | 0.83 | 21 | |
| Croatia | 41.70 | 40 | HI | 36 | EUR | 27 | 0.75 | 50 | |
| Montenegro | 41.23 | 41 | UM | 5 | EUR | 28 | 0.79 | 29 | |
| Chile | 41.20 | 42 | HI | 37 | LCN | 2 | 0.68 | 82 | |
| Saudi Arabia | 40.65 | 43 | HI | 38 | NAWA | 3 | 0.72 | 69 | |
| Moldova, Republic of | 40.53 | 44 | LM | 1 | EUR | 29 | 0.98 | 5 | |
| Greece | 40.28 | 45 | HI | 39 | EUR | 30 | 0.65 | 98 | |
| Poland | 40.16 | 46 | HI | 40 | EUR | 31 | 0.66 | 93 | |
| United Arab Emirates | 40.06 | 47 | HI | 41 | NAWA | 4 | 0.41 | 133 | |
| Russian Federation | 39.32 | 48 | HI | 42 | EUR | 32 | 0.74 | 60 | |
| Mauritius | 39.23 | 49 | UM | 6 | SSF | 1 | 0.65 | 96 | |
| Qatar | 39.01 | 50 | HI | 43 | NAWA | 5 | 0.61 | 110 | |
| Costa Rica | 38.59 | 51 | UM | 7 | LCN | 3 | 0.79 | 32 | |
| Viet Nam | 38.35 | 52 | LM | 2 | SEAO | 9 | 0.92 | 9 | |
| Belarus | 38.23 | 53 | UM | 8 | EUR | 33 | 0.70 | 73 | |
| Romania | 38.20 | 54 | UM | 9 | EUR | 34 | 0.74 | 58 | |
| Thailand | 38.10 | 55 | UM | 10 | SEAO | 10 | 0.76 | 43 | |
| TFYR of Macedonia | 38.03 | 56 | UM | 11 | EUR | 35 | 0.73 | 64 | |
| Mexico | 38.03 | 57 | UM | 12 | LCN | 4 | 0.73 | 61 | |
| Turkey | 37.81 | 58 | UM | 13 | NAWA | 6 | 0.81 | 23 | |
| Bahrain | 37.67 | 59 | HI | 44 | NAWA | 7 | 0.63 | 105 | |
| South Africa | 37.45 | 60 | UM | 14 | SSF | 2 | 0.66 | 94 | |
| Armenia | 37.31 | 61 | LM | 3 | NAWA | 8 | 0.79 | 34 | |
| Panama | 36.80 | 62 | UM | 15 | LCN | 5 | 0.78 | 36 | |
| Serbia | 36.47 | 63 | UM | 16 | EUR | 36 | 0.75 | 55 | |
| Ukraine | 36.45 | 64 | LM | 4 | EUR | 37 | 0.87 | 15 | |
| Seychelles | 36.44 | 65 | UM | 17 | SSF | 3 | 0.67 | 88 | |
| Mongolia | 36.41 | 66 | LM | 5 | SEAO | 11 | 0.61 | 111 | |
| Colombia | 36.41 | 67 | UM | 18 | LCN | 6 | 0.60 | 114 | |
| Uruguay | 35.76 | 68 | HI | 45 | LCN | 7 | 0.66 | 91 | |
| Oman | 35.00 | 69 | HI | 46 | NAWA | 9 | 0.67 | 86 | |
| Brazil | 34.95 | 70 | UM | 19 | LCN | 8 | 0.65 | 99 | |
| Peru | 34.87 | 71 | UM | 20 | LCN | 9 | 0.60 | 113 | |

Global Innovation Index rankings (continued)

| Country/Economy | Score (0–100) | Rank | Income | Rank | Region | Rank | Efficiency Ratio | Rank | Median: 0.71 |
|-----------------------------------|---------------|------|--------|------|--------|------|------------------|------|--------------|
| Argentina | 34.30 | 72 | UM | 21 | LCN | 10 | 0.75 | 52 | |
| Georgia | 33.83 | 73 | LM | 6 | NAWA | 10 | 0.62 | 107 | |
| Lebanon | 33.82 | 74 | UM | 22 | NAWA | 11 | 0.67 | 87 | |
| Jordan | 33.78 | 75 | UM | 23 | NAWA | 12 | 0.72 | 68 | |
| Tunisia | 33.48 | 76 | UM | 24 | NAWA | 13 | 0.71 | 71 | |
| Kuwait | 33.20 | 77 | HI | 47 | NAWA | 14 | 0.73 | 65 | |
| Morocco | 33.19 | 78 | LM | 7 | NAWA | 15 | 0.64 | 102 | |
| Bosnia and Herzegovina | 32.31 | 79 | UM | 25 | EUR | 38 | 0.39 | 135 | |
| Trinidad and Tobago | 32.18 | 80 | HI | 48 | LCN | 11 | 0.66 | 92 | |
| India | 31.74 | 81 | LM | 8 | CSA | 1 | 0.79 | 31 | |
| Kazakhstan | 31.25 | 82 | UM | 26 | CSA | 2 | 0.53 | 124 | |
| Philippines | 31.05 | 83 | LM | 9 | SEAO | 12 | 0.76 | 44 | |
| Senegal | 30.95 | 84 | LM | 10 | SSF | 4 | 0.81 | 24 | |
| Sri Lanka | 30.79 | 85 | LM | 11 | CSA | 3 | 0.76 | 46 | |
| Guyana | 30.75 | 86 | LM | 12 | LCN | 12 | 0.65 | 95 | |
| Albania | 30.74 | 87 | UM | 27 | EUR | 39 | 0.49 | 129 | |
| Paraguay | 30.69 | 88 | LM | 13 | LCN | 13 | 0.75 | 54 | |
| Dominican Republic | 30.60 | 89 | UM | 28 | LCN | 14 | 0.61 | 108 | |
| Botswana | 30.49 | 90 | UM | 29 | SSF | 5 | 0.54 | 120 | |
| Cambodia | 30.35 | 91 | LI | 1 | SEAO | 13 | 0.69 | 80 | |
| Kenya | 30.19 | 92 | LI | 2 | SSF | 6 | 0.79 | 30 | |
| Azerbaijan | 30.10 | 93 | UM | 30 | NAWA | 16 | 0.60 | 115 | |
| Rwanda | 30.09 | 94 | LI | 3 | SSF | 7 | 0.42 | 131 | |
| Mozambique | 30.07 | 95 | LI | 4 | SSF | 8 | 0.63 | 104 | |
| Jamaica | 29.95 | 96 | UM | 31 | LCN | 15 | 0.54 | 121 | |
| Indonesia | 29.79 | 97 | LM | 14 | SEAO | 14 | 0.77 | 42 | |
| Malawi | 29.71 | 98 | LI | 5 | SSF | 9 | 0.75 | 53 | |
| El Salvador | 29.31 | 99 | LM | 15 | LCN | 16 | 0.62 | 106 | |
| Egypt | 28.91 | 100 | LM | 16 | NAWA | 17 | 0.68 | 83 | |
| Guatemala | 28.84 | 101 | LM | 17 | LCN | 17 | 0.67 | 89 | |
| Burkina Faso | 28.68 | 102 | LI | 6 | SSF | 10 | 0.68 | 85 | |
| Cabo Verde | 28.59 | 103 | LM | 18 | SSF | 11 | 0.54 | 119 | |
| Bolivia, Plurinational State of | 28.58 | 104 | LM | 19 | LCN | 18 | 0.76 | 45 | |
| Mali | 28.37 | 105 | LI | 7 | SSF | 12 | 0.87 | 14 | |
| Iran, Islamic Republic of | 28.37 | 106 | UM | 32 | CSA | 4 | 0.63 | 103 | |
| Namibia | 28.15 | 107 | UM | 33 | SSF | 13 | 0.51 | 126 | |
| Ghana | 28.04 | 108 | LM | 20 | SSF | 14 | 0.69 | 79 | |
| Kyrgyzstan | 27.96 | 109 | LM | 21 | CSA | 5 | 0.53 | 122 | |
| Cameroon | 27.80 | 110 | LM | 22 | SSF | 15 | 0.84 | 19 | |
| Uganda | 27.65 | 111 | LI | 8 | SSF | 16 | 0.57 | 118 | |
| Gambia | 27.49 | 112 | LI | 9 | SSF | 17 | 0.77 | 39 | |
| Honduras | 27.48 | 113 | LM | 23 | LCN | 19 | 0.57 | 117 | |
| Tajikistan | 27.46 | 114 | LI | 10 | CSA | 6 | 0.65 | 101 | |
| Fiji | 27.31 | 115 | UM | 34 | SEAO | 15 | 0.28 | 140 | |
| Côte d'Ivoire | 27.16 | 116 | LM | 24 | SSF | 18 | 0.90 | 10 | |
| Tanzania, United Republic of | 27.00 | 117 | LI | 11 | SSF | 19 | 0.77 | 38 | |
| Lesotho | 26.97 | 118 | LM | 25 | SSF | 20 | 0.50 | 128 | |
| Ecuador | 26.87 | 119 | UM | 35 | LCN | 20 | 0.51 | 127 | |
| Angola | 26.20 | 120 | UM | 36 | SSF | 21 | 1.02 | 1 | |
| Bhutan | 26.06 | 121 | LM | 26 | CSA | 7 | 0.33 | 138 | |
| Uzbekistan | 25.89 | 122 | LM | 27 | CSA | 8 | 0.53 | 123 | |
| Swaziland | 25.37 | 123 | LM | 28 | SSF | 22 | 0.42 | 132 | |
| Zambia | 24.64 | 124 | LM | 29 | SSF | 23 | 0.68 | 81 | |
| Madagascar | 24.42 | 125 | LI | 12 | SSF | 24 | 0.59 | 116 | |
| Algeria | 24.38 | 126 | UM | 37 | NAWA | 18 | 0.52 | 125 | |
| Ethiopia | 24.17 | 127 | LI | 13 | SSF | 25 | 0.72 | 66 | |
| Nigeria | 23.72 | 128 | LM | 30 | SSF | 26 | 0.80 | 28 | |
| Bangladesh | 23.71 | 129 | LI | 14 | CSA | 9 | 0.61 | 112 | |
| Nicaragua | 23.47 | 130 | LM | 31 | LCN | 21 | 0.47 | 130 | |
| Pakistan | 23.07 | 131 | LM | 32 | CSA | 10 | 0.76 | 47 | |
| Venezuela, Bolivarian Republic of | 22.77 | 132 | UM | 38 | LCN | 22 | 0.68 | 84 | |
| Zimbabwe | 22.52 | 133 | LI | 15 | SSF | 27 | 0.69 | 77 | |
| Niger | 21.22 | 134 | LI | 16 | SSF | 28 | 0.29 | 139 | |
| Nepal | 21.08 | 135 | LI | 17 | CSA | 11 | 0.40 | 134 | |
| Burundi | 21.04 | 136 | LI | 18 | SSF | 29 | 0.36 | 137 | |
| Yemen | 20.80 | 137 | LM | 33 | NAWA | 19 | 0.65 | 97 | |
| Myanmar | 20.27 | 138 | LI | 19 | SEAO | 16 | 0.69 | 75 | |
| Guinea | 18.49 | 139 | LI | 20 | SSF | 30 | 0.61 | 109 | |
| Togo | 18.43 | 140 | LI | 21 | SSF | 31 | 0.24 | 141 | |
| Sudan | 14.95 | 141 | LM | 34 | SSF | 32 | 0.37 | 136 | |

Note: World Bank Income Group Classification (July 2013): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification: EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; SSF = Sub-Saharan Africa.

Chapters

The Global Innovation Index 2015: Effective Innovation Policies for Development

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Since the Global Innovation Index (GII) 2014 was released last year, the world economy has continued on its path of restrained recovery. The challenge of how to inject more momentum into the economic outlook, spurring economic growth around the globe, remains.

Overcoming a fragile recovery: Laying the foundations for future growth

The world's leading economic institutions predict moderate economic growth in 2015 at levels similar to 2014, preceding a more pronounced increase in growth in 2016.¹

On average, growth in emerging markets is still clearly positive, despite a significant slowdown that involves Latin America and Sub-Saharan Africa in particular, but also fast-growing middle-income economies such as China.² Although risks remain, growth in nearly all high-income countries such as the United States of America (USA) and also in Japan and most countries of the European Union has, if only slightly in most cases, picked up as compared to last year.

Although welcome, the projected increases in growth continue to be modest and uneven. A shared growth momentum with the potential to reduce the persistent high unemployment and secure continued catch-up growth in less-developed nations is lacking.

Indeed, economic output is currently far below the growth trajectory that had been anticipated before the 2009 economic crisis. Worse, recent reports confirm that potential output growth has declined in recent years.³ This concerns not only high-income but also developing economies, which could see a slowdown in their adoption of productivity-enhancing technologies as their investment and economic growth slows.⁴ Whether this is primarily a cyclical issue—and thus a legacy of the economic setback in 2009—or a more structural problem endangering future growth is being vigorously debated by economists.

Regardless of the outcome of this debate, there are clear signs that actions to spur efficiency gains as measured by total factor productivity growth are urgently needed to avert a more persistent low-growth scenario. Increased investments, in areas including infrastructure and technology, and a focus on innovation will be critical in this context.

Innovation expenditures: Back to a new 'normal' of moderate growth

Over the last few years, this report and others have cautioned that the economic crisis might slow innovation more permanently, negatively impacting the future source of growth.⁵

In the aftermath of the economic crisis that began in 2009,

the governments in many countries averted this threat.⁶ The significant drop of private R&D in these countries was efficiently offset by government R&D investments in 2010 and 2011.⁷ Continued high spending in select emerging countries such as China, Turkey, and Mexico, and also in high-income Republic of Korea, subsequently led to significant overall R&D growth through in 2012 (see Box 1).

By our estimates, global R&D expenditures have thus re-entered a moderate growth path. Importantly, on average, businesses are again the drivers of R&D spending growth.

Still, the stabilization or fall of government R&D budgets in advanced countries, the slowdown in emerging markets, and the decreased appetite of business investment have slowed the advance of innovation expenditures. In 2013, according to our estimates, global R&D growth was subdued—the result in part of weakening private R&D expenditure growth as of late 2012, which has seemingly intensified in 2014. Global R&D intensity—computed as global R&D expenditures over global GDP—stayed relatively flat: from 1.6% in 2008 to 1.7% in 2013, with Israel, the Republic of Korea, and Japan being the most R&D-intensive countries.⁸

In terms of the global use of intellectual property (IP), the latest figures point to 9% patent filing growth in 2013; this is slightly

Box 1: Moderate post-crisis R&D expenditure growth largely driven by the private sector

After global R&D spending stagnated (or, in many advanced economies, fell) in 2009, combined global private and public R&D expenditure followed a path of constant growth, increasing by 3.7% in 2010, 5.3% in 2011, and 5.6% in 2012. Although data are still incomplete, estimated global R&D spending grew by about 4.3% in 2013.¹ Gross domestic expenditures on R&D (GERD) in the high-income economies of the Organisation for Economic Co-operation and Development (OECD) increased by 1.4% in 2010, 3.6% in 2011, 3% in 2012, and 2.6% in 2013.² The slowdown after 2011 was triggered mainly by continued weakening public R&D spending in those economies.

The worldwide recovery of business enterprise expenditure on R&D (BERD) was quick, reaching 3.2% growth in 2010 and gaining at the faster pace of 7.2% in 2011 and 6.6% in 2012. Although data are incomplete for 2013, BERD is estimated to exhibit a more moderate growth of 5.1% in that year.³ Businesses in high-income countries of the OECD contributed to the recovery of R&D

expenditure with 4.8% growth in 2011, 4% growth in 2012, and 3.2% growth in 2013.⁴

R&D spending by the top R&D performing 2,500 companies worldwide, as identified by the European Union's 2014 Industrial R&D Investment Scoreboard, grew by 8% in 2011, 7% in 2012, and a slower 4.9% in 2013.⁵ According to PricewaterhouseCoopers and Strategy&, R&D spending by the top R&D performing 1,000 companies worldwide grew by 9.7% in 2012 and 3.8% in 2013, but only 1.4% in 2014.⁶

Regardless of the global economic slowdown, business and total R&D spending are significantly above crisis levels in most economies; so is the spending of top R&D firms, which reached new heights in 2013 or 2014. The situation in terms of total R&D spending across countries is not uniform, however (see Tables 1.1 and 1.2). A large number of Eastern European countries, other large European economies such as France and Ireland, some high-income Asian economies such as the Republic of Korea, and emerging economies such as China and

the Russian Federation have experienced no aggregate drop in R&D spending. Some economies, such as Slovakia and Estonia, have recovered from the slowdown quickly, offsetting the plunge in R&D spending seen during the crisis. Others, such as Israel and Germany, have seen a more timid recovery. Japan has recently returned to its pre-crisis levels for combined public and private R&D, and the United Kingdom's business R&D spending has now fully recovered.

Nonetheless, some high-income economies—such as Portugal, Finland, Singapore, and South Africa—continue to exhibit R&D spending below their pre-crisis levels.

Note

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Notes and references for this box appear at the end of the chapter.

(Continued)

weaker than the two-decade growth record set in 2012.⁹ These aggregates hide the fact that actual IP filings have decreased in Japan and many European countries, while they have strongly increased in China and the Republic of Korea.

Considering these various factors—namely, sluggish investment, continued weak growth, and persistent unemployment—boosting innovation expenditures from businesses and ensuring the dynamic impact needed to re-fuel global growth is the challenge. This objective will require not only longer-term strategies on the corporate side but also ambitious policies from governments.

Importantly, the challenge of sustaining growth and innovation is no longer the prerogative of high-income countries alone. This is why

this year's GII explores the theme of 'Effective Innovation Policies for Development'.

Effective innovation policies for development

On average, the technology gap between developing and developed countries appears to be narrowing.¹⁰ One explanation is that more and more developing countries outperform in innovation inputs and outputs relative to their level of development (see Chapter 2). The GII 2015 studies these 'outperformers'—including Armenia, China, Georgia, India, Jordan, Kenya, Malaysia, the Republic of Moldova, Mongolia, Uganda, and Viet Nam.

These and other countries have realized that technology adoption alone is no longer sufficient to

maintain a high-growth scenario; rather innovation is now crucial for catching up to high-income countries. As a result, national innovation policy programmes are flourishing in low- and middle-income countries.

The specificities of innovation systems in developing countries

One question looms large: How can the prevailing innovation policy approaches of high-income countries be adapted to work for developing countries, if at all?

To find an answer, the first step is to look at the innovation policy mixes that high-income economies have fine-tuned over the last decades.¹¹ Policy makers in these countries follow an *innovation system* approach in which innovation—understood broadly—is the result of complex

Box 1: Moderate post-crisis R&D expenditure growth largely driven by the private sector (cont'd.)

Table 1.1: Gross domestic expenditure on R&D (GERD): Crisis and recovery compared

Countries with no fall in GERD during the crisis that have expanded since

| | CRISIS | | RECOVERY | | | |
|--------------|--------|------|----------|------|------|------------------|
| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| China | 100 | 124 | 145 | 166 | 193 | 218 |
| Poland | 100 | 113 | 128 | 139 | 167 | 166 |
| Turkey | 100 | 111 | 121 | 134 | 147 | 157 |
| Korea, Rep. | 100 | 106 | 119 | 133 | 147 | 156 |
| Slovenia | 100 | 103 | 118 | 140 | 145 | 144 ^P |
| Hungary | 100 | 108 | 110 | 116 | 122 | 137 |
| Belgium | 100 | 100 | 107 | 114 | 119 | 121 ^P |
| Russian Fed. | 100 | 111 | 104 | 105 | 112 | 113 |
| France | 100 | 104 | 105 | 108 | 110 | 110 ^P |
| Denmark | 100 | 105 | 102 | 104 | 105 | 106 ^P |
| Argentina | 100 | 115 | 128 | 146 | 166 | n/a |
| Switzerland | 100 | n/a | n/a | n/a | 113 | n/a |
| Mexico | 100 | 102 | 113 | 110 | n/a | n/a |
| Ireland | 100 | 109 | 108 | 106 | 108 | n/a |
| Australia | 100 | n/a | 102 | 102 | n/a | n/a |
| Italy* | 100 | 99 | 101 | 100 | 102 | 99 ^P |

Note: * Countries that reached 99% of their 2008 GERD spending in 2013; 2008 is indexed as 100%.

Countries with fall in GERD but above pre-crisis levels in 2013

| | CRISIS | | RECOVERY | | | |
|---------------|--------|------|----------|------|------------------|------------------|
| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Slovakia | 100 | 97 | 132 | 147 | 181 | 188 |
| Czech Rep. | 100 | 99 | 105 | 125 | 142 | 150 ^P |
| Estonia | 100 | 94 | 110 | 176 | 170 | 139 ^P |
| Netherlands | 100 | 99 | 102 | 114 | 116 | 116 ^P |
| Germany | 100 | 99 | 103 | 109 | 113 | 115 ^P |
| Israel | 100 | 96 | 97 | 105 | 112 | 115 |
| Austria | 100 | 97 | 104 | 105 | 111 | 111 ^P |
| Norway | 100 | 101 | 99 | 102 | 105 | 108 ^P |
| Japan | 100 | 91 | 93 | 96 | 97 | 102 |
| Chile | 100 | 93 | 92 | 104 | 113 | n/a |
| United States | 100 | 99 | 99 | 101 | 105 ^P | n/a |

GERD below crisis levels in 2013

| | CRISIS | | RECOVERY | | | |
|----------------|--------|------|----------|------|------|-----------------|
| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| United Kingdom | 100 | 99 | 98 | 99 | 96 | 98 ^P |
| Sweden | 100 | 93 | 92 | 95 | 97 | 98 ^m |
| Canada | 100 | 100 | 99 | 99 | 97 | 94 ^P |
| Finland | 100 | 97 | 99 | 99 | 92 | 88 |
| Greece | 100 | 90 | 82 | 83 | 80 | 88 ^P |
| Spain | 100 | 99 | 99 | 96 | 90 | 88 ^P |
| Portugal | 100 | 106 | 105 | 98 | 89 | 87 ^P |
| Luxembourg | 100 | 99 | 91 | 87 | 71 | 73 ^P |
| Romania | 100 | 75 | 73 | 81 | 79 | 66 |
| Singapore | 100 | 82 | 88 | 100 | 96 | n/a |
| Iceland | 100 | 100 | n/a | 93 | n/a | n/a |
| South Africa | 100 | 92 | 83 | 85 | 88 | n/a |

Note: p = provisional data; m = underestimated or based on underestimated data.

Source: OECD MSTI, February 2015; data used: Gross domestic expenditure on R&D (GERD) at constant 2005 PPP\$, index = 2008.

Table 1.2: Business enterprise expenditure on R&D (BERD): Crisis and recovery compared

Countries with no fall in BERD during the crisis that have expanded since

| | CRISIS | | RECOVERY | | | |
|--------------|--------|------|----------|------|------|------------------|
| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Poland | 100 | 104 | 110 | 135 | 201 | 234 |
| China | 100 | 124 | 145 | 171 | 200 | 228 |
| Hungary | 100 | 118 | 125 | 138 | 152 | 180 |
| Slovenia | 100 | 103 | 124 | 160 | 170 | 171 ^P |
| Turkey | 100 | 101 | 116 | 131 | 150 | 168 |
| Korea, Rep. | 100 | 105 | 118 | 135 | 152 | 162 |
| France | 100 | 102 | 105 | 110 | 113 | 114 ^P |
| Russian Fed. | 100 | 110 | 100 | 102 | 104 | 109 |
| Ireland | 100 | 115 | 115 | 116 | 120 | n/a |
| Mexico | 100 | 109 | 113 | 111 | n/a | n/a |
| Switzerland | 100 | n/a | n/a | n/a | 106 | n/a |
| Denmark* | 100 | 105 | 98 | 99 | 99 | 99 ^P |

Note: * Countries that reached 99% of their 2008 BERD spending in 2013; 2008 is indexed as 100%.

Countries with fall in BERD during the crisis but above crisis levels in 2013

| | CRISIS | | RECOVERY | | | |
|----------------|--------|------|----------|------|------------------|------------------|
| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Slovakia | 100 | 93 | 130 | 127 | 174 | 203 |
| Estonia | 100 | 98 | 127 | 257 | 226 | 153 ^P |
| Czech Rep. | 100 | 96 | 103 | 118 | 130 | 138 ^P |
| Netherlands | 100 | 93 | 98 | 127 | 134 | 134 ^P |
| Belgium | 100 | 97 | 105 | 114 | 120 | 123 ^P |
| Israel | 100 | 97 | 97 | 105 | 111 | 114 |
| Germany | 100 | 97 | 99 | 107 | 111 | 113 ^P |
| Austria | 100 | 96 | 103 | 104 | 110 | 110 ^P |
| Norway | 100 | 98 | 95 | 100 | 103 | 106 ^P |
| United Kingdom | 100 | 96 | 96 | 102 | 99 | 102 ^P |
| Italy | 100 | 99 | 102 | 103 | 103 | 100 ^P |
| Argentina | 100 | 93 | 108 | 131 | 130 | n/a |
| United States | 100 | 96 | 94 | 97 | 103 ^P | n/a |
| Japan* | 100 | 88 | 90 | 94 | 94 | 99 |

Note: * Countries that reached 99% of their 2008 BERD spending in 2013; 2008 is indexed as 100%.

BERD below crisis levels in 2013

| | CRISIS | | RECOVERY | | | |
|--------------|--------|------|----------|------|------|-----------------|
| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Sweden | 100 | 88 | 86 | 88 | 88 | 92 |
| Canada | 100 | 98 | 95 | 96 | 92 | 87 |
| Spain | 100 | 93 | 93 | 91 | 87 | 85 ^P |
| Portugal | 100 | 100 | 96 | 93 | 88 | 82 ^P |
| Finland | 100 | 93 | 93 | 94 | 86 | 82 |
| Romania | 100 | 101 | 94 | 97 | 103 | 67 |
| Luxembourg | 100 | 96 | 79 | 78 | 56 | 57 ^P |
| Australia | 100 | 96 | 97 | 97 | n/a | n/a |
| Chile | 100 | 68 | 68 | 88 | 96 | n/a |
| Iceland | 100 | 92 | 88 | 90 | n/a | n/a |
| Singapore | 100 | 70 | 75 | 87 | 81 | n/a |
| South Africa | 100 | 83 | 70 | 69 | 66 | n/a |

Note: p = provisional data.

Source: OECD MSTI, February 2015; data used: Business enterprise expenditure on R&D (BERD) at constant 2005 PPP\$, index = 2008.

interactions among all innovation actors, policies, and institutions.¹² They also draw on the understanding, born of experience, that converting a scientific breakthrough or an idea into a successfully commercialized innovation often involves a long journey with no guaranteed outcomes. Beyond incentivizing research, complementary measures are required to bring product, process, marketing, and organizational innovation to fruition.

Two main policy strands form the core of present innovation policy. On the one hand, there is a need to improve the framework conditions for innovation; these include the business environment, access to finance, competition, and trade openness, as captured in the Innovation Input Sub-Index of the GII model.

On the other hand, nations also need dedicated innovation policies targeting both innovation actors and the linkages among them; these include collaborative research projects, public-private partnerships, and clusters.¹³ High-income countries follow a set of dedicated supply- and demand-side innovation policies (see Chapter 3 by Goedhuys et al.).¹⁴ This entails creating a strong human capital and research base that includes research infrastructures, sophisticated firms and markets, innovation linkages, and knowledge absorption, and that fosters innovation outputs as captured by the GII. Direct support for business R&D and innovation is provided in the form of grants, subsidies, or indirect measures such as R&D tax credits. Universities and public research organizations are funded either via across-the-board or more competitive funding mechanisms.

In addition, there is also renewed interest in demand-side measures. This interest is evident while using

classic instruments such as public procurement, as well as while testing out new approaches to promote innovation specific to overcoming a key societal challenge in fields such as clean energy and health. Demand-side measures also facilitate the uptake of specific innovations (including via standards or regulations) and can foster user-led innovation.¹⁵ Business executives in charge of innovation surveyed in Chapter 5 by Engel et al. stress the importance of forward-thinking legislation to support future innovation and the related markets (e.g., for autonomous cars). They also stress the need for the international harmonization of regulations for new technologies so they can diffuse more rapidly and be commercially viable.

Another new policy development is the focus on creating an ‘innovation culture’ with businesses, students, and society at large. This is meant to spur greater entrepreneurial activity and to achieve a better public appreciation of the role of science and innovation. The design of proper metrics and evaluation strategies of policies is emphasized too. Indeed, the formulation and measurement of innovation policies is increasingly treated as a science in its own right.

Regardless of these developments, finding the right combination between demand and supply measures, and between public and private funding for innovation, remains largely a trial-and-error type of endeavour. In addition, although it is tempting to think so, a simple migration of policy mixes developed in high-income countries to developing countries is unlikely to bear fruit. Innovation policies and institutions need to be context-specific, reflecting the extensive

heterogeneity and varying trajectories of countries.¹⁶

The heterogeneity among countries aside, broadly speaking a number of differences between developed and developing countries need to be considered:¹⁷

First, evidently the framework conditions for innovation are more challenging in developing countries. Beyond macroeconomic challenges, this often manifests itself in poorer infrastructure; weaker product, capital, and labour markets; and weaker education systems. Ineffective regulatory set-ups that do not provide the proper incentives to innovation are often a problem.¹⁸ Developing countries also frequently face inherently dissimilar pressures—for example, high population growth and a resulting younger population, or more intense inequalities.

Second, for sheer budgetary reasons, the capacity to finance, coordinate, and evaluate a large package of innovation policies is constrained in developing countries. Although arguably all components of innovation policy dimensions seem important, tough priority-setting is required. Moreover, in the context of developing countries, the innovation policy coordination between various local, regional, and national levels of government is often even more demanding than it is in developed ones.

Third, the industrial structure of most low- and middle-income countries is usually different, with a greater reliance on agriculture, the extraction of raw materials, and too few—mostly low-value-added—manufacturing activities (e.g., food processing, textiles), as well as an increasing reliance on services industries such as creative sectors, tourism, transport, and retail activities. Micro- and small businesses play an above-average role for the

broader economy and potentially for innovation too. Although frequently neglected, the informal sector often matters greatly, as described in Chapters 9 by Ndemo on Kenya and 11 by Ecuru and Kawooya on Uganda.

Fourth, country- or sector-specific exceptions aside, innovation capabilities in developing countries are typically less advanced than those in developed countries. For one, the human resource base remains comparatively weak (see Chapter 2); the brain drain abroad is high (see Chapter 7 by Chaminade and Moskovo on Georgia and the GII report of 2014). Innovation actors and linkages between them are usually weaker; public research organizations are often the only actors engaged in research and often operate in an isolated fashion without links to the real economy, while firms tend to have a low absorptive capacity. In the formal sector, improvements in maintenance, engineering, and quality control, rather than fresh R&D investment, tend to drive innovation. Sources of learning and innovation frequently result from foreign direct investment (FDI) or technology acquisition from technologies developed abroad. Firms tend to have a low absorptive capacity and do not interact with scientific institutions or science more broadly. As noted in Chapter 5, collaborating with external partners in innovation remains an important challenge for companies.

In turn, innovation under scarcity is the daily dare of dynamic clusters of small, informal firms and other actors in developing countries. As outlined by Mashelkar (a member of the GII Advisory Board) in 2012, the focus is often on innovating with limited means and with the aim of providing more affordable access of quality goods and services and

improving the livelihood for poorer segments of the population.¹⁹

Tailoring innovation policies to the needs of developing countries

A few lessons that apply to the future of innovation policy approaches in developing countries emerge from this edition of the GII and existing innovation policy experiences.

Institutionally speaking, a persistent, well-coordinated national innovation policy plan with clear targets and a matching institutional set-up have proved a key ingredient for success. All too often a succession of vaguely defined, often uncoordinated, and inadequately implemented innovation policy plans can be observed. In many areas, however, perseverance is key to success. China, for example, has succeeded in making science and technology a cornerstone of higher education and R&D driving innovation (see Chapter 6 by Chen et al.); India is another example of success in education and ICT development driving innovation (see Chapter 8 by Gopalakrishnan and Dasgupta). Institution-building—the development of human resources and innovation capacities in certain fields of science or particular sectors—is indeed an expensive medium- to long-term process that can hardly be fast-tracked.

In terms of organizational set-up, a coordinating ministry or body often offers the managing and leadership hub required, as shown in Chapter 10 by Rasiah and Yap on Malaysia. The fragmentation of key innovation responsibilities across different ministries or agencies is often a drag on effectiveness. The mere creation of an ‘innovation ministry’, however, will rarely prove successful if it remains surrounded by a plethora of other often

more powerful ministries. Instead, cross-cutting innovation agencies or councils reporting directly to, or chaired by, top-level government officials such as the prime minister have been successful (see Chapters 7 and 9 on Georgia and Kenya).

Importantly, developing countries should not forget the significance of coordinating with other, related policy strategies—in particular those aimed at enhancing education and skills, as well as key economic policy matters such as foreign investment and international trade (see Chapter 4 by Atkinson and Ezell and Chapter 10 on Malaysia).

A more strategic coordination of IP policies with innovation policy objectives is desirable, while also fostering the creation of recognized brands, strong physical or intangible assets, and appealing creative works.

At the outset, the design of innovation policies will require a thorough review of the existing innovation system, along with its strengths and weaknesses. The involvement of key innovation actors in this process, including successful national innovators and entrepreneurs abroad—is critical.

Effective implementation will entail building the skills needed to execute policy. Ensuring access to suitably skilled science, technology, and innovation (STI) policy managers remains a work in progress even in high-income countries.

In addition, innovation metrics are needed to assess the state of play. Developing countries are increasingly adopting rich-country STI indicators and surveys (refer to Box 1 in Annex 1 of the first chapter of the GII 2013). Yet metrics focused on R&D personnel or expenditures, or innovation surveys sent to formal firms, for instance, might provide only a partial—or even distorted—measure of innovation realities in

developing economies. In many of them innovation works differently than it does in advanced economies, and is more incremental and based in grassroots experience, often taking place outside the formal business sector. Including but not limited to the GII, work is still needed to produce innovation metrics and survey approaches that are more appropriate for developing countries.

In terms of innovation policy substance, a few lessons emerge from this edition of the GII and the experience of developing countries. Despite of the specific nature of innovation in developing countries, policies are often framed narrowly and focus on high-tech products, clusters, or special economic zones, and are formulated with an eye on the integration of local operations and products into global value chains through the support of FDI and the use of lower tariffs. For this reason, these strategies are also often focused on absorbing technology from foreign multinational enterprises and creating national champions or particular sectoral high-tech or global value chain-related strengths.

This ‘international specialization’-type approach is not without success: indeed, it was often vital in driving the ascension of many technology-savvy developing countries. China, for instance, focused on telecommunications and electronics assembly, India on software back-office operations and software, Viet Nam on IT and automotive assembly, and Malaysia on IT assembly. All are innovation outperformers as identified in Chapter 2 of this report.

However, this type of strategy has often led to enclaves of higher-productivity activities, with weak links to the rest of the economy, composed by a plethora of micro and small firms that operate far from the technological frontier. Hence, even

if a country has been successful in attracting FDI and in becoming an integral part of the global value chain, there is no guarantee that spillovers will automatically spur more domestic innovation (see Chapters 7 and 10 on Georgia and Malaysia).

Overall, risks associated with policies aimed at fostering national champions or pockets of excellence remain high. The number of announced high-tech clusters that remain empty shells and of strategic ‘national priority’ sectors that never took off is a vivid reminder of such risks. Top-down approaches in designating clusters or picking champions and priority sectors might come at the expense of fostering true bottom-up entrepreneurship that thrives on the creation of an open and competitive level playing field that gives space to potential local innovators. Every so often these activities come at the expense of focusing on more domestically generated innovation. Domestic innovation is significant because it can address actual local challenges through technologies that are not at the world frontier but that work in the local context.

Fostering existing domestic innovation capabilities—including in traditional sectors such as agriculture, food, mining, energy—should be emphasized. This will require, first, a more strategic focus on and assessment of key strengths, and then a determination of how these strengths can be built up. In the process, and to leverage their strengths, countries will also want to devise smart and more customized IP strategies (see the example of Georgia in Chapter 7 for agricultural sciences and of Uganda in Chapter 11 for the agro-processing industry).

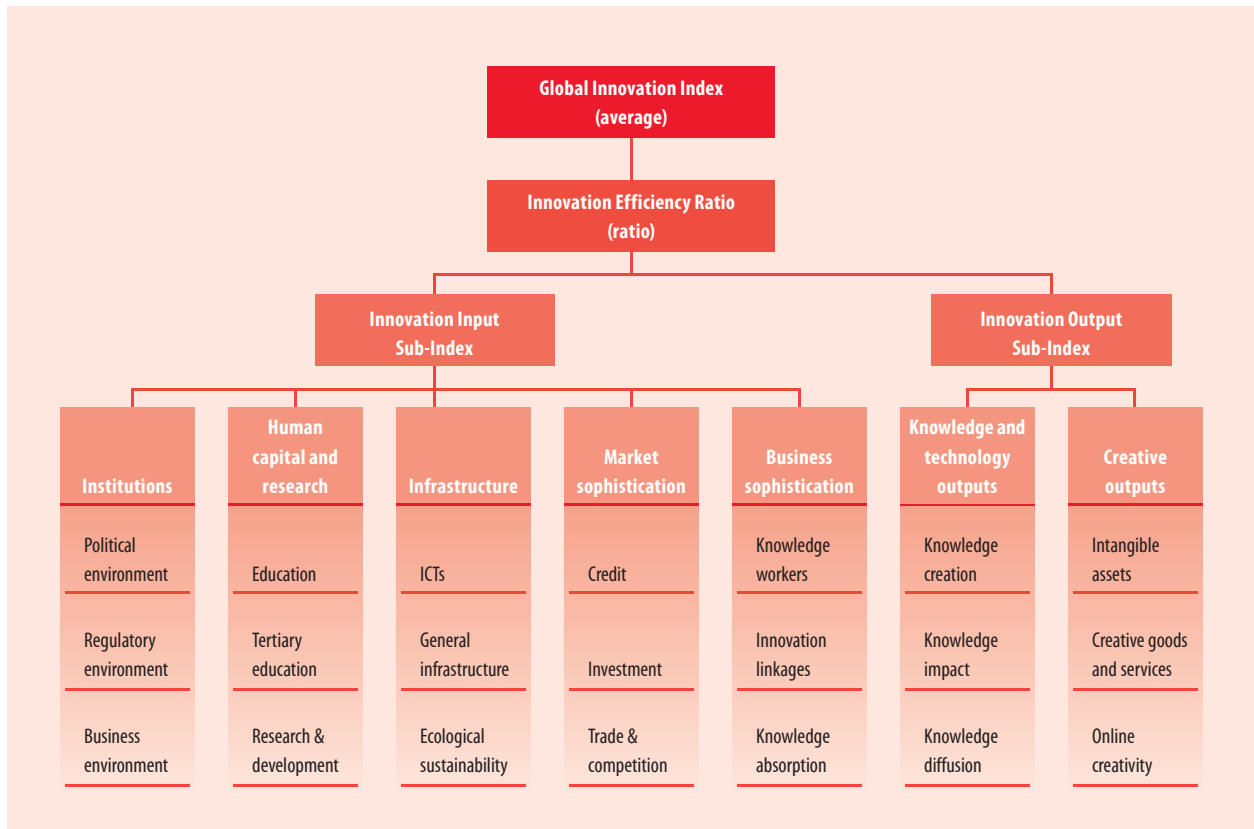
Furthermore, the disruptive and remarkable nature of innovation

that is more service-based and works from the bottom up tends to be underestimated. Indeed, certain African countries have experienced rapid and spontaneous innovations in finance (e-banking), telecommunications, medical technologies, and other areas in recent years. The well-known case of M-PESA in Kenya noted in Chapters 3 and 9 is just one example. The developing-country context and a regulatory environment that is sometimes more permissive can help innovation in the service sector and promote leapfrogging in ways rarely seen in higher-income economies. Moreover, developing countries have seen the emergence of more grassroots-type innovations for health, education, and transport that make significant contributions to the quality of daily lives.

In sum, the potential payoff of creating technology-neutral framework conditions for more bottom-up innovation, along with a certain degree of serendipity, remains significant. Introducing more labour market flexibility; allowing for fair competition among private, foreign, and state-owned firms; facilitating access to finance; making it easier to start a business; and fostering an efficient ICT infrastructure (see Chapter 4) are actions that—at times—might be both faster to implement and can yield quicker returns. Yet this approach comes with less control; progress and impacts are not easily monitored by data.

Priorities for dedicated innovation policies should focus on three opportunities. First, all the GII-related national assessments on the ground show that increasing business sophistication—in terms of its linkages to science and its institutions (for example, via joint research projects), foreign subsidiaries, and the recruitment of scientists—is often the single biggest challenge.

Figure 1: Framework of the Global Innovation Index 2015



Unfortunately, some developing countries produce above-par science and engineering graduates and researchers but never put these talents to use in local business innovation, leaving these precious resources idle.

Second, although significant resources are devoted to attracting foreign multinationals and investment, less attention is paid to the question of how to capture and maximize positive spillovers to the local economy. Intermediate organizations such as non-governmental organizations or measuring and testing centres can play a crucial role in transmitting the knowledge of multinationals to local actors, as documented in Chapter 7 on Georgia. Furthermore, labour mobility and the upgrading of supplier activities are essential. People working for multinationals can also incentivized to start their own businesses. Moreover, scaling

up innovative activities in small and micro-enterprises in the informal sector as well as in formal firms and strengthening their linkages to formal institutions should be a priority.²⁰

Finally, steering innovation and research to finding context-specific solutions to local challenges that are not necessarily frontier technologies or part of existing global value chains seems underexplored.²¹ Such solutions can be applicable to particular energy, transport, or sanitation needs; or can be for processing local produce, upgrading local artisanship, or reaping economic rewards from a thriving creative industry.

Rallying national efforts around particular health or other developing-country challenges that remain unaddressed by innovation systems in higher-income countries is also promising. Other developing countries facing similar conditions and

seeking similar solutions constitute a large potential set of buyers for context-specific innovation; south-south trade in tailored innovative goods and services is increasingly both a reality and a goal.

The GII conceptual framework

The GII is focused both on improving ways to measure innovation and understanding it, and on identifying targeted policies and good practices. The GII helps to create an environment in which innovation factors are continually evaluated. It provides a key tool of detailed metrics for 141 economies this year, representing 95.1% of the world’s population and 98.6% of the world’s GDP (in current US dollars).

Four measures are calculated: the overall GII, the Input and Output

Sub-Indices, and the Innovation Efficiency Ratio (Figure 1).

- **The overall GII score** is the simple average of the Input and Output Sub-Index scores.
- **The Innovation Input Sub-Index** is comprised of five input pillars that capture elements of the national economy that enable innovative activities: (1) Institutions, (2) Human capital and research, (3) Infrastructure, (4) Market sophistication, and (5) Business sophistication.
- **The Innovation Output Sub-Index** provides information about outputs that are the results of innovative activities within the economy. There are two output pillars: (6) Knowledge and technology outputs and (7) Creative outputs.
- **The Innovation Efficiency Ratio** is the ratio of the Output Sub-Index score over the Input Sub-Index score. It shows how much innovation output a given country is getting for its inputs.

Each pillar is divided into three sub-pillars and each sub-pillar is composed of individual indicators, for a total of 79 indicators. Further details on the GII framework and the indicators used are provided in Annex 1. It is important to note that each year the variables included in the GII computation are reviewed and updated to provide the best and most current assessment of global innovation. Other methodological issues—such as missing data, revised scaling factors, and new countries added to the sample—also impact year-on-year comparability of the rankings (details of these changes to the framework and factors impacting year-on-year comparability are provided in Annex 2).

The Global Innovation Index 2015: Main findings

The GII 2015 results have shown consistency in areas such as top rankings and the innovation divide. However, there have also been some new developments, particularly evident within the middle-income economies and the Sub-Saharan Africa region. In the following pages, a number of findings from the report are exposed in greater detail. The key messages are:

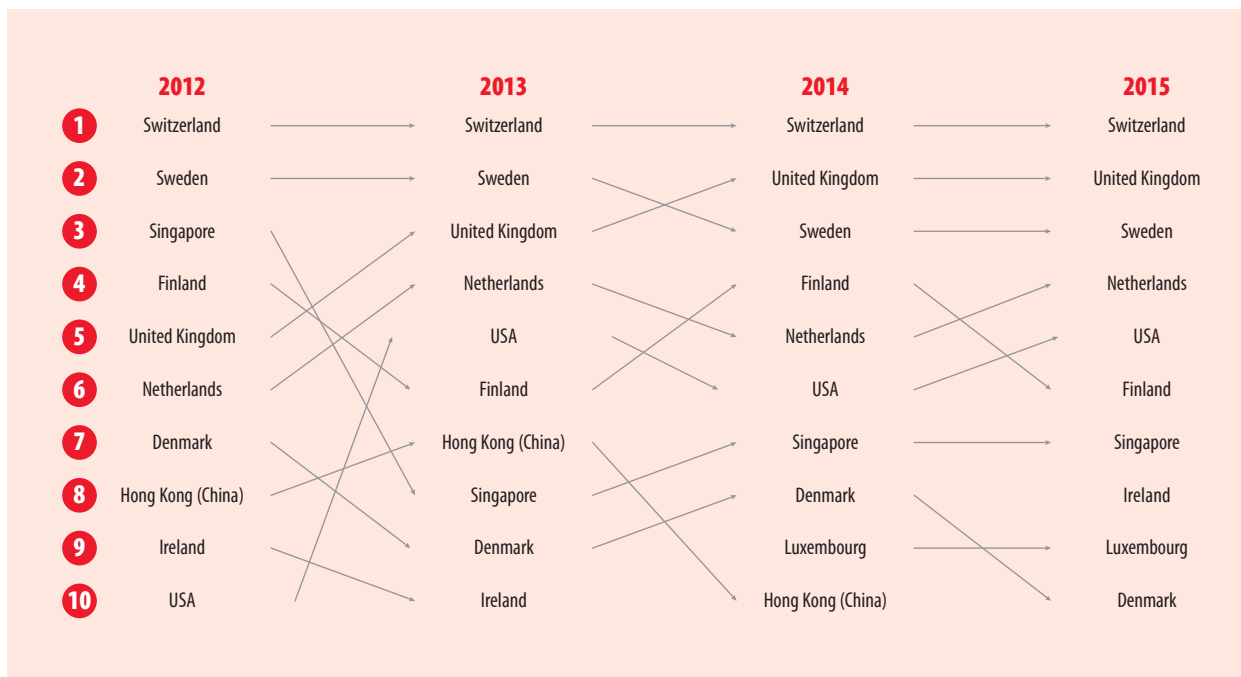
- **Among the top, quality matters.** Among high-income countries, a major divider can be found in the quality of innovation. This is the area in which the USA and the United Kingdom (UK), largely as a result of their world-class universities, stay ahead of the pack (refer to Box 3 on pages 14–15 for further details).
- **Several emerging innovators are now on the heels of rich countries.** Differences are eroding between the champions of the middle-income countries (Malaysia, China) and the lower tier of high-income countries (refer to Box 2 on page 12–13 for further details).
- **Institutions matter.** Across regions, the most visible differentiator in terms of innovation performance is found in the Institutions pillar. GII metrics hence confirm a core principle of international policy literature: good innovation policies start with good innovation institutions.

The set of rules defined by institutions is particularly important for developing economies because the rules stipulate norms of interaction among actors in

recurrent situations. Eventually, these rules set the formal and informal guidelines followed by national, international, private, and public realms as they interact to produce and develop new ideas and innovations in particular regions.

- **Among poor economies, business sophistication makes a big difference.** Low-income countries that have made efforts on business sophistication are able to do well, sometimes overtaking some middle-income countries (refer to Box 2 for further details).
- **Encouraging signs emerge in Sub-Saharan Africa.** In 2015 the Sub-Saharan Africa region has caught up with and even superseded Central and Southern Asia in several pillars (Institutions, Business sophistication, and Creative outputs). In addition to South Africa, some preeminent performances from this region include some of the same economies flagged in 2014 as stand-out innovation achievers: Burkina Faso, Kenya, Malawi, Rwanda, Senegal (refer to Figure 4 for further details and Chapter 1, Box 4, in the GII 2014 report).
- **BRICS economies—particularly China—are gaining ground in innovation quality.** Among the middle-income top 10 in innovation quality, the BRICS economies are at the top. At the same time, the distance between China and the others is rapidly increasing (see Box 3). The Russian Federation is now among the high-income group; it would be 3rd if it was still considered among the upper-middle income countries.

Figure 2: Movement in the top 10 of the GII



Stability at the top, with a strong performance from the UK and the USA

As seen in recent editions of the GII, there is relative stability in the top 10: Switzerland leads again in 2015, the UK takes the second spot, and the USA makes it into the top 5. Switzerland ranks consistently as number 1 in the GII and among the top 25 in all pillars and all but four sub-pillars. Finland (6th) declines by two spots this year. Except for one change, the top 10 ranked economies in the GII 2015 remain the same as in 2014. Ireland (ranked 11th in 2014) enters the top 10 at 8th position, pushing Hong Kong (China) just over to 11th position (down from rank 10 in 2014). The top 10 economies in 2015 are listed below; Figure 2 shows movement in the top 10 ranked economies over the last four years:

1. Switzerland
2. United Kingdom (UK)
3. Sweden

4. Netherlands
5. United States of America (USA)
6. Finland
7. Singapore
8. Ireland
9. Luxembourg
10. Denmark

Furthermore, stability across the top 25 has also been evident across the years. With the exception of Malta dropping out (26th this year) and the Czech Republic moving in (24th), the top 25 have included the same set of countries since 2011. Within this group, however, some notable large high-income countries are moving upwards and closer to the top-tier performers. Three clear cases are Germany (15th in 2013, 13th in 2014, 12th in 2015), the Republic of Korea (18th in 2013, 16th in 2014, 14th in 2015), and Japan (22nd in 2013, 21st in 2014, 19th in 2015): The Republic of Korea and Japan can attribute their ascent primarily to improved rankings on the Output Sub-Index, and Germany to the Input Sub-Index.

Several emerging countries now on the heels of richer countries

The GII 2015 confirms the continued existence of global innovation divides (see Box 2). The gap between the innovation performance of high-income top performers and those poorer economies that follow is large. However, in the case of a few countries, this gap is beginning to erode. This is especially noticeable between the lower tier of high-income economies and the upper-middle-income group. China (GII 29th) and Malaysia (GII 32nd) now achieve scores closer to those of high-income countries in four of the GII pillars. More specifically, they are closing the gap in areas associated with credit, investment, and economic competition (Market sophistication); those linked to the acquisition and transfer of knowledge (Business sophistication); those associated with education and with R&D (Human capital and research); and those associated with the creation, impact, and diffusion of

Box 2: The persistent global innovation divide: A few countries about to bridge the gap

Stability among the top economies has always been a recognized feature of the GII rankings. This steadiness has allowed Switzerland to remain number 1 for the fifth consecutive year and for the composition of the top 25 economies to continue mostly unchanged. Yet the countries within the top 10 and top 25 ranks have seen some movement: for the first time the Czech Republic (24th) is part of the top 25 group, and Ireland (8th) is back in the top 10. Conversely, Hong Kong (China) (11th) and Malta (26th) have left their positions among the top 10 and top 25 economies, respectively.

The persistence of an innovation divide is confirmed by the fact that the cluster of the top 25 GII leaders are all high-income economies, and that its composition has remained relatively unchanged since 2011. Although consistency has been unmistakable at the high-income level, noticeable ranking

moves are happening more frequently within lower-income groups.

The distance between the top-ranked economies and the groups that follow is still apparent, however, as captured by Figure 2.1. This figure shows the three different echelons of the high-income economies (the top 10, the top 11 to 25, and other high-income economies that rank below 25), as well as the upper- and lower-middle-income and low-income groups.

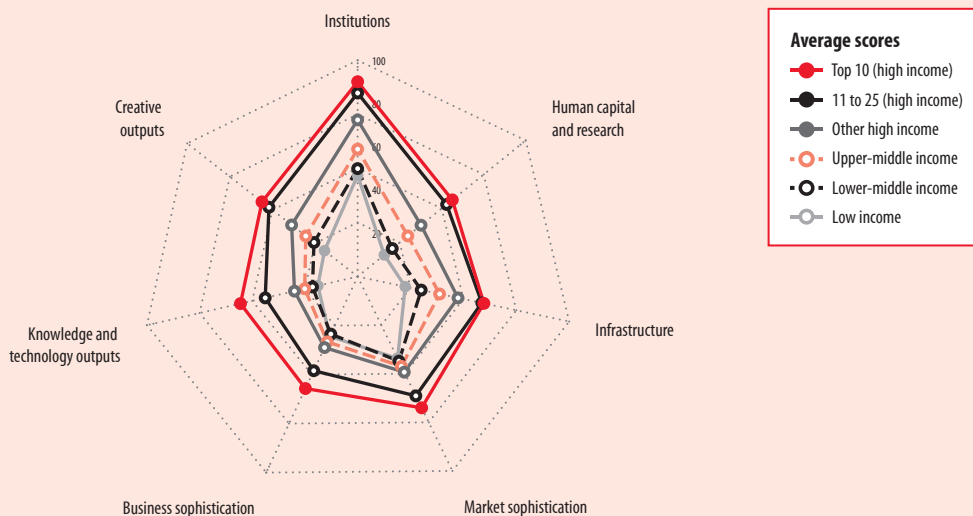
High-income economies

This year the top 10 high-income economies perform better than the second-tier high-income group in all pillars, particularly in Market sophistication (pillar 4), Business sophistication (pillar 5), and Knowledge and technology outputs (pillar 6). Compared with the results of the GII 2014, the gap between these two groups has expanded,

as seen most markedly in pillars 5 and 6, and marginally in Human capital and research (pillar 2). However, a reduction in the divide between the two high-income groups is visible in Infrastructure (pillar 3), and especially in the two pillars—Market sophistication (pillar 4) and Creative outputs (pillar 7)—where both groups have achieved almost the same average scores (59.7 and 58.7, respectively).

The largest divide between income groups is evident between the second and third tiers of high-income economies. The high-income economies that are ranked above 25 perform at significantly lower levels in the Human capital and research (pillar 2), Knowledge and technology outputs (pillar 6), and Creative outputs (pillar 7) than the second-tier high-income group (those ranked 11–25). Yet, as the third-tier high-income group starts to perform better in Institutions (1), Human capital and research

Figure 2.1: The persistent innovation divide: Stability among the GII 2015 top 10 and top 25



Note: Countries/economies are classified according to the World Bank Income Group Classification (July 2013).

(Continued)

Box 2: The persistent global innovation divide: A few countries about to bridge the gap (cont'd.)

(2), and Knowledge and technology outputs (6), the gap between the two groups is beginning to lessen.

Middle-income economies

When contrasting high-income with middle-income performance, the divide can be most clearly seen in Institutions (pillar 1), Infrastructure (3), and Creative outputs (7). It is only in Business sophistication (5) that the gap between these two groups is narrowing. On average, the upper-middle-income group has scores similar to those of third-tier high-income economies. For example, China (29th) and Malaysia (32nd) from the upper-middle-income group almost mimic the performance of the third-tier high-income group, increasing the likelihood that they might join the top 25 group in the near future.

Low-income economies

This year the lower-income groups continue to show some success at closing the innovation divide. Although this group as a whole performs at levels below those of lower-middle-income economies in six out of the seven GII pillars, their respective scores are comparable in Market sophistication (a difference of only 1.4 points) and Knowledge and technology outputs (a difference of 2.6 points). Since 2013, the low-income cluster has gotten closer to the lower-middle cluster in Business sophistication (pillar 5). This performance is comparable with that of the upper-middle-income group (a difference of 2.8 points) and suggests that greater efforts to adopt market economy frameworks are taking place within economies at that income level.

Regional differences

Aggregate regional rankings based on the GII average scores show the Northern America region at the top (57.9), followed by Europe (48.0), South East Asia and Oceania (42.7), Northern Africa and Western Asia (35.3), and Latin America and the Caribbean (32.5).¹ This year Sub-Saharan Africa's average score (27.1) is marginally above that of Central and Southern Asia (27.0).

Note

- 1 Regional groups are based on the United Nations classification, United Nations Statistics Division, Revision of 13 October 2013.

knowledge (Knowledge and technology outputs).

Similarly, a select number of low-income economies are also performing increasingly well at levels hitherto reserved for the lower-middle-income group. Cambodia (GII 91st) is closing the gap in Market sophistication and Business sophistication as well as Institutions; Malawi (GII 98th) is doing so in Institutions, Business sophistication, and Knowledge and technology outputs; Mozambique (GII 95th) in Human capital and research, and Market and Business sophistication and Knowledge technology outputs; and Rwanda (GII 94th) in Institutions and both Market and Business sophistication.

The greatest divide between developed and developing economies is in Institutions, Infrastructure, and areas related to intangible assets, creative goods and services, and online creativity (Creative outputs).

Conversely, the divide appears to be reducing in two other pillars: upper-middle-income economies South Africa (GII 60th) and Malaysia (GII 32nd) are now performing at the levels seen in second-tier high-income economies in Market sophistication, and Malaysia and China at those same levels in Business sophistication (see also Chapter 2).

Beyond quantity: The critical importance of high-quality innovation

In terms of innovation *quality*—as measured by university performance, the reach of scholarly articles, and the international dimension of patent applications—the USA holds the top place within the high-income group, followed by the UK, Japan, Germany, and Switzerland (see Box 3). Top-scoring middle-income economies are narrowing the gap on innovation quality with China in the lead, followed by Brazil and

India, fuelled by an improvement in the quality of higher-education institutions.

On average, the gap in innovation quality between top-performing high-income and top-performing middle-income economies appears to be shrinking. Although the average number of patents filed has increased for the middle-income group, the gradual improvement in innovation quality for these countries appears to stem from an expansion in the quality of higher-education institutions.²²

The BRICS economies are at the top of the innovation quality composite ranking among the middle-income group.²³ This group of nations, with the exception of Brazil's score for the number of patents filed, increased their scores in all three quality indicators. China's score for quality of innovation has improved more rapidly than both those of its BRICS neighbours and

Box 3: Innovation quality: USA and China at the top, with a large gap between them

Measuring the quality of innovation-related input and output indicators as well as their quantity is critical. Indeed, some countries have managed to ramp up the quantity of some indicators—such as education expenditures, patents, or publications, for instance—without making much impact. It is to address this concern that three additional indicators were introduced into the Global Innovation Index (GII) in 2013, aiming to better measure the *quality* of innovation: (1) quality of local universities (2.3.3, QS university rankings average score of top 3 universities); (2) internationalization of local inventions (5.2.5, patent families filed in at least three offices); and the number of citations that local research documents receive abroad (6.1.5, citable documents H index). Figure 3.1 shows the sum of the scores of these three indicators and captures the top 10 highest-performing high- and middle-income economies for this composite indicator.

Top 10 high-income economies

Among the high-income economies, the United States of America (USA) tops the GI rankings in innovation quality. This performance results from its 2nd place in top university rankings and its 1st place in the number of research document citations abroad (citable documents abroad) for the third year in a row. The United Kingdom (UK) regains the 2nd position in innovation quality this year, above Japan and Germany, with its 1st place in the top university rankings and citable documents abroad (where it ties with the USA), keeping the spot it has held since 2013. This upward movement can be also attributed to increasing levels of patents filed in at least three offices (patents filed). Similarly, in 2015 the UK also holds 2nd place in the overall GI for second year in a row. Japan (GI rank of 19), while moving up in the overall GI rankings, drops one position this

year to 3rd in innovation quality. Although retaining the same rank in top university rankings and citable documents abroad (7th and 6th, respectively), Japan slipped from 1st to 2nd in patents filed this year, affecting its overall performance on the quality of innovation.

Like Japan, Canada (GI 16) and France (GI 21) perform better in the combined quality indicators ranking than in the overall GI ranking. In combined innovation quality, Canada moves up one position to 6th, switching places with France. This can be explained in part by Canada's improvement in both the top university rankings and patents filed, in addition to France's slightly less robust performance in the latter this year. France, however, retains its 4th position in citable documents abroad for the third consecutive year and achieves 7th place in the quality of innovation. The Republic of Korea moves up two positions in both the overall GI (rank 14) and in the composite quality of innovation (8) this year. This is partially the result of a marginally better performance in the top university rankings indicator. Although Germany (GI 12) performs the same as last year in these indicators, it drops one position in the innovation quality composite, primarily because of going from top position in citable documents abroad last year to 3rd in 2015.

Top 10 middle-income economies

Following renewed domestic policy attention on ramping up innovation quality, China (GI 29) moves up to 18th position in the innovation quality ranking, retaining the top place among the middle-income economies and narrowing the gap that separates it from the high-income group. This upward movement can be attributed to its 1st place ranking among middle-income economies in the top university rankings (11th out of all GI economies) plus an improvement in

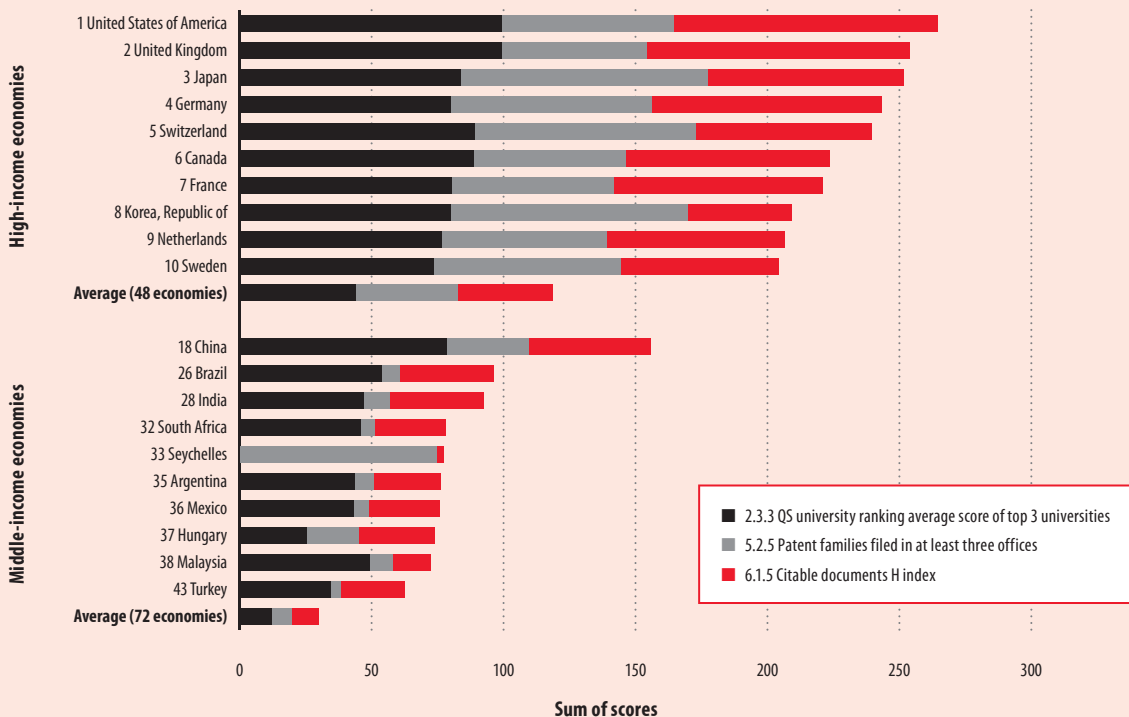
the number of patents filed. Brazil (GI 70) and India (GI 81)—two of the four BRICS economies in this list—remain in 2nd and 3rd position, respectively, in the innovation quality composite ranking among the middle-income nations for the second consecutive year. Although both countries moved down in their overall GI ranking, their performance (similar to that of 2014 in all three quality indicators) has both kept them in the top 5 among middle-income economies and helped them move upwards in terms of the quality of innovation composite (26th and 28th, respectively). For India, this year's substantial improvement in patents filed also contributed to this performance. South Africa (GI 60) keeps its upward trajectory in innovation quality, moving into the 32nd composite position—4th among middle-income economies. Along with most of the other BRICS economies, it has also seen a drop in its GI rank this year but has retained its strong performance in innovation quality. Even though the Russian Federation (GI 48) is not among the top 10 high-income innovation quality performers, its sum of scores for these indicators this year is much better than most middle-income countries in the top 10. Its ranking for the combined indicators is 27, above that of India and South Africa.

With the exception of China and Hungary, whose innovation quality scores display a balance similar to that of high-income economies, the majority of middle-income economies still face a significant journey if they are to improve their innovation quality metrics. It is also noteworthy that even the innovation quality top performers depend heavily on their high university rankings to achieve their top-quality scores. More priority could be given to the calibre of publications and—the area in which middle-income countries show the weakest relative performance—to patents filed globally.

(Continued)

Box 3: Innovation quality: USA and China at the top, with a large gap between them (cont'd.)

Figure 3.1: Metrics for quality of innovation: Top 10 high- and top 10 middle-income economies



Notes: Numbers to the left of the economy name are the innovation quality rank. Economies are classified by income according to the World Bank Income Group Classification (July 2013). Upper- and lower-middle income categories were grouped together as middle-income economies.

the rest of the top 10 ranked in the composite. The gap between China and the other middle-income economies has consistently increased since 2013. Although India has also steadily improved its quality of innovation score, its improvement has not been as substantial as that of China. Brazil, on the other hand, has worsened in this metric, although the gap in score between India and Brazil has considerably reduced since 2013. South Africa has remained at constant levels, yet below all those of its BRICS peers.

2015 results: The world's top innovators

The following section describes and analyses the prominent features of the GII 2015 results for the global leaders in each index and the best performers in light of their income level.²⁴ A short discussion of the rankings at the regional level follows.²⁵

Tables 1 through 3 present the rankings of all economies included in the GII 2015 for the GII and the Input and Output Sub-Indices.

The top 10 in the Global Innovation Index

The top 10 economies in the GII 2015 edition are discussed in detail below.

Switzerland maintains its number 1 position in the GII since 2011, as well as its number 1 position in the Output Sub-Index and in the Knowledge and technology outputs pillar since 2012. It achieves a spot among the top 25 in all pillars and sub-pillars with only four exceptions: sub-pillars Business environment (where it ranks 28th), Education (28th), Information and communication technologies (41st), and General infrastructure (26th). A knowledge-based economy of 8.1 million people with one of the highest GDP per capita in the world (PPP\$47,863), its high Innovation Efficiency Ratio (2nd highest of all economies in the sample, and

Table 1: Global Innovation Index rankings

| Country/Economy | Score (0–100) | Rank | Income | Rank | Region | Rank | Efficiency Ratio | Rank | Median: 0.71 |
|--------------------------|---------------|------|--------|------|--------|------|------------------|------|--------------|
| Switzerland | 68.30 | 1 | HI | 1 | EUR | 1 | 1.01 | 2 | |
| United Kingdom | 62.42 | 2 | HI | 2 | EUR | 2 | 0.86 | 18 | |
| Sweden | 62.40 | 3 | HI | 3 | EUR | 3 | 0.86 | 16 | |
| Netherlands | 61.58 | 4 | HI | 4 | EUR | 4 | 0.92 | 8 | |
| United States of America | 60.10 | 5 | HI | 5 | NAC | 1 | 0.79 | 33 | |
| Finland | 59.97 | 6 | HI | 6 | EUR | 5 | 0.77 | 41 | |
| Singapore | 59.36 | 7 | HI | 7 | SEAO | 1 | 0.65 | 100 | |
| Ireland | 59.13 | 8 | HI | 8 | EUR | 6 | 0.88 | 12 | |
| Luxembourg | 59.02 | 9 | HI | 9 | EUR | 7 | 1.00 | 3 | |
| Denmark | 57.70 | 10 | HI | 10 | EUR | 8 | 0.75 | 49 | |
| Hong Kong (China) | 57.23 | 11 | HI | 11 | SEAO | 2 | 0.69 | 76 | |
| Germany | 57.05 | 12 | HI | 12 | EUR | 9 | 0.87 | 13 | |
| Iceland | 57.02 | 13 | HI | 13 | EUR | 10 | 0.98 | 4 | |
| Korea, Republic of | 56.26 | 14 | HI | 14 | SEAO | 3 | 0.80 | 27 | |
| New Zealand | 55.92 | 15 | HI | 15 | SEAO | 4 | 0.77 | 40 | |
| Canada | 55.73 | 16 | HI | 16 | NAC | 2 | 0.71 | 70 | |
| Australia | 55.22 | 17 | HI | 17 | SEAO | 5 | 0.70 | 72 | |
| Austria | 54.07 | 18 | HI | 18 | EUR | 11 | 0.77 | 37 | |
| Japan | 53.97 | 19 | HI | 19 | SEAO | 6 | 0.69 | 78 | |
| Norway | 53.80 | 20 | HI | 20 | EUR | 12 | 0.73 | 63 | |
| France | 53.59 | 21 | HI | 21 | EUR | 13 | 0.75 | 51 | |
| Israel | 53.54 | 22 | HI | 22 | NAWA | 1 | 0.83 | 20 | |
| Estonia | 52.81 | 23 | HI | 23 | EUR | 14 | 0.86 | 17 | |
| Czech Republic | 51.32 | 24 | HI | 24 | EUR | 15 | 0.89 | 11 | |
| Belgium | 50.91 | 25 | HI | 25 | EUR | 16 | 0.74 | 59 | |
| Malta | 50.48 | 26 | HI | 26 | EUR | 17 | 0.95 | 7 | |
| Spain | 49.07 | 27 | HI | 27 | EUR | 18 | 0.72 | 67 | |
| Slovenia | 48.49 | 28 | HI | 28 | EUR | 19 | 0.82 | 22 | |
| China | 47.47 | 29 | UM | 1 | SEAO | 7 | 0.96 | 6 | |
| Portugal | 46.61 | 30 | HI | 29 | EUR | 20 | 0.73 | 62 | |
| Italy | 46.40 | 31 | HI | 30 | EUR | 21 | 0.74 | 57 | |
| Malaysia | 45.98 | 32 | UM | 2 | SEAO | 8 | 0.74 | 56 | |
| Latvia | 45.51 | 33 | HI | 31 | EUR | 22 | 0.81 | 26 | |
| Cyprus | 43.51 | 34 | HI | 32 | NAWA | 2 | 0.66 | 90 | |
| Hungary | 43.00 | 35 | UM | 3 | EUR | 23 | 0.78 | 35 | |
| Slovakia | 42.99 | 36 | HI | 33 | EUR | 24 | 0.76 | 48 | |
| Barbados | 42.47 | 37 | HI | 34 | LCN | 1 | 0.81 | 25 | |
| Lithuania | 42.26 | 38 | HI | 35 | EUR | 25 | 0.70 | 74 | |
| Bulgaria | 42.16 | 39 | UM | 4 | EUR | 26 | 0.83 | 21 | |
| Croatia | 41.70 | 40 | HI | 36 | EUR | 27 | 0.75 | 50 | |
| Montenegro | 41.23 | 41 | UM | 5 | EUR | 28 | 0.79 | 29 | |
| Chile | 41.20 | 42 | HI | 37 | LCN | 2 | 0.68 | 82 | |
| Saudi Arabia | 40.65 | 43 | HI | 38 | NAWA | 3 | 0.72 | 69 | |
| Moldova, Republic of | 40.53 | 44 | LM | 1 | EUR | 29 | 0.98 | 5 | |
| Greece | 40.28 | 45 | HI | 39 | EUR | 30 | 0.65 | 98 | |
| Poland | 40.16 | 46 | HI | 40 | EUR | 31 | 0.66 | 93 | |
| United Arab Emirates | 40.06 | 47 | HI | 41 | NAWA | 4 | 0.41 | 133 | |
| Russian Federation | 39.32 | 48 | HI | 42 | EUR | 32 | 0.74 | 60 | |
| Mauritius | 39.23 | 49 | UM | 6 | SSF | 1 | 0.65 | 96 | |
| Qatar | 39.01 | 50 | HI | 43 | NAWA | 5 | 0.61 | 110 | |
| Costa Rica | 38.59 | 51 | UM | 7 | LCN | 3 | 0.79 | 32 | |
| Viet Nam | 38.35 | 52 | LM | 2 | SEAO | 9 | 0.92 | 9 | |
| Belarus | 38.23 | 53 | UM | 8 | EUR | 33 | 0.70 | 73 | |
| Romania | 38.20 | 54 | UM | 9 | EUR | 34 | 0.74 | 58 | |
| Thailand | 38.10 | 55 | UM | 10 | SEAO | 10 | 0.76 | 43 | |
| TFYR of Macedonia | 38.03 | 56 | UM | 11 | EUR | 35 | 0.73 | 64 | |
| Mexico | 38.03 | 57 | UM | 12 | LCN | 4 | 0.73 | 61 | |
| Turkey | 37.81 | 58 | UM | 13 | NAWA | 6 | 0.81 | 23 | |
| Bahrain | 37.67 | 59 | HI | 44 | NAWA | 7 | 0.63 | 105 | |
| South Africa | 37.45 | 60 | UM | 14 | SSF | 2 | 0.66 | 94 | |
| Armenia | 37.31 | 61 | LM | 3 | NAWA | 8 | 0.79 | 34 | |
| Panama | 36.80 | 62 | UM | 15 | LCN | 5 | 0.78 | 36 | |
| Serbia | 36.47 | 63 | UM | 16 | EUR | 36 | 0.75 | 55 | |
| Ukraine | 36.45 | 64 | LM | 4 | EUR | 37 | 0.87 | 15 | |
| Seychelles | 36.44 | 65 | UM | 17 | SSF | 3 | 0.67 | 88 | |
| Mongolia | 36.41 | 66 | LM | 5 | SEAO | 11 | 0.61 | 111 | |
| Colombia | 36.41 | 67 | UM | 18 | LCN | 6 | 0.60 | 114 | |
| Uruguay | 35.76 | 68 | HI | 45 | LCN | 7 | 0.66 | 91 | |
| Oman | 35.00 | 69 | HI | 46 | NAWA | 9 | 0.67 | 86 | |
| Brazil | 34.95 | 70 | UM | 19 | LCN | 8 | 0.65 | 99 | |
| Peru | 34.87 | 71 | UM | 20 | LCN | 9 | 0.60 | 113 | |

Table 1: Global Innovation Index rankings (continued)

| Country/Economy | Score (0–100) | Rank | Income | Rank | Region | Rank | Efficiency Ratio | Rank | Median: 0.71 |
|-----------------------------------|---------------|------|--------|------|--------|------|------------------|------|--------------|
| Argentina | 34.30 | 72 | UM | 21 | LCN | 10 | 0.75 | 52 | |
| Georgia | 33.83 | 73 | LM | 6 | NAWA | 10 | 0.62 | 107 | |
| Lebanon | 33.82 | 74 | UM | 22 | NAWA | 11 | 0.67 | 87 | |
| Jordan | 33.78 | 75 | UM | 23 | NAWA | 12 | 0.72 | 68 | |
| Tunisia | 33.48 | 76 | UM | 24 | NAWA | 13 | 0.71 | 71 | |
| Kuwait | 33.20 | 77 | HI | 47 | NAWA | 14 | 0.73 | 65 | |
| Morocco | 33.19 | 78 | LM | 7 | NAWA | 15 | 0.64 | 102 | |
| Bosnia and Herzegovina | 32.31 | 79 | UM | 25 | EUR | 38 | 0.39 | 135 | |
| Trinidad and Tobago | 32.18 | 80 | HI | 48 | LCN | 11 | 0.66 | 92 | |
| India | 31.74 | 81 | LM | 8 | CSA | 1 | 0.79 | 31 | |
| Kazakhstan | 31.25 | 82 | UM | 26 | CSA | 2 | 0.53 | 124 | |
| Philippines | 31.05 | 83 | LM | 9 | SEAO | 12 | 0.76 | 44 | |
| Senegal | 30.95 | 84 | LM | 10 | SSF | 4 | 0.81 | 24 | |
| Sri Lanka | 30.79 | 85 | LM | 11 | CSA | 3 | 0.76 | 46 | |
| Guyana | 30.75 | 86 | LM | 12 | LCN | 12 | 0.65 | 95 | |
| Albania | 30.74 | 87 | UM | 27 | EUR | 39 | 0.49 | 129 | |
| Paraguay | 30.69 | 88 | LM | 13 | LCN | 13 | 0.75 | 54 | |
| Dominican Republic | 30.60 | 89 | UM | 28 | LCN | 14 | 0.61 | 108 | |
| Botswana | 30.49 | 90 | UM | 29 | SSF | 5 | 0.54 | 120 | |
| Cambodia | 30.35 | 91 | LI | 1 | SEAO | 13 | 0.69 | 80 | |
| Kenya | 30.19 | 92 | LI | 2 | SSF | 6 | 0.79 | 30 | |
| Azerbaijan | 30.10 | 93 | UM | 30 | NAWA | 16 | 0.60 | 115 | |
| Rwanda | 30.09 | 94 | LI | 3 | SSF | 7 | 0.42 | 131 | |
| Mozambique | 30.07 | 95 | LI | 4 | SSF | 8 | 0.63 | 104 | |
| Jamaica | 29.95 | 96 | UM | 31 | LCN | 15 | 0.54 | 121 | |
| Indonesia | 29.79 | 97 | LM | 14 | SEAO | 14 | 0.77 | 42 | |
| Malawi | 29.71 | 98 | LI | 5 | SSF | 9 | 0.75 | 53 | |
| El Salvador | 29.31 | 99 | LM | 15 | LCN | 16 | 0.62 | 106 | |
| Egypt | 28.91 | 100 | LM | 16 | NAWA | 17 | 0.68 | 83 | |
| Guatemala | 28.84 | 101 | LM | 17 | LCN | 17 | 0.67 | 89 | |
| Burkina Faso | 28.68 | 102 | LI | 6 | SSF | 10 | 0.68 | 85 | |
| Cabo Verde | 28.59 | 103 | LM | 18 | SSF | 11 | 0.54 | 119 | |
| Bolivia, Plurinational State of | 28.58 | 104 | LM | 19 | LCN | 18 | 0.76 | 45 | |
| Mali | 28.37 | 105 | LI | 7 | SSF | 12 | 0.87 | 14 | |
| Iran, Islamic Republic of | 28.37 | 106 | UM | 32 | CSA | 4 | 0.63 | 103 | |
| Namibia | 28.15 | 107 | UM | 33 | SSF | 13 | 0.51 | 126 | |
| Ghana | 28.04 | 108 | LM | 20 | SSF | 14 | 0.69 | 79 | |
| Kyrgyzstan | 27.96 | 109 | LM | 21 | CSA | 5 | 0.53 | 122 | |
| Cameroon | 27.80 | 110 | LM | 22 | SSF | 15 | 0.84 | 19 | |
| Uganda | 27.65 | 111 | LI | 8 | SSF | 16 | 0.57 | 118 | |
| Gambia | 27.49 | 112 | LI | 9 | SSF | 17 | 0.77 | 39 | |
| Honduras | 27.48 | 113 | LM | 23 | LCN | 19 | 0.57 | 117 | |
| Tajikistan | 27.46 | 114 | LI | 10 | CSA | 6 | 0.65 | 101 | |
| Fiji | 27.31 | 115 | UM | 34 | SEAO | 15 | 0.28 | 140 | |
| Côte d'Ivoire | 27.16 | 116 | LM | 24 | SSF | 18 | 0.90 | 10 | |
| Tanzania, United Republic of | 27.00 | 117 | LI | 11 | SSF | 19 | 0.77 | 38 | |
| Lesotho | 26.97 | 118 | LM | 25 | SSF | 20 | 0.50 | 128 | |
| Ecuador | 26.87 | 119 | UM | 35 | LCN | 20 | 0.51 | 127 | |
| Angola | 26.20 | 120 | UM | 36 | SSF | 21 | 1.02 | 1 | |
| Bhutan | 26.06 | 121 | LM | 26 | CSA | 7 | 0.33 | 138 | |
| Uzbekistan | 25.89 | 122 | LM | 27 | CSA | 8 | 0.53 | 123 | |
| Swaziland | 25.37 | 123 | LM | 28 | SSF | 22 | 0.42 | 132 | |
| Zambia | 24.64 | 124 | LM | 29 | SSF | 23 | 0.68 | 81 | |
| Madagascar | 24.42 | 125 | LI | 12 | SSF | 24 | 0.59 | 116 | |
| Algeria | 24.38 | 126 | UM | 37 | NAWA | 18 | 0.52 | 125 | |
| Ethiopia | 24.17 | 127 | LI | 13 | SSF | 25 | 0.72 | 66 | |
| Nigeria | 23.72 | 128 | LM | 30 | SSF | 26 | 0.80 | 28 | |
| Bangladesh | 23.71 | 129 | LI | 14 | CSA | 9 | 0.61 | 112 | |
| Nicaragua | 23.47 | 130 | LM | 31 | LCN | 21 | 0.47 | 130 | |
| Pakistan | 23.07 | 131 | LM | 32 | CSA | 10 | 0.76 | 47 | |
| Venezuela, Bolivarian Republic of | 22.77 | 132 | UM | 38 | LCN | 22 | 0.68 | 84 | |
| Zimbabwe | 22.52 | 133 | LI | 15 | SSF | 27 | 0.69 | 77 | |
| Niger | 21.22 | 134 | LI | 16 | SSF | 28 | 0.29 | 139 | |
| Nepal | 21.08 | 135 | LI | 17 | CSA | 11 | 0.40 | 134 | |
| Burundi | 21.04 | 136 | LI | 18 | SSF | 29 | 0.36 | 137 | |
| Yemen | 20.80 | 137 | LM | 33 | NAWA | 19 | 0.65 | 97 | |
| Myanmar | 20.27 | 138 | LI | 19 | SEAO | 16 | 0.69 | 75 | |
| Guinea | 18.49 | 139 | LI | 20 | SSF | 30 | 0.61 | 109 | |
| Togo | 18.43 | 140 | LI | 21 | SSF | 31 | 0.24 | 141 | |
| Sudan | 14.95 | 141 | LM | 34 | SSF | 32 | 0.37 | 136 | |

Note: World Bank Income Group Classification (July 2013): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification: EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; SSF = Sub-Saharan Africa.

Table 2: Innovation Input Sub-Index rankings

| Country/Economy | Score (0–100) | Rank | Income | Rank | Region | Rank | Median: 41.68 |
|--------------------------|---------------|------|--------|------|--------|------|---------------|
| Singapore | 72.12 | 1 | HI | 1 | SEAO | 1 | |
| Switzerland | 67.96 | 2 | HI | 2 | EUR | 1 | |
| Finland | 67.91 | 3 | HI | 3 | EUR | 2 | |
| Hong Kong (China) | 67.61 | 4 | HI | 4 | SEAO | 2 | |
| United States of America | 67.31 | 5 | HI | 5 | NAC | 1 | |
| United Kingdom | 67.15 | 6 | HI | 6 | EUR | 3 | |
| Sweden | 67.01 | 7 | HI | 7 | EUR | 4 | |
| Denmark | 65.87 | 8 | HI | 8 | EUR | 5 | |
| Canada | 65.05 | 9 | HI | 9 | NAC | 2 | |
| Australia | 64.84 | 10 | HI | 10 | SEAO | 3 | |
| Netherlands | 64.23 | 11 | HI | 11 | EUR | 6 | |
| Japan | 63.83 | 12 | HI | 12 | SEAO | 4 | |
| New Zealand | 63.14 | 13 | HI | 13 | SEAO | 5 | |
| Ireland | 62.90 | 14 | HI | 14 | EUR | 7 | |
| Korea, Republic of | 62.37 | 15 | HI | 15 | SEAO | 6 | |
| Norway | 62.18 | 16 | HI | 16 | EUR | 8 | |
| France | 61.25 | 17 | HI | 17 | EUR | 9 | |
| Germany | 60.99 | 18 | HI | 18 | EUR | 10 | |
| Austria | 60.95 | 19 | HI | 19 | EUR | 11 | |
| Luxembourg | 59.02 | 20 | HI | 20 | EUR | 12 | |
| Belgium | 58.61 | 21 | HI | 21 | EUR | 13 | |
| Israel | 58.50 | 22 | HI | 22 | NAWA | 1 | |
| Iceland | 57.48 | 23 | HI | 23 | EUR | 14 | |
| Spain | 57.00 | 24 | HI | 24 | EUR | 15 | |
| United Arab Emirates | 56.85 | 25 | HI | 25 | NAWA | 2 | |
| Estonia | 56.78 | 26 | HI | 26 | EUR | 16 | |
| Czech Republic | 54.18 | 27 | HI | 27 | EUR | 17 | |
| Portugal | 53.80 | 28 | HI | 28 | EUR | 18 | |
| Italy | 53.38 | 29 | HI | 29 | EUR | 19 | |
| Slovenia | 53.22 | 30 | HI | 30 | EUR | 20 | |
| Malaysia | 52.78 | 31 | UM | 1 | SEAO | 7 | |
| Cyprus | 52.35 | 32 | HI | 31 | NAWA | 3 | |
| Malta | 51.81 | 33 | HI | 32 | EUR | 21 | |
| Latvia | 50.41 | 34 | HI | 33 | EUR | 22 | |
| Lithuania | 49.86 | 35 | HI | 34 | EUR | 23 | |
| Chile | 48.96 | 36 | HI | 35 | LCN | 1 | |
| Slovakia | 48.93 | 37 | HI | 36 | EUR | 24 | |
| Greece | 48.81 | 38 | HI | 37 | EUR | 25 | |
| Poland | 48.44 | 39 | HI | 38 | EUR | 26 | |
| Qatar | 48.42 | 40 | HI | 39 | NAWA | 4 | |
| China | 48.36 | 41 | UM | 2 | SEAO | 8 | |
| Hungary | 48.25 | 42 | UM | 3 | EUR | 27 | |
| Croatia | 47.65 | 43 | HI | 40 | EUR | 28 | |
| Mauritius | 47.49 | 44 | UM | 4 | SSF | 1 | |
| Saudi Arabia | 47.31 | 45 | HI | 41 | NAWA | 5 | |
| Barbados | 46.94 | 46 | HI | 42 | LCN | 2 | |
| Bosnia and Herzegovina | 46.42 | 47 | UM | 5 | EUR | 29 | |
| Bahrain | 46.24 | 48 | HI | 43 | NAWA | 6 | |
| Bulgaria | 46.10 | 49 | UM | 6 | EUR | 30 | |
| Montenegro | 45.94 | 50 | UM | 7 | EUR | 31 | |
| Colombia | 45.44 | 51 | UM | 8 | LCN | 3 | |
| Russian Federation | 45.33 | 52 | HI | 44 | EUR | 32 | |
| Mongolia | 45.23 | 53 | LM | 1 | SEAO | 9 | |
| South Africa | 45.19 | 54 | UM | 10 | SSF | 2 | |
| Belarus | 44.91 | 55 | UM | 11 | EUR | 33 | |
| TFYR of Macedonia | 43.99 | 56 | UM | 12 | EUR | 34 | |
| Romania | 43.95 | 57 | UM | 13 | EUR | 35 | |
| Mexico | 43.87 | 58 | UM | 14 | LCN | 4 | |
| Seychelles | 43.68 | 59 | UM | 15 | SSF | 3 | |
| Peru | 43.50 | 60 | UM | 16 | LCN | 5 | |
| Costa Rica | 43.21 | 61 | UM | 17 | LCN | 6 | |
| Thailand | 43.17 | 62 | UM | 18 | SEAO | 10 | |
| Uruguay | 43.06 | 63 | HI | 45 | LCN | 7 | |
| Fiji | 42.61 | 64 | UM | 19 | SEAO | 11 | |
| Brazil | 42.38 | 65 | UM | 20 | LCN | 8 | |
| Rwanda | 42.33 | 66 | LI | 1 | SSF | 4 | |
| Georgia | 41.84 | 67 | LM | 2 | NAWA | 7 | |
| Oman | 41.83 | 68 | HI | 46 | NAWA | 8 | |
| Armenia | 41.79 | 69 | LM | 3 | NAWA | 9 | |
| Serbia | 41.78 | 70 | UM | 21 | EUR | 36 | |
| Turkey | 41.68 | 71 | UM | 22 | NAWA | 10 | |

Table 2: Innovation Input Sub-Index rankings (continued)

| Country/Economy | Score (0–100) | Rank | Income | Rank | Region | Rank | Median: 41.68 |
|-----------------------------------|---------------|------|--------|------|--------|------|---------------|
| Panama | 41.40 | 72 | UM | 23 | LCN | 9 | |
| Albania | 41.22 | 73 | UM | 24 | EUR | 37 | |
| Moldova, Republic of | 40.99 | 74 | LM | 4 | EUR | 38 | |
| Kazakhstan | 40.98 | 75 | UM | 25 | CSA | 1 | |
| Morocco | 40.55 | 76 | LM | 5 | NAWA | 11 | |
| Lebanon | 40.53 | 77 | UM | 26 | NAWA | 12 | |
| Viet Nam | 40.04 | 78 | LM | 6 | SEAO | 12 | |
| Botswana | 39.63 | 79 | UM | 27 | SSF | 5 | |
| Jordan | 39.29 | 80 | UM | 28 | NAWA | 13 | |
| Argentina | 39.22 | 81 | UM | 29 | LCN | 10 | |
| Bhutan | 39.20 | 82 | LM | 7 | CSA | 2 | |
| Tunisia | 39.10 | 83 | UM | 30 | NAWA | 14 | |
| Ukraine | 39.06 | 84 | LM | 8 | EUR | 39 | |
| Jamaica | 38.93 | 85 | UM | 31 | LCN | 11 | |
| Trinidad and Tobago | 38.80 | 86 | HI | 47 | LCN | 12 | |
| Kuwait | 38.44 | 87 | HI | 48 | NAWA | 15 | |
| Dominican Republic | 37.92 | 88 | UM | 32 | LCN | 13 | |
| Azerbaijan | 37.59 | 89 | UM | 33 | NAWA | 16 | |
| Guyana | 37.21 | 90 | LM | 9 | LCN | 14 | |
| Namibia | 37.18 | 91 | UM | 34 | SSF | 6 | |
| Cabo Verde | 37.13 | 92 | LM | 10 | SSF | 7 | |
| Mozambique | 36.86 | 93 | LI | 2 | SSF | 8 | |
| Kyrgyzstan | 36.57 | 94 | LM | 11 | CSA | 3 | |
| El Salvador | 36.18 | 95 | LM | 12 | LCN | 15 | |
| Cambodia | 35.98 | 96 | LI | 3 | SEAO | 13 | |
| Lesotho | 35.93 | 97 | LM | 13 | SSF | 9 | |
| Swaziland | 35.71 | 98 | LM | 14 | SSF | 10 | |
| Ecuador | 35.63 | 99 | UM | 35 | LCN | 16 | |
| India | 35.51 | 100 | LM | 15 | CSA | 4 | |
| Philippines | 35.24 | 101 | LM | 16 | SEAO | 14 | |
| Uganda | 35.17 | 102 | LI | 4 | SSF | 11 | |
| Paraguay | 35.15 | 103 | LM | 17 | LCN | 17 | |
| Sri Lanka | 35.01 | 104 | LM | 18 | CSA | 5 | |
| Honduras | 34.94 | 105 | LM | 19 | LCN | 18 | |
| Iran, Islamic Republic of | 34.75 | 106 | UM | 36 | CSA | 6 | |
| Guatemala | 34.62 | 107 | LM | 20 | LCN | 19 | |
| Egypt | 34.42 | 108 | LM | 21 | NAWA | 17 | |
| Burkina Faso | 34.20 | 109 | LI | 5 | SSF | 12 | |
| Senegal | 34.13 | 110 | LM | 22 | SSF | 13 | |
| Malawi | 34.00 | 111 | LI | 6 | SSF | 14 | |
| Uzbekistan | 33.88 | 112 | LM | 23 | CSA | 7 | |
| Kenya | 33.75 | 113 | LI | 7 | SSF | 15 | |
| Indonesia | 33.74 | 114 | LM | 24 | SEAO | 15 | |
| Tajikistan | 33.39 | 115 | LI | 8 | CSA | 8 | |
| Ghana | 33.22 | 116 | LM | 25 | SSF | 16 | |
| Niger | 32.87 | 117 | LI | 9 | SSF | 17 | |
| Bolivia, Plurinational State of | 32.49 | 118 | LM | 26 | LCN | 20 | |
| Algeria | 32.08 | 119 | UM | 37 | NAWA | 18 | |
| Nicaragua | 31.94 | 120 | LM | 27 | LCN | 21 | |
| Gambia | 31.03 | 121 | LI | 10 | SSF | 18 | |
| Burundi | 30.96 | 122 | LI | 11 | SSF | 19 | |
| Madagascar | 30.66 | 123 | LI | 12 | SSF | 20 | |
| Tanzania, United Republic of | 30.45 | 124 | LI | 13 | SSF | 21 | |
| Mali | 30.37 | 125 | LI | 14 | SSF | 22 | |
| Cameroon | 30.19 | 126 | LM | 28 | SSF | 23 | |
| Nepal | 30.02 | 127 | LI | 15 | CSA | 9 | |
| Togo | 29.65 | 128 | LI | 16 | SSF | 24 | |
| Bangladesh | 29.48 | 129 | LI | 17 | CSA | 10 | |
| Zambia | 29.26 | 130 | LM | 29 | SSF | 25 | |
| Côte d'Ivoire | 28.57 | 131 | LM | 30 | SSF | 26 | |
| Ethiopia | 28.04 | 132 | LI | 18 | SSF | 27 | |
| Venezuela, Bolivarian Republic of | 27.15 | 133 | UM | 38 | LCN | 22 | |
| Zimbabwe | 26.61 | 134 | LI | 19 | SSF | 28 | |
| Nigeria | 26.30 | 135 | LM | 31 | SSF | 29 | |
| Pakistan | 26.25 | 136 | LM | 32 | CSA | 11 | |
| Angola | 25.91 | 137 | UM | 39 | SSF | 30 | |
| Yemen | 25.20 | 138 | LM | 33 | NAWA | 19 | |
| Myanmar | 23.92 | 139 | LI | 20 | SEAO | 16 | |
| Guinea | 22.92 | 140 | LI | 21 | SSF | 31 | |
| Sudan | 21.90 | 141 | LM | 34 | SSF | 32 | |

Note: World Bank Income Group Classification (July 2013): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification: EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; SSF = Sub-Saharan Africa.

Table 3: Innovation Output Sub-Index rankings

| Country/Economy | Score (0–100) | Rank | Income | Rank | Region | Rank | Median: 27.86 |
|--------------------------|---------------|------|--------|------|--------|------|---------------|
| Switzerland | 68.63 | 1 | HI | 1 | EUR | 1 | |
| Luxembourg | 59.02 | 2 | HI | 2 | EUR | 2 | |
| Netherlands | 58.93 | 3 | HI | 3 | EUR | 3 | |
| Sweden | 57.78 | 4 | HI | 4 | EUR | 4 | |
| United Kingdom | 57.70 | 5 | HI | 5 | EUR | 5 | |
| Iceland | 56.56 | 6 | HI | 6 | EUR | 6 | |
| Ireland | 55.37 | 7 | HI | 7 | EUR | 7 | |
| Germany | 53.11 | 8 | HI | 8 | EUR | 8 | |
| United States of America | 52.89 | 9 | HI | 9 | NAC | 1 | |
| Finland | 52.04 | 10 | HI | 10 | EUR | 9 | |
| Korea, Republic of | 50.15 | 11 | HI | 11 | SEAO | 1 | |
| Denmark | 49.53 | 12 | HI | 12 | EUR | 10 | |
| Malta | 49.16 | 13 | HI | 13 | EUR | 11 | |
| Estonia | 48.83 | 14 | HI | 14 | EUR | 12 | |
| New Zealand | 48.71 | 15 | HI | 15 | SEAO | 2 | |
| Israel | 48.59 | 16 | HI | 16 | NAWA | 1 | |
| Czech Republic | 48.46 | 17 | HI | 17 | EUR | 13 | |
| Austria | 47.19 | 18 | HI | 18 | EUR | 14 | |
| Hong Kong (China) | 46.86 | 19 | HI | 19 | SEAO | 3 | |
| Singapore | 46.60 | 20 | HI | 20 | SEAO | 4 | |
| China | 46.57 | 21 | UM | 1 | SEAO | 5 | |
| Canada | 46.42 | 22 | HI | 21 | NAC | 2 | |
| France | 45.93 | 23 | HI | 22 | EUR | 15 | |
| Australia | 45.61 | 24 | HI | 23 | SEAO | 6 | |
| Norway | 45.43 | 25 | HI | 24 | EUR | 16 | |
| Japan | 44.10 | 26 | HI | 25 | SEAO | 7 | |
| Slovenia | 43.77 | 27 | HI | 26 | EUR | 17 | |
| Belgium | 43.22 | 28 | HI | 27 | EUR | 18 | |
| Spain | 41.14 | 29 | HI | 28 | EUR | 19 | |
| Latvia | 40.60 | 30 | HI | 29 | EUR | 20 | |
| Moldova, Republic of | 40.06 | 31 | LM | 1 | EUR | 21 | |
| Italy | 39.41 | 32 | HI | 30 | EUR | 22 | |
| Portugal | 39.41 | 33 | HI | 31 | EUR | 23 | |
| Malaysia | 39.18 | 34 | UM | 2 | SEAO | 8 | |
| Bulgaria | 38.23 | 35 | UM | 3 | EUR | 24 | |
| Barbados | 38.00 | 36 | HI | 32 | LCN | 1 | |
| Hungary | 37.74 | 37 | UM | 4 | EUR | 25 | |
| Slovakia | 37.05 | 38 | HI | 33 | EUR | 26 | |
| Viet Nam | 36.65 | 39 | LM | 2 | SEAO | 9 | |
| Montenegro | 36.52 | 40 | UM | 5 | EUR | 27 | |
| Croatia | 35.75 | 41 | HI | 34 | EUR | 28 | |
| Lithuania | 34.66 | 42 | HI | 35 | EUR | 29 | |
| Cyprus | 34.66 | 43 | HI | 36 | NAWA | 2 | |
| Saudi Arabia | 33.99 | 44 | HI | 37 | NAWA | 3 | |
| Costa Rica | 33.96 | 45 | UM | 6 | LCN | 2 | |
| Turkey | 33.93 | 46 | UM | 7 | NAWA | 4 | |
| Ukraine | 33.85 | 47 | LM | 3 | EUR | 30 | |
| Chile | 33.45 | 48 | HI | 38 | LCN | 3 | |
| Russian Federation | 33.32 | 49 | HI | 39 | EUR | 31 | |
| Thailand | 33.02 | 50 | UM | 8 | SEAO | 10 | |
| Armenia | 32.83 | 51 | LM | 4 | NAWA | 5 | |
| Romania | 32.45 | 52 | UM | 9 | EUR | 32 | |
| Panama | 32.20 | 53 | UM | 10 | LCN | 4 | |
| Mexico | 32.19 | 54 | UM | 11 | LCN | 5 | |
| TFYR of Macedonia | 32.07 | 55 | UM | 12 | EUR | 33 | |
| Poland | 31.87 | 56 | HI | 40 | EUR | 34 | |
| Greece | 31.75 | 57 | HI | 41 | EUR | 35 | |
| Belarus | 31.55 | 58 | UM | 13 | EUR | 36 | |
| Serbia | 31.16 | 59 | UM | 14 | EUR | 37 | |
| Mauritius | 30.98 | 60 | UM | 15 | SSF | 1 | |
| South Africa | 29.70 | 61 | UM | 16 | SSF | 2 | |
| Qatar | 29.60 | 62 | HI | 42 | NAWA | 6 | |
| Argentina | 29.38 | 63 | UM | 17 | LCN | 6 | |
| Seychelles | 29.21 | 64 | UM | 18 | SSF | 3 | |
| Bahrain | 29.10 | 65 | HI | 43 | NAWA | 7 | |
| Uruguay | 28.45 | 66 | HI | 44 | LCN | 7 | |
| Jordan | 28.26 | 67 | UM | 19 | NAWA | 8 | |
| Oman | 28.16 | 68 | HI | 45 | NAWA | 9 | |
| India | 27.97 | 69 | LM | 5 | CSA | 1 | |
| Kuwait | 27.96 | 70 | HI | 46 | NAWA | 10 | |
| Tunisia | 27.86 | 71 | UM | 20 | NAWA | 11 | |

Table 3: Innovation Output Sub-Index rankings (continued)

| Country/Economy | Score (0–100) | Rank | Income | Rank | Region | Rank | Median: 27.86 |
|-----------------------------------|---------------|------|--------|------|--------|------|---------------|
| Senegal | 27.77 | 72 | LM | 6 | SSF | 4 | ■ |
| Mongolia | 27.59 | 73 | LM | 7 | SEAO | 11 | ■ |
| Brazil | 27.52 | 74 | UM | 21 | LCN | 8 | ■ |
| Colombia | 27.37 | 75 | UM | 22 | LCN | 9 | ■ |
| Lebanon | 27.11 | 76 | UM | 23 | NAWA | 12 | ■ |
| Philippines | 26.86 | 77 | LM | 8 | SEAO | 12 | ■ |
| Kenya | 26.64 | 78 | LI | 1 | SSF | 5 | ■ |
| Sri Lanka | 26.56 | 79 | LM | 9 | CSA | 2 | ■ |
| Angola | 26.49 | 80 | UM | 24 | SSF | 6 | ■ |
| Mali | 26.37 | 81 | LI | 2 | SSF | 7 | ■ |
| Peru | 26.24 | 82 | UM | 25 | LCN | 10 | ■ |
| Paraguay | 26.22 | 83 | LM | 10 | LCN | 11 | ■ |
| Morocco | 25.84 | 84 | LM | 11 | NAWA | 13 | ■ |
| Indonesia | 25.83 | 85 | LM | 12 | SEAO | 13 | ■ |
| Georgia | 25.81 | 86 | LM | 13 | NAWA | 14 | ■ |
| Côte d'Ivoire | 25.74 | 87 | LM | 14 | SSF | 8 | ■ |
| Trinidad and Tobago | 25.55 | 88 | HI | 47 | LCN | 12 | ■ |
| Malawi | 25.42 | 89 | LI | 3 | SSF | 9 | ■ |
| Cameroon | 25.40 | 90 | LM | 15 | SSF | 10 | ■ |
| Cambodia | 24.72 | 91 | LI | 4 | SEAO | 14 | ■ |
| Bolivia, Plurinational State of | 24.68 | 92 | LM | 16 | LCN | 13 | ■ |
| Guyana | 24.28 | 93 | LM | 17 | LCN | 14 | ■ |
| Gambia | 23.95 | 94 | LI | 5 | SSF | 11 | ■ |
| Tanzania, United Republic of | 23.56 | 95 | LI | 6 | SSF | 12 | ■ |
| Egypt | 23.39 | 96 | LM | 18 | NAWA | 15 | ■ |
| Mozambique | 23.29 | 97 | LI | 7 | SSF | 13 | ■ |
| Dominican Republic | 23.28 | 98 | UM | 26 | LCN | 15 | ■ |
| United Arab Emirates | 23.27 | 99 | HI | 48 | NAWA | 16 | ■ |
| Burkina Faso | 23.16 | 100 | LI | 8 | SSF | 14 | ■ |
| Guatemala | 23.06 | 101 | LM | 19 | LCN | 16 | ■ |
| Ghana | 22.86 | 102 | LM | 20 | SSF | 15 | ■ |
| Azerbaijan | 22.62 | 103 | UM | 27 | NAWA | 17 | ■ |
| El Salvador | 22.43 | 104 | LM | 21 | LCN | 17 | ■ |
| Iran, Islamic Republic of | 21.99 | 105 | UM | 28 | CSA | 3 | ■ |
| Tajikistan | 21.54 | 106 | LI | 9 | CSA | 4 | ■ |
| Kazakhstan | 21.52 | 107 | UM | 29 | CSA | 5 | ■ |
| Botswana | 21.35 | 108 | UM | 30 | SSF | 16 | ■ |
| Nigeria | 21.15 | 109 | LM | 22 | SSF | 17 | ■ |
| Jamaica | 20.97 | 110 | UM | 31 | LCN | 18 | ■ |
| Ethiopia | 20.29 | 111 | LI | 10 | SSF | 18 | ■ |
| Albania | 20.26 | 112 | UM | 32 | EUR | 38 | ■ |
| Uganda | 20.13 | 113 | LI | 11 | SSF | 19 | ■ |
| Cabo Verde | 20.05 | 114 | LM | 23 | SSF | 20 | ■ |
| Zambia | 20.02 | 115 | LM | 24 | SSF | 21 | ■ |
| Honduras | 20.01 | 116 | LM | 25 | LCN | 19 | ■ |
| Pakistan | 19.90 | 117 | LM | 26 | CSA | 6 | ■ |
| Kyrgyzstan | 19.35 | 118 | LM | 27 | CSA | 7 | ■ |
| Namibia | 19.11 | 119 | UM | 33 | SSF | 22 | ■ |
| Zimbabwe | 18.42 | 120 | LI | 12 | SSF | 23 | ■ |
| Venezuela, Bolivarian Republic of | 18.40 | 121 | UM | 34 | LCN | 20 | ■ |
| Bosnia and Herzegovina | 18.21 | 122 | UM | 35 | EUR | 39 | ■ |
| Madagascar | 18.17 | 123 | LI | 13 | SSF | 24 | ■ |
| Ecuador | 18.11 | 124 | UM | 36 | LCN | 21 | ■ |
| Lesotho | 18.01 | 125 | LM | 28 | SSF | 25 | ■ |
| Bangladesh | 17.94 | 126 | LI | 14 | CSA | 8 | ■ |
| Uzbekistan | 17.89 | 127 | LM | 29 | CSA | 9 | ■ |
| Rwanda | 17.85 | 128 | LI | 15 | SSF | 26 | ■ |
| Algeria | 16.68 | 129 | UM | 37 | NAWA | 18 | ■ |
| Myanmar | 16.62 | 130 | LI | 16 | SEAO | 15 | ■ |
| Yemen | 16.41 | 131 | LM | 30 | NAWA | 19 | ■ |
| Swaziland | 15.03 | 132 | LM | 31 | SSF | 27 | ■ |
| Nicaragua | 15.00 | 133 | LM | 32 | LCN | 22 | ■ |
| Guinea | 14.06 | 134 | LI | 17 | SSF | 28 | ■ |
| Bhutan | 12.93 | 135 | LM | 33 | CSA | 10 | ■ |
| Nepal | 12.14 | 136 | LI | 18 | CSA | 11 | ■ |
| Fiji | 12.01 | 137 | UM | 38 | SEAO | 16 | ■ |
| Burundi | 11.13 | 138 | LI | 19 | SSF | 29 | ■ |
| Niger | 9.57 | 139 | LI | 20 | SSF | 30 | ■ |
| Sudan | 8.00 | 140 | LM | 34 | SSF | 31 | ■ |
| Togo | 7.20 | 141 | LI | 21 | SSF | 32 | ■ |

Note: World Bank Income Group Classification (July 2013); LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification: EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; SSF = Sub-Saharan Africa.

1st among the GII top 10) allows Switzerland to translate its robust innovation capabilities into high-level innovation outputs.

The runner-up, the **United Kingdom (UK)**, keeps its position from last year after a strong rise from 10th in 2011 to 2nd in 2014 and 2015, with strengths in both its innovation inputs (6th) and outputs (5th). The UK places within the top 25 in all pillars and sub-pillars with only three exceptions: sub-pillars General infrastructure (48th), Knowledge absorption (30th), and Intangible assets (31st). Although it keeps its 2nd place in the overall GII rankings, the UK improves its ranking in the Human capital and research pillar (by three places) and Creative outputs (two places). Conversely, it slightly worsens in the Knowledge and technology outputs pillar (three places), with the remaining pillars moving up or down by only one place. The UK has strengths in all pillars except Institutions and ranks 1st in two of the three innovation quality indicators (see Box 3). Its weaknesses are mainly in the areas of education, investment, and productivity—for example, in graduates in science and engineering (39th), the pupil-teacher ratio for secondary education (56th), gross capital formation (122nd), and the growth rate of GDP per person engaged (78th), as well as in domestic trademark applications (50th).

The stability in the top three continues with **Sweden** in 3rd place, leading the Nordic countries. It achieves positions among the top 25 in all pillars, ranking 4th in overall outputs (2nd in Knowledge and technology outputs and 11th in Creative outputs), and in all sub-pillars with the exception of Trade and competition (28th) and Knowledge impact (28th). Sweden has improved its ranking by two places in two of the

seven GII pillars: Human capital and research (4th), notably in the quality of its universities; and Business sophistication (7th), notably in the areas of knowledge workers and knowledge absorption. Sweden also drops three places in Infrastructure (7th)—in part as a result of the methodological changes of the UNPAN data on Government online service and E-participation data,²⁶ as well as five places in Market sophistication (14th) and two in Creative outputs (11th).

The Netherlands is ranked 4th in the GII this year (up from 5th in 2014), and is 3rd in the Output Sub-Index and 11th in the Input Sub-Index. It achieves positions among the top 25 in all pillars, improving the most in Human capital and research (by five places to reach 17th) and Knowledge and technology outputs (by three places to 6th). Its weakest showing is in Market sophistication at 17th place, which, however, also improved by two places this year. At the indicator level, the Netherlands ranks the strongest in the online e-participation index (1st), the logistics performance index (2nd), royalties and license fee payments and receipts (1st and 2nd places, respectively), and country-code top level domains (1st). Some of its major weaknesses (measured in percent ranks to take account of missing values) are in the Tertiary education sub-pillar, with a low number of tertiary graduates in science and engineering, and in the ease of starting a business, ease of protecting investors, joint venture/strategic alliance deals, and the cultural and creative services exports variables.

The United States of America (USA) is ranked 5th, up one spot from 6th in 2014, coming in 5th in inputs and 9th in outputs. The USA keeps its 1st place position in the Market sophistication pillar and

Credit sub-pillar and has leading positions (within the top 25) for the rest of the pillars and 16 of the 21 sub-pillars. It also comes 1st in 7 of the 74 indicators with available data, including the cost of redundancy dismissal, total value of stocks traded, national office patent applications, citable documents H index, total computer software spending, generic top-level domains, and video uploads on YouTube. A weaker performance is seen in the number of ISO 14001 environmental certificates (96th), ISO 9001 quality certificates (90th), gross capital formation (89th), growth rate of GDP per person engaged (79th), GDP per unit of energy use (76th), number of graduates in science and engineering (75th), and GERD financed by business abroad (72nd).

Finland ranks 6th, down two positions from 2014, as a result of worsening in the Infrastructure pillar by eight places, Knowledge and technology outputs by three places, and Creative outputs by five places. However, it still ranks 1st in both Institutions and Human capital and research. Finland falls more than five places in the ICTs—notably also the consequence of a change of the methodology underlying the Government online service and e-participation data of UNPAN,²⁷ as well as dropping in the Knowledge diffusion and Creative goods and services sub-pillars. Conversely, Finland improves by more than five places in the Trade and competition and Knowledge absorption sub-pillars. The improvement in Knowledge absorption is mainly the result of other countries performing worse in this sub-pillar, lifting Finland up. Its loss of three positions in Knowledge and technology outputs is partly caused by lower high-tech and ICT services exports, which is potentially linked to the

lesser prominence of the ICT firm Nokia.

Singapore maintains its 2014 position at 7th place, the top-ranked country in the South East Asia and Oceania region. Singapore ranks 1st in innovation inputs (because of its 1st place in the Infrastructure and Business sophistication pillars and 2nd place in the Institutions pillar), yet it ranks 20th in innovation outputs, thus achieving quite a low ranking in innovation efficiency (100th). Singapore remains consistent across most areas of the GII, but with some notable progress in the Political environment (where it improves by 15 places), Ecological sustainability (9 places), Knowledge impact (5 places), and Knowledge diffusion (11 places) sub-pillars. Although the improvement in Political environment is the result of the removal of the press freedom index variable this year (see Annex 2), Singapore greatly improves in the GDP per unit of energy use variable, the growth rate of GDP per person engaged variable, and most of the variables in sub-pillar 6.3, Knowledge diffusion. Conversely, Singapore declines in the Investment (down four places), Trade and competition (six places), and Knowledge creation sub-pillars (five places).

Ireland is ranked 8th in 2015 (up three places from 2014) and is back in the top 10 for the second time. This improvement is attributable to a much improved innovation efficiency ranking (from 47th to 12th), a consequence of strengthening its innovation outputs (from 11th place in 2014 to 7th place in 2015). Ireland ranks in the top 25 across all pillars, with its biggest progress in Infrastructure (14 places) and Creative outputs (7 places). These pillar improvements are the result of significant improvement in all variables within the Ecological

sustainability and Intangible assets sub-pillars.²⁸ Conversely, Ireland worsens slightly in Institutions (six places), Human capital and research (two places), Market sophistication (six places), and Business sophistication (one place). At the variable level, some of Ireland's weaknesses are the cost of redundancy dismissal, total value of stocks traded, intensity of local competition, high-tech imports, national office patent applications, and cultural and creative services exports.

Luxembourg maintains its 9th place position while improving its innovation output ranking to 2nd place (from 5th in 2014) and its innovation efficiency ranking to 3rd place (from 9th in 2014). It greatly improved in the Market sophistication pillar by 28 places, mainly because of improvements made in the Investment and Trade and competition sub-pillars. This is the result of an increased number of venture capital deals and the removal of the non-agricultural market access weighted tariff indicator from the GII model. The rest of Luxembourg's performance in the GII this year remains relatively stable with the exception of Human capital and research, where it drops from 27th place in 2014 to 34th. This is the consequence of a drop in both the amount of government expenditure per pupil in secondary education and the number of graduates in science and engineering. Identified strengths include ICT access, environmental performance, employment in knowledge-intensive services, joint venture deals, and cultural and creative services exports.

Denmark is ranked 10th, down two positions from 8th place in 2014. This fall is similar to that of Finland, and—except for Sweden—there has been a noticeable decrease

in the GII innovation performance of the Nordic European countries since 2011. Despite this decline, the country performs strongly in both the Input Sub-Index (at 8th place) and the Output Sub-Index (12th). It achieves a leading position (within the top 25) in all pillars and in 14 out of 21 sub-pillars, with strengths in its government effectiveness, regulatory quality, rule of law, school life expectancy, number of researchers, ICT use, and number of scientific and technical publications. Denmark's several steep drops in 2015 are mainly in the Infrastructure pillar in areas such as the government's online index and e-participation index,²⁹ GDP per unit of energy use, and the number of ISO 14001 certificates.

The top 10 in the Innovation Input Sub-Index

The Innovation Input Sub-Index considers the elements of an economy that enable innovative activity through five pillars. The top 10 economies in the Innovation Input Sub-Index are Singapore, Switzerland, Finland, Hong Kong (China), the USA, the UK, Sweden, Denmark, Canada, and Australia. Hong Kong (China), Canada, and Australia are the only economies in this group that are not also in the GII top 10.

Hong Kong (China) is ranked 11th in the GII overall, down from 10th in 2014. However, it ranks 4th in the Input Sub-Index, with top 10 rankings in the Institutions (8th), Infrastructure (2nd), and Market sophistication (2nd) input pillars. It also ranks 8th in Creative outputs. Hong Kong (China)'s biggest strengths in the input variables are in regulatory quality, GDP per unit of energy use, domestic credit to private sector, ease of protecting investors, market capitalization,

intensity of local competition, and high-tech imports. Its biggest drop this year is in Business sophistication (where it falls by nine places to 15th) and in the Knowledge workers sub-pillar, mainly the result of its performance in the percentage of females employed with advanced degrees.³⁰ Hong Kong (China)'s biggest improvement is in the Knowledge and technology output pillar (it improves by 14 places to 31st place) in all sub-pillars and most variables.

Canada is ranked 16th, down from 12th in 2014 and 11th in 2013. It ranks 9th in the Input Sub-Index, with top 10 rankings on the Institutions pillar (6th)—linked to its strong performance (1st) in the Business environment sub-pillar—and the Market sophistication pillar (4th), the result of a robust performance in the Investment (5th) and Credit (9th) sub-pillars. Canada's decline is mostly the result of its drop in the Human capital and research pillar, from 13th in 2014 to 22nd this year. Its main weakness in this pillar is linked to government expenditure on secondary education per pupil, where it ranks 65th.

Australia maintains its 17th place overall GII rank and 10th place rank in the Input Sub-Index from 2014. It also maintains its top 10 rankings in three pillars: Human capital and research (9th), Infrastructure (4th), and Market sophistication (9th). It improves by three places in the Infrastructure pillar across two sub-pillars: ICTs (7th) and Ecological sustainability (27th). It also improves in Business sophistication by three places to 23rd, as a result of improvements made in two sub-pillars: Knowledge workers and Innovation linkages. In relation to innovation outputs, Australia also improved in Creative outputs by five places to 7th place, with improvements within all three sub-pillars. Australia's main

falls take place in Human capital and research (down two places) and Knowledge and technology outputs (down eight places).

The top 10 in the Innovation Output Sub-Index

The Innovation Output Sub-Index variables provide information on elements that are the result of innovation within an economy. Although scores on the Input and Output Sub-Indices might differ substantially, leading to important shifts in rankings from one sub-index to the other for particular countries, the data confirm that efforts made to improve enabling environments are rewarded with increased innovation outputs.

The top 10 countries in the Innovation Output Sub-Index this year are Switzerland, Luxembourg, the Netherlands, Sweden, the UK, Iceland, Ireland, Germany, the USA, and Finland. Ireland enters the list this year (ranked 11th in 2014), while Malta drops to 13th place. Eight of these countries are already in the GII top 10; the profiles of the other two economies are discussed below.

Iceland is ranked 13th in the GII overall, up six positions from 19th in 2014. This Nordic country ranks 23th in the Input Sub-Index and 6th in the Output Sub-Index. While the main leverage on the output side comes from its consistent 1st place in Creative outputs, where Iceland shows strengths in all sub-pillars and most indicators, it also shows great progress in the Knowledge and technology outputs sub-pillar (with an improvement of 12 places to reach 24th). This advance is linked to a substantial improvement in FDI net outflows.³¹ In addition, notable developments have been made in the percentage of graduates in science and engineering (18 places), its performance in the e-participation

index (15 places), and ease of protecting investors (14 places). Notable weaknesses for Iceland are its high-tech imports (100th), growth rate of labour productivity (103rd), high-tech and medium-high-tech output (85th), and creative goods exports (92nd).

Germany is ranked 12th in the overall GII, up one place from 2014. As has been the case for the past three years, Germany's relative strengths lies in the Output Sub-Index (8th), although it ranks a respectable 18th in the Input Sub-Index and shows a balanced profile, with pillar rankings ranging from 10th to 22nd. All sub-pillars rank among the top 40 with the exception of Investment (59th) and Creative goods and services (43rd). Germany's output strengths are attributable to its 1st place ranking in national office patent applications and country-code top-level domains, its 3rd place in the citable documents H index, and its 5th position in high-tech and medium-high-tech output.

Top performers by income group

Viewing economies among their income-group peers can illustrate important relative competitive advantages and help decision makers glean important lessons for improved performance that are applicable on the ground. This report attempts to abide by this underlying principle by assessing results on the basis of the development stages of countries.

Table 4 shows the 10 best performers in each index by income group. The top 28 positions in the GII are taken by high-income economies, the same number as in 2014. Switzerland, the UK, Sweden, and the USA are among the high-income top 10 on the three main indices, while Switzerland is the

Table 4: Ten best-ranked economies by income group (rank)

| | Global Innovation Index | Innovation Input Sub-index | Innovation Output Sub-index | Innovation Efficiency Ratio |
|--|-------------------------------------|-------------------------------------|-------------------------------------|-----------------------------------|
| High-income economies (48 in total) | | | | |
| 1 | Switzerland (1) | Singapore (1) | Switzerland (1) | Switzerland (2) |
| 2 | United Kingdom (2) | Switzerland (2) | Luxembourg (2) | Luxembourg (3) |
| 3 | Sweden (3) | Finland (3) | Netherlands (3) | Iceland (4) |
| 4 | Netherlands (4) | Hong Kong (China) (4) | Sweden (4) | Malta (7) |
| 5 | United States of America (5) | United States of America (5) | United Kingdom (5) | Netherlands (8) |
| 6 | Finland (6) | United Kingdom (6) | Iceland (6) | Czech Republic (11) |
| 7 | Singapore (7) | Sweden (7) | Ireland (7) | Ireland (12) |
| 8 | Ireland (8) | Denmark (8) | Germany (8) | Germany (13) |
| 9 | Luxembourg (9) | Canada (9) | United States of America (9) | Sweden (16) |
| 10 | Denmark (10) | Australia (10) | Finland (10) | Estonia (17) |
| Upper-middle-income economies (38 in total) | | | | |
| 1 | China (29) | Malaysia (31) | China (21) | Angola (1) |
| 2 | Malaysia (32) | China (41) | Malaysia (34) | China (6) |
| 3 | Hungary (35) | Hungary (42) | Bulgaria (35) | Bulgaria (21) |
| 4 | Bulgaria (39) | Mauritius (44) | Hungary (37) | Turkey (23) |
| 5 | Montenegro (41) | Bosnia and Herzegovina (47) | Montenegro (40) | Montenegro (29) |
| 6 | Mauritius (49) | Bulgaria (49) | Costa Rica (45) | Costa Rica (32) |
| 7 | Costa Rica (51) | Montenegro (50) | Turkey (46) | Hungary (35) |
| 8 | Belarus (53) | Colombia (51) | Thailand (50) | Panama (36) |
| 9 | Romania (54) | South Africa (54) | Romania (52) | Thailand (43) |
| 10 | Thailand (55) | Belarus (55) | Panama (53) | Argentina (52) |
| Lower-middle-income economies (34 in total) | | | | |
| 1 | Moldova, Republic of (44) | Mongolia (53) | Moldova, Republic of (31) | Moldova, Republic of (5) |
| 2 | Viet Nam (52) | Georgia (67) | Viet Nam (39) | Viet Nam (9) |
| 3 | Armenia (61) | Armenia (69) | Ukraine (47) | Côte d'Ivoire (10) |
| 4 | Ukraine (64) | Moldova, Republic of (74) | Armenia (51) | Ukraine (15) |
| 5 | Mongolia (66) | Morocco (76) | India (69) | Cameroon (19) |
| 6 | Georgia (73) | Viet Nam (78) | Senegal (72) | Senegal (24) |
| 7 | Morocco (78) | Bhutan (82) | Mongolia (73) | Nigeria (28) |
| 8 | India (81) | Ukraine (84) | Philippines (77) | India (31) |
| 9 | Philippines (83) | Guyana (90) | Sri Lanka (79) | Armenia (34) |
| 10 | Senegal (84) | Cabo Verde (92) | Paraguay (83) | Indonesia (42) |
| Low-income economies (21 in total) | | | | |
| 1 | Cambodia (91) | Rwanda (66) | Kenya (78) | Mali (14) |
| 2 | Kenya (92) | Mozambique (93) | Mali (81) | Kenya (30) |
| 3 | Rwanda (94) | Cambodia (96) | Malawi (89) | Tanzania, United Republic of (38) |
| 4 | Mozambique (95) | Uganda (102) | Cambodia (91) | Gambia (39) |
| 5 | Malawi (98) | Burkina Faso (109) | Gambia (94) | Malawi (53) |
| 6 | Burkina Faso (102) | Malawi (111) | Tanzania, United Republic of (95) | Ethiopia (66) |
| 7 | Mali (105) | Kenya (113) | Mozambique (97) | Myanmar (75) |
| 8 | Uganda (111) | Tajikistan (115) | Burkina Faso (100) | Zimbabwe (77) |
| 9 | Gambia (112) | Niger (117) | Tajikistan (106) | Cambodia (80) |
| 10 | Tajikistan (114) | Gambia (121) | Ethiopia (111) | Burkina Faso (85) |

Note: Economies with top 10 positions in the GI, the Input Sub-Index, and the Output Sub-Index within their income group are highlighted in bold.

only economy also in the high-income top 10 in the efficiency ratio.

Among the upper-middle-income 10 best performers, five remain from 2014: China (29th), Malaysia (32nd), Hungary (35th), Bulgaria (39th), and Mauritius (49th); Thailand (55th) enters this list again this year. Newcomers to this group of 10 best performers are Montenegro (41st), Costa Rica (51st), Belarus (53rd), and Romania (54th), which displace Turkey (58th), South Africa (60th), Panama (62nd), and Seychelles (65th).

China, Malaysia, Hungary, Bulgaria, and Montenegro are among the 10 best performers in the three indices; of these, all except Malaysia also make it to the upper-middle-income top 10 in the efficiency ratio.

The same analysis for lower-middle-income countries shows that eight of the top 10 countries from 2014 remain in the top 10 this year, which include the Republic of Moldova (44th), Viet Nam (52nd), Armenia (61st), Ukraine (64th), Mongolia (66th), Georgia (73rd), Morocco (78th), India (81st); new this year are the Philippines (83rd) and Senegal (84th). The Republic of Moldova, Viet Nam, Ukraine, Armenia, and Mongolia are among the top 10 in the three indices; all of these except Mongolia are the only countries from this income group with top 10 positions in the efficiency ratio as well.

There has also been a strong consistency among low-income countries, with nine out of 10 economies remaining in the top 10. Cambodia paves its way to 1st place in this income group (91st),³² followed by Kenya (92nd), Rwanda (94th), Mozambique (95th), Malawi (98th), Burkina Faso (102nd), Mali (105th), Uganda (111st), and Gambia (112nd),

while Tajikistan (114th) displaces Kyrgyzstan (109th).

Performing strongly across all aspects of the GII, Cambodia, Kenya, Mozambique, Malawi, Burkina Faso, Gambia, and Tajikistan are among the top 10 in all three indices; of these except Malaysia and Tajikistan are in the low-income top 10 on efficiency.

The effectiveness of innovation systems and policies: The Innovation Efficiency Ratio

The Innovation Efficiency Ratio is calculated as the ratio of the Output Sub-Index score over the Input Sub-Index score. It is designed to assess the effectiveness of innovation systems and policies. The 10 countries with the highest Innovation Efficiency Ratios are countries that combine certain levels of innovation inputs with more robust output results (see Table 1): Angola (120th), Switzerland (1st), Luxembourg (9th), Iceland (13th), the Republic of Moldova (44th), China (29th), Malta (26th), the Netherlands (4th), Viet Nam (52nd), and Côte d'Ivoire (116th). Countries in this list such as Angola and Côte d'Ivoire do not show significant innovation input and output results, yet their efficiency ratios appear high because their outputs outweigh their inputs on a low level. Indeed, economies might reach a relatively high efficiency ratio as a result of particularly low input scores. Because of this, efficiency ratios must be analysed jointly with GII, Input, and Output scores, and with the development stages of the economies in mind.

Five of the top 10 most efficient economies are high-income economies: Switzerland, Luxembourg, Iceland, Malta, and the Netherlands. Countries from Sub-Saharan Africa, Europe, South East Asia and Oceania, and Northern Africa and

Western Asia take up the first 20 positions in this ratio.

Among upper-middle-income countries, Angola—with the proviso noted above—and China are in the top 10. China makes it to the top 25 globally in outputs, surmounting lower capabilities. In this income group, 50% of countries have better rankings in outputs than they do in inputs.

Among lower-middle-income countries, the Republic of Moldova, Viet Nam, and Côte d'Ivoire are among the global top 10. The Republic of Moldova and Viet Nam are in the global top 50 in outputs, with lower positions in inputs. Within this income group, 61.8% of countries have better rankings in outputs than in inputs. No low-income countries are in the top 10 innovation efficiency rankings.

Leaders and achievers: Leveraging strengths and addressing weaknesses

Figure 3 on pages 28–29 illustrates the above findings by presenting the GII scores plotted against GDP per capita in PPP\$ (in natural logs). When countries' stages of development are considered, the GII results can be interpreted in a new light (refer to Box 2 in Chapter 2).

The economies that appear close to the trend line show results that are in accordance with what is expected from their level of development.³³ A majority of economies are in this category. The farther up and above the trend line a country appears, the better its innovation performance is when compared with that of its peers at the same stage of development. Light-coloured bubbles in the figure correspond to the efficient innovators (a majority of them are situated above the trend line), while the dark-coloured bubbles represent those countries in the lower half of the Innovation Efficiency Ratio.

- Among the innovation leaders we find the top 25 countries already discussed above: They are the same economies as in 2014, with the exception of the Czech Republic (new this year) and the removal of Malta—all with GII scores above 50. They have succeeded in creating well-linked innovation systems where investments in human capital thrive in fertile and stable innovation infrastructures to create impressive levels of innovation outputs.
- Economies that perform at least 10 percent higher than their peers for their level of GDP are called ‘innovation achievers’. These economies are shown in Table 5.
- Innovation achievers demonstrate rising levels of innovation results because they have made improvements to their institutional frameworks and they have a skilled labour force with expanded tertiary education, better innovation infrastructures, a deeper integration with global credit investment and trade markets, and a sophisticated business community—even if progress on these dimensions is not uniform across their economies.
- There is also a group of economies that perform at least 10 percent below their peers for their level of GDP. This group of economies includes 34 countries: 7 from the high-income group (6 of these are from the Middle East), 14 from the upper-middle-income group, 7 from the lower-middle, and 5 low-income.

Latin America and the Caribbean: Untapped innovation potential

When reviewing the performance of regions at the pillar level it becomes evident that each has its own strengths. Latin America and the Caribbean is an example where these strengths are latent, yet innovation has still not reached desired levels. In this region, Brazil, Argentina, and Mexico—three of the world largest economies based on their GDPs—stand out as economies performing above the region’s GII average. Yet none have been signalled as innovation achievers, while smaller nations such as Costa Rica and Guyana have reached this category in the past (see Box 4).

Although it has been noted that the region is converging towards higher scores in Infrastructure and Market sophistication, largely as a result of consistent policies to invigorate these areas, its aggregate performance has remained stable. However, economies such as Chile, Colombia, and Costa Rica, as well as Mexico and Peru, perform increasingly well (refer to Box 4 on pages 33–34 for more details).

Regional rankings

This section discusses regional and sub-regional trends, with snapshots for some of the economies leading in the rankings.

Table 6 on page 30 presents a heatmap with the scores for the top 10, along with average scores by income and regional group. To put the discussion of rankings further into perspective, Figure 4 on page 31 presents, for each region, bars representing the median pillar scores (second quartile) as well as the range of scores determined by the first and second quartile; regions are presented in decreasing order of their average

Table 5: Innovation achievers and their income groups and regions

| Economy | Income group | Region |
|---------------|--------------|--------|
| Latvia | High-income | EUR |
| Malta | High-income | EUR |
| China | Upper-middle | SEAO |
| Malaysia | Upper-middle | SEAO |
| Montenegro | Upper-middle | EUR |
| Bulgaria | Upper-middle | EUR |
| Thailand | Upper-middle | SEAO |
| Jordan | Upper-middle | NAWA |
| Moldova, Rep. | Lower-middle | EUR |
| Viet Nam | Lower-middle | SEAO |
| Armenia | Lower-middle | NAWA |
| Senegal | Lower-middle | SSF |
| Mongolia | Lower-middle | SEAO |
| Ukraine | Lower-middle | EUR |
| India | Lower-middle | CSA |
| Morocco | Lower-middle | NAWA |
| Malawi | Low-income | SSF |
| Mozambique | Low-income | SSF |
| Rwanda | Low-income | SSF |
| Kenya | Low-income | SSF |
| Mali | Low-income | SSF |
| Burkina Faso | Low-income | SSF |
| Cambodia | Low-income | SEAO |
| Uganda | Low-income | SSF |

Note: These countries appear 10% or more above the trend line and are listed here in order of distance.

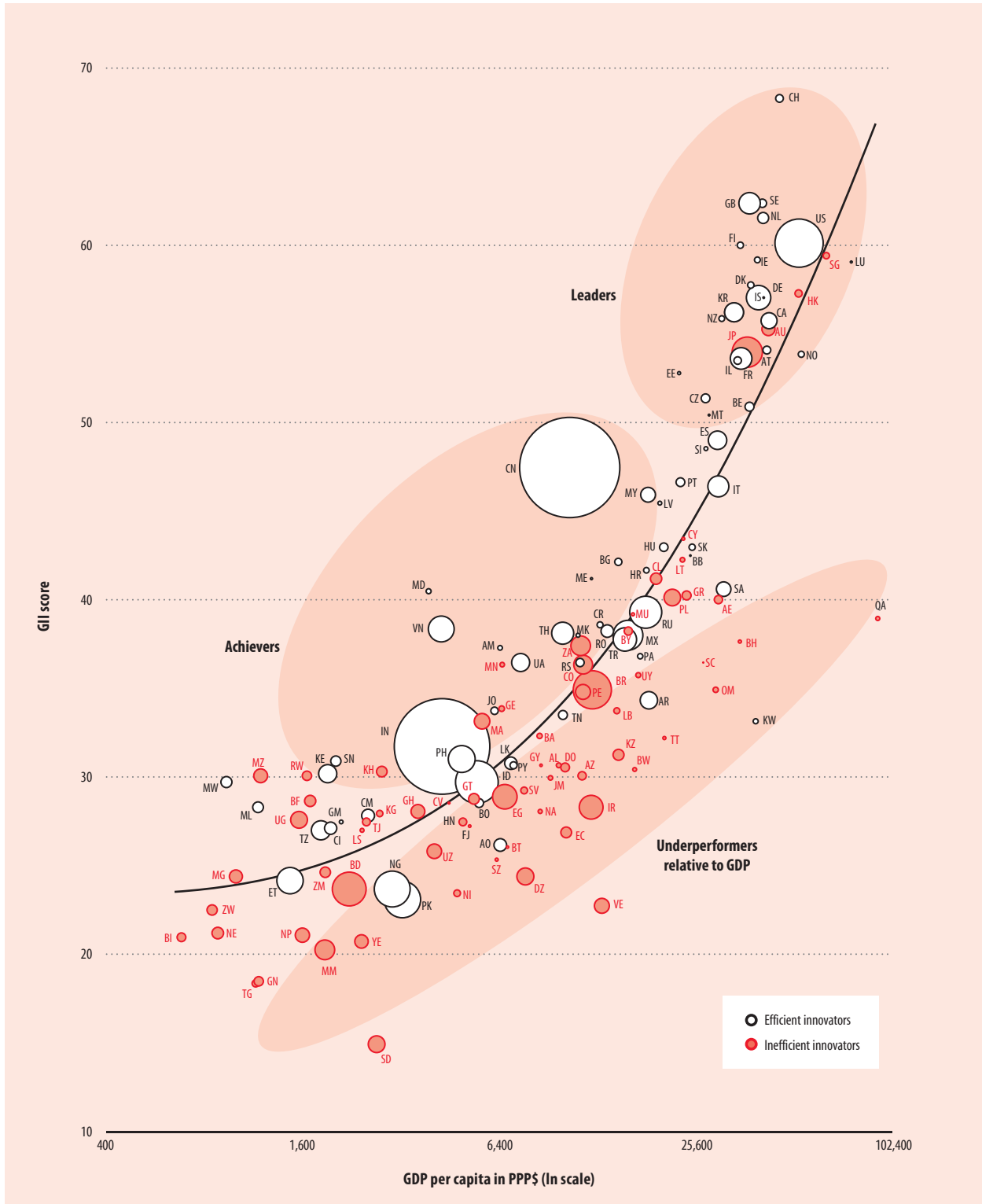
Regions are based on the United Nations Classification: EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; SSF = Sub-Saharan Africa.

GII rankings (except for the EU, which is placed at the end).

Sub-Saharan Africa (32 countries)

In recent years, three Sub-Saharan African countries have reached positions in the upper half of the GII rankings: Mauritius has been in the top half since 2011 and is 49th in 2015 (although down from 40th in 2014); South Africa, which has been in the top half of the rankings in all previous editions of the GII, is 60th in 2015 (down from 53rd in 2014); and Seychelles, which was in the top half of the rankings (51st) in 2014, is down to 65th in 2015. In addition,

Figure 3: GII scores and GDP per capita in PPP\$ (bubbles sized by population)



Note: 'Efficient innovators' are countries/economies with Innovation Efficiency ratios ≥ 0.71 ; 'Inefficient innovators' have ratios < 0.71 ; the trend line is a polynomial of degree three with intercept ($R^2 = 0.739$).

Figure 3: GII scores and GDP per capita in PPP\$ (bubbles sized by population): ISO-2 Country Codes

| Code | Country | Code | Country | Code | Country |
|------|----------------------------|------|--------------------|------|----------------------------|
| AE | United Arab Emirates | GM | Gambia | NG | Nigeria |
| AL | Albania | GN | Guinea | NI | Nicaragua |
| AM | Armenia | GR | Greece | NL | Netherlands |
| AO | Angola | GT | Guatemala | NO | Norway |
| AR | Argentina | GY | Guyana | NP | Nepal |
| AT | Austria | HK | Hong Kong (China) | NZ | New Zealand |
| AU | Australia | HN | Honduras | OM | Oman |
| AZ | Azerbaijan | HR | Croatia | PA | Panama |
| BA | Bosnia and Herzegovina | HU | Hungary | PE | Peru |
| BB | Barbados | ID | Indonesia | PH | Philippines |
| BD | Bangladesh | IE | Ireland | PK | Pakistan |
| BE | Belgium | IL | Israel | PL | Poland |
| BF | Burkina Faso | IN | India | PT | Portugal |
| BG | Bulgaria | IR | Iran, Islamic Rep. | PY | Paraguay |
| BH | Bahrain | IS | Iceland | QA | Qatar |
| BI | Burundi | IT | Italy | RO | Romania |
| BO | Bolivia, Plurinational St. | JM | Jamaica | RS | Serbia |
| BR | Brazil | JO | Jordan | RU | Russian Federation |
| BT | Bhutan | JP | Japan | RW | Rwanda |
| BW | Botswana | KE | Kenya | SA | Saudi Arabia |
| BY | Belarus | KG | Kyrgyzstan | SC | Seychelles |
| CA | Canada | KH | Cambodia | SD | Sudan |
| CH | Switzerland | KR | Korea, Rep. | SE | Sweden |
| CI | Côte d'Ivoire | KW | Kuwait | SG | Singapore |
| CL | Chile | KZ | Kazakhstan | SI | Slovenia |
| CM | Cameroon | LB | Lebanon | SK | Slovakia |
| CN | China | LK | Sri Lanka | SN | Senegal |
| CO | Colombia | LS | Lesotho | SV | El Salvador |
| CR | Costa Rica | LT | Lithuania | SZ | Swaziland |
| CV | Cabo Verde | LU | Luxembourg | TG | Togo |
| CY | Cyprus | LV | Latvia | TH | Thailand |
| CZ | Czech Republic | MA | Morocco | TJ | Tajikistan |
| DE | Germany | MD | Moldova, Rep. | TN | Tunisia |
| DK | Denmark | ME | Montenegro | TR | Turkey |
| DO | Dominican Republic | MG | Madagascar | TT | Trinidad and Tobago |
| DZ | Algeria | MK | TFYR of Macedonia | TZ | Tanzania, United Rep. |
| EC | Ecuador | ML | Mali | UA | Ukraine |
| EE | Estonia | MM | Myanmar | UG | Uganda |
| EG | Egypt | MN | Mongolia | US | United States of America |
| ES | Spain | MT | Malta | UY | Uruguay |
| ET | Ethiopia | MU | Mauritius | UZ | Uzbekistan |
| FI | Finland | MW | Malawi | VE | Venezuela, Bolivarian Rep. |
| FJ | Fiji | MX | Mexico | VN | Viet Nam |
| FR | France | MY | Malaysia | YE | Yemen |
| GB | United Kingdom | MZ | Mozambique | ZA | South Africa |
| GE | Georgia | NA | Namibia | ZM | Zambia |
| GH | Ghana | NE | Niger | ZW | Zimbabwe |

Table 6: Heatmap for GII top 10 economies and regional and income group averages (1–100)

| Country/Economy | GI | Institutions | Human capital and research | Infrastructure | Market sophistication | Business sophistication | Input | Knowledge and technology outputs | Creative outputs | Output | Efficiency |
|----------------------------------|--------------|--------------|----------------------------|----------------|-----------------------|-------------------------|--------------|----------------------------------|------------------|--------------|-------------|
| Switzerland | 68.29 | 89.62 | 59.22 | 58.63 | 72.33 | 59.97 | 67.95 | 72.41 | 64.84 | 68.63 | 1.01 |
| United Kingdom | 62.42 | 87.32 | 57.45 | 63.04 | 74.31 | 53.59 | 67.14 | 54.92 | 60.48 | 57.70 | 0.86 |
| Sweden | 62.39 | 90.00 | 61.67 | 62.75 | 63.70 | 56.92 | 67.01 | 60.45 | 55.10 | 57.77 | 0.86 |
| Netherlands | 61.58 | 91.88 | 51.72 | 60.50 | 61.77 | 55.26 | 64.23 | 55.93 | 61.92 | 58.93 | 0.92 |
| United States of America | 60.10 | 86.81 | 54.03 | 58.84 | 81.48 | 55.35 | 67.30 | 57.96 | 47.81 | 52.89 | 0.79 |
| Finland | 59.97 | 95.84 | 64.89 | 58.51 | 61.51 | 58.75 | 67.90 | 51.89 | 52.18 | 52.03 | 0.77 |
| Singapore | 59.35 | 95.44 | 60.89 | 69.54 | 71.57 | 63.13 | 72.11 | 51.47 | 41.71 | 46.59 | 0.65 |
| Ireland | 59.13 | 87.22 | 50.05 | 54.86 | 63.96 | 58.36 | 62.89 | 55.70 | 55.02 | 55.36 | 0.88 |
| Luxembourg | 59.01 | 83.54 | 40.84 | 54.23 | 56.23 | 60.24 | 59.02 | 49.06 | 68.96 | 59.01 | 1.00 |
| Denmark | 57.70 | 93.13 | 62.43 | 55.71 | 68.35 | 49.71 | 65.87 | 46.06 | 52.99 | 49.53 | 0.75 |
| Average | 37.01 | 62.10 | 31.15 | 39.25 | 48.55 | 35.66 | 43.35 | 28.23 | 33.10 | 30.67 | 0.69 |
| Region | | | | | | | | | | | |
| Northern America | 57.91 | 89.74 | 51.50 | 59.88 | 77.48 | 52.31 | 66.18 | 49.94 | 49.36 | 49.65 | 0.75 |
| Europe | 47.99 | 76.37 | 44.15 | 49.61 | 54.95 | 42.29 | 53.48 | 39.44 | 45.56 | 42.50 | 0.79 |
| South East Asia and Oceania | 42.68 | 65.87 | 38.43 | 46.25 | 56.16 | 41.70 | 49.68 | 35.53 | 35.84 | 35.69 | 0.72 |
| Northern Africa and Western Asia | 35.26 | 61.05 | 32.08 | 41.74 | 46.24 | 30.44 | 42.31 | 24.83 | 31.59 | 28.21 | 0.67 |
| Latin America and the Caribbean | 32.49 | 54.87 | 25.29 | 35.37 | 44.29 | 35.37 | 39.04 | 21.01 | 30.86 | 25.94 | 0.66 |
| Sub-Saharan Africa | 27.05 | 51.66 | 16.89 | 25.60 | 41.37 | 30.29 | 33.16 | 19.34 | 22.53 | 20.94 | 0.64 |
| Central and Southern Asia | 27.03 | 47.67 | 22.41 | 31.77 | 43.00 | 25.60 | 34.09 | 20.12 | 19.82 | 19.97 | 0.59 |
| Income level | | | | | | | | | | | |
| High income | 49.63 | 79.98 | 46.35 | 53.51 | 56.81 | 44.27 | 56.18 | 39.64 | 46.50 | 43.07 | 0.76 |
| Upper-middle income | 34.58 | 58.90 | 29.85 | 38.75 | 46.17 | 33.31 | 41.40 | 25.10 | 30.44 | 27.77 | 0.67 |
| Lower-middle income | 29.10 | 49.90 | 20.60 | 30.04 | 43.53 | 29.34 | 34.68 | 21.41 | 25.61 | 23.51 | 0.68 |
| Low income | 25.35 | 46.76 | 15.88 | 22.49 | 42.14 | 30.48 | 31.55 | 18.86 | 19.43 | 19.14 | 0.61 |



Note: Darker shadings indicate better performances. Countries/economies are classified according to the World Bank Income Group and the United Nations Regional Classifications (July 2012 and 11 February 2013, respectively)

six other countries from this region are ranked among the top 100: Senegal (84th), Botswana (90th), Kenya (92nd), Rwanda (94th), Mozambique (95th), and Malawi (98th). However, with 31 missing values, Seychelles ranks 1st in the list of economies with the highest number of missing values (see Annex 2). If one removes Seychelles from the top list for this reason, the top

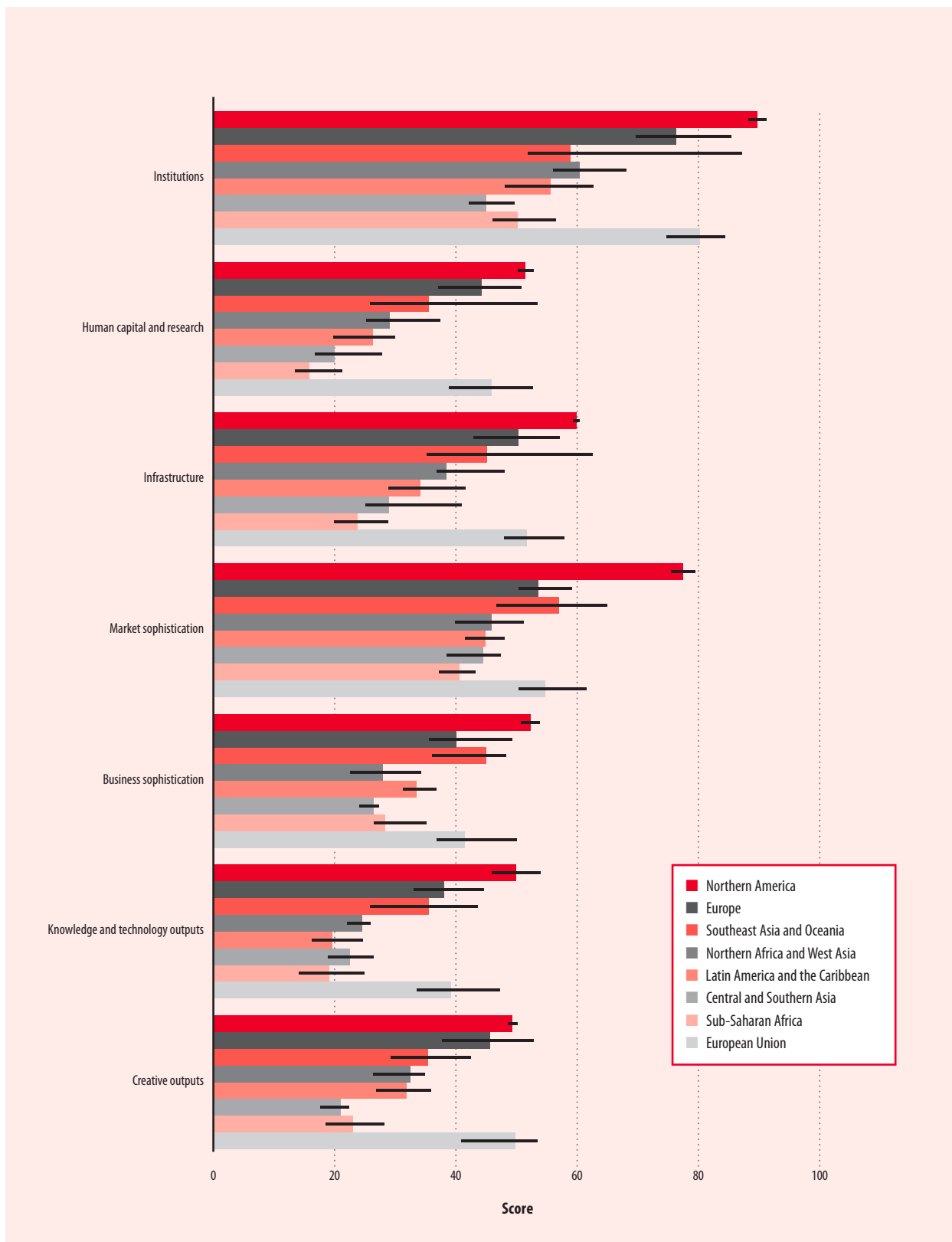
regional performers are Mauritius, South Africa, and Senegal.

The remaining 23 countries in this region can be found at the bottom of the rankings (100 or lower); 10 of them have improved since 2014. Malawi, Mozambique, Senegal, Rwanda, Kenya, Mali, Burkina Faso, and Uganda—also an innovation outperformer—are among the innovation achievers this year,

while Burundi, Niger, Namibia, Angola, Swaziland, Guinea, Togo, Seychelles, Botswana, and Sudan have below-par performances.

Countries from this region with the biggest improvement in GII rankings are Malawi and Angola (improving 15 places each), Senegal and Mali (14 each), Mozambique (12), Rwanda (8), Burkina Faso (7), and the United Republic of Tanzania (6).

Figure 4: Median scores by regional group and by pillar



Note: The bars show median scores (second quartiles); the lines show the range of scores between the first and third quartiles.

Nearly 50% of the countries with the highest number of missing values (20 or more) are from this region (see Annex 2). Because the GII does not impute values for missing data, including missing values can have a positive impact on some economies' overall rankings. If only those countries with data coverage of 75% or higher were assessed, Seychelles would lose its 2nd place ranking (it ties for the highest number of missing values), as would Rwanda (95th, data coverage of 72%) and Malawi (98th, data coverage of 71%), which now rank 7th and 9th in the region, respectively. This would make Senegal number 3 in the region, and bring in Namibia as 8th, Ghana as 9th, and Uganda as 10th. Conversely, two countries from this region should be commended for having over 90% data coverage: South Africa and Kenya.

Central and Southern Asia (11 economies)

In all prior editions of the GII, of the countries in Central and Southern Asia, only India (81st) and Kazakhstan (82nd) have consistently achieved positions among the first 100; this year, Bhutan (121st) drops out of the top 100 and is displaced by Sri Lanka (85th). The remaining seven countries of the region are found at the bottom of the rankings: the Islamic Republic of Iran (106th), Kyrgyzstan (109th), Tajikistan (114th), Uzbekistan (122nd), Bangladesh (129th), Pakistan (131st), and Nepal (135th). In 2015 only India remains an innovation achiever, with Nepal and Bhutan joining Tajikistan, Uzbekistan, Pakistan, Kazakhstan, and the Islamic Republic of Iran with below-par performances relative to their GDP (Figure 3). All of these countries, with the exception of Pakistan and Kazakhstan, are highlighted as being among those

economies with the highest number of missing values (see Annex 2).

India still comes 1st in the region, although it is now 8th among lower-middle-income countries (7th in 2014) and has dropped five positions in the overall GII since 2014. With more than 1.2 billion inhabitants and a robust economy, this lower-middle-income country is again among the innovation achievers and has also been highlighted as an innovation outperformer (see Chapters 2 and 8). Its new government is dedicated to focusing on further improving the economy, business investment, and innovation. India's strengths lie in the sub-pillars Knowledge diffusion (34th), R&D (44th), General infrastructure (43rd), and Investment (42nd). India has made some progress in Institutions (improving two places) and Knowledge and technology outputs (improving one place to reach 49th). Still, its position remains weaker in Institutions (104th) and Infrastructure (87th), with rankings deteriorating in Human capital and research (103rd), Market sophistication (72nd), Business sophistication (116th), and Creative outputs (95th) (falling from 96th, 50th, 93rd, and 82nd in 2014, respectively).

Sri Lanka makes commendable progress in its GII ranking from 105th in 2014 to 85th this year. With the exception of Creative outputs, Sri Lanka advances significantly in all GII pillars. Although some of this development can be linked to methodological changes (see Annex 2) and other countries worsening (particularly in Human capital and research), Sri Lanka makes advancements at the raw data level in areas such as the government's online service index and online e-participation,³⁴ GDP per unit of energy use, and communications and computer and information services imports.

Conversely, Sri Lanka worsened at the raw data level in areas such as ease of starting a business, ease of resolving insolvency, rule of law, employment in knowledge-intensive services, and new business density.

Latin America and the Caribbean (22 economies)

Latin America and the Caribbean includes only upper- and lower-middle-income economies except for high-income Barbados, Trinidad and Tobago, Chile, and Uruguay (see also Box 4 for details about this region).

This year Barbados (37th) reaches 1st place in the regional rankings,³⁵ followed by Chile (42nd) and upper-middle-income countries Costa Rica (51st), Mexico (57th), Panama (62nd), Colombia (67th), Uruguay (68th), and Brazil (70th)—all in the first half of the rankings. However, with 26 missing values, Barbados is among the economies with the highest number of missing values (see Annex 2). If Barbados is eliminated from the top list for this reason, the top regional performers are Chile, Costa Rica, and Mexico.

The remaining countries in the top 100 are Peru (71st), Argentina (72nd), Trinidad and Tobago (80th), Guyana (86th), Paraguay (88th), Dominican Republic (89th), Jamaica (96th), and El Salvador (99th). The remaining countries are ranked below 100: Guatemala (101st), the Plurinational State of Bolivia (104th), Honduras (113th), Ecuador (119th), Nicaragua (130th), and the Bolivarian Republic of Venezuela (132nd).

No countries in the region are among innovation achievers this year; seven display below-par performances relative to their GDP per capita (Figure 3): Jamaica and Dominican Republic (both drop from performing at par to

Box 4: Latin America and the Caribbean: A region with improving but largely untapped innovation potential

This year the Global Innovation Index (GII) identifies a small set of emerging economies that exhibit remarkable innovation performance over time. Innovation performance is reviewed by assessing a country's GI score and its performance in each of the seven innovation input and output factors relative to its level of development (see Chapter 2).

In this analysis, no economies from Latin America qualify as innovation outperformers.¹

However, between 2011 and 2014, only Costa Rica (2013) and Guyana (2011) were once reported as outperforming on innovation relative to their development level.² The fact that Chile is a high-income economy—and thus is now competing with world leaders—makes it harder for it to outperform relative to its development level.

Figure 4.1 and the data for 2015 show that only Chile, Colombia, and Costa Rica

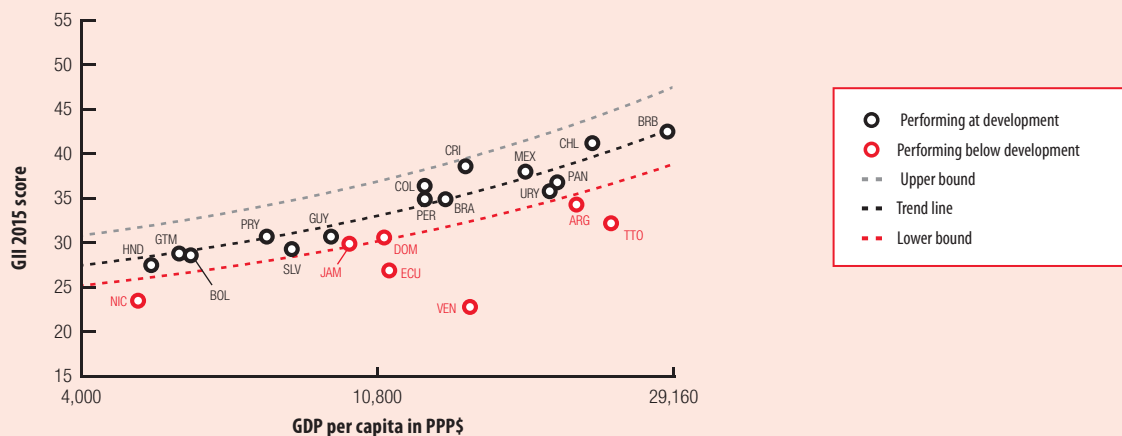
detach themselves from their expected performance and move in the direction of outperforming relative to their GDP per capita.³ Mexico and Peru are next in line, and they also do well on various innovation inputs and outputs in 2015.

This tendency of the relatively strong performance exhibited by the countries noted above is also mirrored by the regional comparison. Since 2011—in addition to Argentina, Brazil, and Uruguay—Chile, Colombia, and Costa Rica have consistently performed above the region's average GI, both overall as well as on input and output metrics. Mexico and Peru excel primarily in the area of innovation inputs.

When it comes to outperformance at the pillar level, six Latin-American economies scored above their income group average in four or more pillars almost every

year since 2011: Brazil and Costa Rica (every year) and Argentina, El Salvador, Panama, and Peru (every year except one) (see Table 4.1). Nine countries have done so in 2015. Colombia and Costa Rica both outperform in five or more pillars in 2015. At the regional level both these economies also outperform in most pillars, with the exception of Market sophistication for Colombia and Creative outputs for Costa Rica. Chile is far from outperforming its high-income peers in four or more pillars, yet its notable performance is shown by above-average regional scores in all seven pillars. Mexico stands out in 2015 because it is the only country in the region to score above the upper-middle-income averages in all seven pillars this year.

Figure 4.1: Latin America and the Caribbean economies closest to the innovation achievers' threshold, 2015



Note: ARG = Argentina; BOL = Bolivia, Plurinational State of; BRB = Barbados; BRA = Brazil; CHL = Chile; COL = Colombia; CRI = Costa Rica; DOM = Dominican Republic; ECU = Ecuador; GTM = Guatemala; GUY = Guyana; HND = Honduras; JAM = Jamaica; MEX = Mexico; NIC = Nicaragua; PAN = Panama; PER = Peru; PRY = Paraguay; SLV = El Salvador; TTO = Trinidad and Tobago; URY = Uruguay; and VEN = Venezuela, Bolivarian Republic.

(Continued on next page)

performing below-par), Nicaragua, Argentina, Ecuador, Trinidad and Tobago, and the Bolivarian Republic of Venezuela. Honduras, El Salvador, and Uruguay, all

improved since 2014, move out of this underperformer group.

Barbados is ranked 37th, up four positions from 41st place in 2014. With a population of 0.3 million and a GDP per capita of PPP\$25,193,

Barbados ranks 46th in the Input Sub-Index (down from 38th in 2014). It comes in at 36th in the Output Sub-Index (up from 53rd), where its significant improvement is determined by better rankings in

Box 4: Latin America and the Caribbean: A region with improving but largely untapped innovation potential (cont'd.)

Table 4.1: Latin America and the Caribbean: Innovation achievers and pillar outperformers, 2011–15

| Economy | Income group | Years as an innovation achiever (total) | Years as a pillar outperformer (total) |
|----------------------------|---------------------|---|--|
| Argentina | Upper-middle income | | 2014, 2013, 2012, 2011 (4) |
| Bolivia, Plurinational St. | Lower-middle income | | 2015, 2013 (2) |
| Brazil | Upper-middle income | | 2015, 2014, 2013, 2012, 2011 (5) |
| Colombia | Upper-middle income | | 2015, 2013 (2) |
| Costa Rica | Upper-middle income | 2013 (1) | 2015, 2014, 2013, 2012, 2011 (5) |
| El Salvador | Lower-middle income | | 2015, 2014, 2013, 2012 (4) |
| Guatemala | Lower-middle income | | 2012 (1) |
| Guyana | Lower-middle income | 2011 (1) | 2013, 2012, 2011 (3) |
| Honduras | Lower-middle income | | 2013 (1) |
| Panama | Upper-middle income | | 2015, 2014, 2012, 2011 (4) |
| Mexico | Upper-middle income | | 2015, 2014, 2013 (3) |
| Nicaragua | Lower-middle income | | 2013, 2012 (2) |
| Paraguay | Lower-middle income | | 2015, 2014, 2012 (3) |
| Peru | Upper-middle income | | 2015, 2014, 2013, 2012 (4) |

Notes

- For a country to be labeled as an 'innovation outperformer' it has to be identified as an 'innovation achiever' and it must also score above its income group average in four or more GII pillars for two or more years, including the two most recent—2013 and 2014. In 2015 11 economies were identified as innovation outperformers this was 2013 and 2014. Northern America is the only other region that has no representation among this group of 11 innovation outperformers. This is because the countries that comprise this region are among the top 25 innovation leaders and hence not eligible for innovation outperformer status. See Chapter 2 for more details.
- Guyana is missing 33% of the data points for its analysis (27 out of 80 indicators have no data available).
- The general trendline is defined by the scores and economic development level of all countries considered in the GII. The threshold bounds are defined as 10% above and 10% below the scores defined by trendline (see Box 2 in Chapter 2 for more details).

the pillars of Knowledge and technology outputs (18th up from 33rd) and Creative outputs (63rd up from 85th).

Brazil is ranked 70th (down from 61st in 2014), 19th among upper-middle-income countries (down from 16th), and 8th in the region (down from 5th). Although Brazil drops in its overall GII ranking, it improves in a number of innovation inputs. The country improves in six of the eight variables in Institutions, bringing up this pillar ranking by 11 places to reach 85th. In addition, it improves in Market sophistication by two places to 87th, a result of bettering eight of this pillar's nine variables. Conversely, Brazil's major falls take place in both innovation output pillars, where it drops from 65th to 72nd in Knowledge and technology outputs and from 64th to 82nd in Creative outputs. Although its fall in Knowledge diffusion is

mainly the result of other countries improving in this area, it is declining in ICTs and business and organizational model creation, and in online creativity, as measured by the GII.

Northern Africa and Western Asia (19 economies)

Israel (22nd) and Cyprus (34th) achieve the top positions in the region for the third year running. Three of the six countries of the Gulf Cooperation Council (GCC) come next: Saudi Arabia (43rd), the United Arab Emirates (47th), and Qatar (50th).

Although the scaling by GDP of a few indicators (required for comparability across countries) penalizes the relatively wealthy, resource-rich countries of the GCC, they often exhibit relative shortcomings in important areas in which this effect does not prevail, such as Institutions, Market sophistication, and Business

sophistication. This phenomenon—reminiscent of what has been called the 'resource curse' or the 'paradox of plenty'—has been discussed in the GII before (see the 2013 and 2014 reports). These GCC countries, however, are uniquely positioned to do better in the years to come. Many of them have been diversifying towards innovation-rich sectors already.

Furthermore, the revisions to the PPP conversion factors implemented by the World Bank's International Comparison Program (ICP) (refer to Annex 2), a scaling factor used for 11 of the 79 GII variables, had a particularly significant impact on nine economies in this region, especially the United Arab Emirates, Jordan, Kuwait, Bahrain, Saudi Arabia, and Oman. Although the revised PPP values did not greatly affect the overall GII rankings in the region,

they did affect some of the variable-level rankings.

Most of the countries in this region rank in the top 100, including Turkey (58th), Bahrain (59th), Armenia (61st), Oman (69th), Georgia (73rd), Lebanon (74th), Jordan (75th), Tunisia (76th), Kuwait (77th), Morocco (78th), Azerbaijan (93rd), and Egypt (100th). Only two fall out of the top 100—Algeria (126th) and Yemen (137th).

Although Israel is the only innovation leader in the region, Armenia and Jordan remain in the group of innovation achievers (both are also flagged as innovation outperformers; see Chapter 2) and are joined by Morocco this year, while Georgia just falls out of this group. Morocco has made a notable improvement of eight places—another example of a country putting in effort to improve its innovation metrics. Improving at the raw data level in expenditure on education and government expenditure on secondary education per pupil are the main reasons for Morocco's progress in Human capital and research, where it advances from 64th to 56th. Conversely, its improvement in Infrastructure is linked to methodological changes to the UN e-Government Survey methodology questionnaire (variables 3.1.3 and 3.1.4).

Lebanon, Azerbaijan, Saudi Arabia, the United Arab Emirates, Yemen, Algeria, Bahrain, Oman, Kuwait, and Qatar show below-par performances compared to their income levels (Figure 3).

Israel falls seven places from 15th in 2014 to 22nd in 2015, yet still remains number 1 in the region. With an innovation input rank of 22 and an output rank of 16, it has improved its overall efficiency ratio ranking from 42nd to 20th. Israel's biggest drops are in Human capital and research (5th in 2014 to

11th in 2015), Market sophistication (12th in 2014 to 21st in 2015), and Business sophistication (3rd in 2014 to 11th in 2015). Since last year Israel has considerably improved its data availability. But while helping to provide a more accurate picture of its innovation ranking, the inclusion of these new data is partially responsible for Israel's fall in Human capital and research and its overall ranking (see Annex 2). Israel also makes some notable improvements at the variable level, particularly in applied tariff rates, communications, computer and information services imports, and cultural and creative services exports.

South East Asia and Oceania (16 economies)

This region's 16 economies range across all income groups. The first five rank among the top 25 in the three indices (GII, inputs, and outputs): Singapore (7th), which displaces Hong Kong (China) at the top of the regional rankings this year; Hong Kong (China), which is now 11th globally; the Republic of Korea (14th); New Zealand (15th); and Australia (17th). These five economies, as well as Japan (19th), are innovation leaders, all placing within the top 25.

Among upper-middle-income economies, China (29th) and Malaysia (32nd) rank high, with Thailand falling back down the ranks from 48th in 2014 to 55th in 2015 and Fiji performing poorly at 115th. Lower-middle-income Viet Nam keeps its innovation achiever status—and is flagged as an innovation outperformer—while advancing 19 places to 52nd. Mongolia drops to 66th, the Philippines progresses to 83rd, and Indonesia falls to 97th. Low-income Cambodia now places in the top 100 (up from 106th in 2014 to 91st in 2015) and Myanmar is ranked 138th.

This region has six innovation achievers: China, Viet Nam, Mongolia (also an innovation outperformer), Malaysia, Cambodia (a new addition), and Thailand. With the exception of Northern America, South East Asia and Oceania is the region with the lowest number of economies with below-par innovation performances (only Myanmar; see Figure 3).

For the fourth year in a row **China** maintains its strengths: overall, it preserves its 29th place ranking and is 1st among upper-middle-income countries and 7th in the region. China advances in all areas of the Institutions pillar (ranked 91st) and makes slight improvements in Human capital and research (up one place to 31st), Infrastructure (up seven places to 32nd), Business sophistication (up one place to 31st), and Creative outputs (up five places to 54th). China has also been flagged as an innovation outperformer in this year's edition (see Chapters 2 and 6). Conversely, China dropped slightly in Market sophistication (down five places to 59th) and Knowledge and technology outputs (down one place to 3rd). China is only 3.5 points away from making it into the GII top 25, an improvement over the 3.9 points away it was in 2014.³⁶

Malaysia, improving one place to reach 32nd this year, has put considerable effort into improving its innovation performance and coordinating its STI via the Ministry of Science, Technology and Innovation. The result of this effort is also evident in its low level of missing values (only two). It improves in three overall pillars of the GII: Institutions (by eight places to 42nd), Business sophistication (by seven places to 22nd), and Knowledge technology and outputs (by four places to 35th). Conversely, while it dropped only seven places

in Creative outputs, it dropped nine and ten places in Infrastructure and Market sophistication, respectively. Malaysia has also been flagged as an innovation outperformer in this year's edition (see Chapter 2).

Europe (39 countries)

As last year, a total of 16 European countries (13 of them from the EU) are among the top 25: Switzerland (1st), the UK (2nd), Sweden (3rd), the Netherlands (4th), Finland (6th), Ireland (8th), Luxembourg (9th), Denmark (10th), Germany (12th), Iceland (13th), Austria (18th), Norway (20th), France (21st), Estonia (23rd), the Czech Republic (24th), and Belgium (25th). All of these achieve positions in the top 25 in both the Output and Input Sub-Indices with the exception of Estonia (26th in inputs), the Czech Republic (27th in inputs), and Belgium (28th in outputs). It should be noted that most of the countries in this region have the fewest missing values, leading them to display the most accurate GII rankings (see Annex 2).

Sixteen countries follow among the top 50 and maintain relatively stable rankings since 2014, including all remaining EU countries, with the exception of Romania (54th): Malta (26th), Spain (27th), Slovenia (28th), Portugal (30th), Italy (31st), Latvia (33rd), Hungary (35th), Slovakia (36th), Lithuania (38th), Bulgaria (39th), Croatia (40th), Montenegro (41st), the Republic of Moldova (44th), Greece (45th), Poland (46th), and the Russian Federation (48th).

The remaining European economies, with the exception of Ukraine, improve their overall GII rankings from 2014 to 2015: Belarus (53rd, up from 58th in 2014), the Former Yugoslav Republic of Macedonia (56th, up from 60th in 2014), Serbia (63rd, 67th in 2014), Ukraine (64th, 63rd in 2014), Bosnia

and Herzegovina (79th, 81st in 2014), and Albania (87th, 94th in 2014). In addition, the Republic of Moldova and Ukraine are positioned among the innovation achievers (the Republic of Moldova is also an innovation outperformer), while Greece and Albania show below-par performances (see Figure 3).

Ranking 48th, up one position from its 49th place in 2014, **the Russian Federation** is ranked 32nd in Europe. This year the country maintains a relatively stable position across innovation inputs (from 56th in 2014 to 52nd in 2015) and outputs (from 45th in 2014 to 49th in 2015). Its biggest improvements lie in the Market and Business sophistication pillars, improving 17 positions to 94th and 16 positions to 44th place, respectively. Within these pillars, the Russian Federation's strengths are employment in knowledge-intensive services, the percentage of females employed with advanced degrees, royalties and license fee payments, national office patent applications, national office utility model applications, citable documents H index, and FDI net outflows. Its biggest fall is in Infrastructure, dropping 14 places to 65th. Its main weakness in this pillar is GDP per unit of energy use.

Conclusions

The theme for this year's GII is 'Effective Innovation Policies for Development'. This chapter has provided a current assessment of global innovation expenditures in the context of a fragile economic recovery. In addition, it has analysed opportunities and challenges when designing innovation policies in a developing country context.

Finally, this chapter has presented the main GII 2015 results, distilling six main messages. The

six key messages addressed by this chapter—that quality matters at the top; that emerging economies are catching up to rich economies; that institutions matter (especially because of their role in establishing rules for international interaction); that the Business sophistication pillar makes a particularly big difference among low-income economies; that encouraging signs are emerging in Sub-Saharan Africa; and that the BRICS economies, especially China, are gaining ground in innovation quality—indicate that there is potential for those economies on the cusp of the top 10 or top 25 to make their way into the top rankings, provided they focus their efforts on improving key areas of innovation such as innovation institutions and the quality of innovation.

The remaining chapters provide more details on developing countries that have outperformed on innovation. Chapter 2 identifies a set of low- and middle-income countries that—over time—have succeeded in outperforming on innovation generally and on specific innovation inputs and outputs more specifically. Chapters 3 through 11 then provide additional details on innovation policies adapted in some of these developing countries, assessing their strengths and further development potential.

Notes and References for Box 1

Notes

- 1 Data are based on the UNESCO-UIS Science & Technology Data Center, updated February 2015. Data used: GERD, performed by business enterprise (in '000 PPP\$, constant prices, 2005).

Economies included: Afghanistan, Albania, Algeria, Angola, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia (Plurinational State of), Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Canada, Central African Republic, Chad, Chile, China, Colombia, Comoros, Congo, Costa Rica, Croatia, Cuba, Cyprus, Czech Republic, Côte d'Ivoire, Democratic Republic of the Congo, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong (China), Hungary, Iceland, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Israel, Italy, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Lao People's Democratic Republic, Latvia, Lebanon, Lesotho, Liberia, Libya, Lithuania, Luxembourg, Macao (China), Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Mauritania, Mauritius, Mexico, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nepal, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Puerto Rico, Qatar, Republic of Korea, the Republic of Moldova, Romania, Russian Federation, Rwanda, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sudan, Suriname, Swaziland, Sweden, Switzerland, Taiwan (China), Tajikistan, Thailand, the Former Yugoslav Republic of Macedonia, Timor-Leste, Togo, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Uganda, Ukraine, the United Arab Emirates, the United Kingdom, the United Republic of Tanzania, the United States of America, Uruguay, Uzbekistan, Venezuela (Bolivarian Republic of), Viet Nam, Yemen, Zambia, and Zimbabwe.

- 2 Data are based on the OECD Main Science and Technology Indicators (MSTI), updated 4 February 2015. Data used: Gross domestic expenditure on R&D (GERD) at constant 2005 PPP\$. OECD countries are represented by the MSTI indicator 'OECD-total'.

- 3 UNESCO-UIS Science & Technology Data Center and OECD Main Science and Technology Indicators (MSTI), updated February 2015. Data used: GERD, performed by business enterprise (in '000 PPP\$, constant prices, 2005).

Economies included are the same as those listed in endnote 1.

- 4 OECD MSTI, updated 4 February 2015. Data used: Business enterprise expenditure on R&D (BERD) at constant 2005 PPP\$. See Main Science and Technology Indicators (MSTI) indicator 'OECD-total'.
- 5 Based on the *2014 EU Industrial R&D Investment Scoreboard* from the European Commission (DG Research and Innovation and DG Joint Research Centre). The *2014 Scoreboard* is based on a changing sample of the top 2,500 R&D spenders of a given year. What is measured is the total value of these firms' global R&D expenditures, irrespective of the location where the relevant R&D takes place. The distribution of countries in global top 2,500 R&D spenders shows that firms with headquarters in the United States of America, Japan, and Germany were still the top R&D spenders in 2013. Firms in China have increased their share to 3.8% in 2013, while the share of Japanese firms has decreased to 15.9%.
- 6 PricewaterhouseCoopers and Strategy&, 2014. This growth is based on a changing sample of firms of the top 1,000 R&D spenders of a given year. It also measures the total value of their global R&D expenditures, irrespective of the location where the relevant R&D takes place.

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Notes and References for Chapter 1

Notes

- 1 IMF, 2015a; OECD, 2015.
- 2 IMF, 2015a.
- 3 Conference Board, 2015; IMF, 2015b.
- 4 World Bank, 2015.
- 5 OECD, 2009; WIPO, 2010; Dutta et al., 2013, 2014.
- 6 Dutta et al., 2014.
- 7 Dutta et al., 2014, based on UNESCO Institute for Statistics R&D data and OECD Main Science and Technology Indicators. See also OECD, 2014.
- 8 The biggest increase in R&D intensity between 2008 and 2013 was achieved by the Republic of Korea, with a jump from 3.12% to 4.15% of GDP. Slovenia exhibited an increase of nearly 1%, expanding from 1.66% in 2008 to 2.65% in 2013, while the Czech Republic, China, and Serbia have increased their R&D Intensity by 0.7%, 0.61%, and 0.59%.
- 9 WIPO, 2014. Note also that patent applications under WIPO's Patent Cooperation Treaty (PCT) saw a 4.5% increase in 2014; this represents a fall in growth compared with previous years (WIPO, 2015).
- 10 WIPO, 2011a.
- 11 It must be noted that even in these experienced innovative nations, deciding and implementing the right innovation policy mix remains a continual challenge because innovation parameters and objectives tend to evolve. See OECD, 2014.
- 12 The innovation system approach aims to provide a holistic framework to analyse innovation performance (Freeman, 1987; Lundvall, 1992; Edquist, 1997). It starts from the assumption that firms do not conduct innovation in isolation, but instead are part of a larger system made of multiple agents—for example, universities, financial institutions, governments, and so on—that interact with each other. The functioning and outcomes of innovation systems also depend on institutional, organizational, historical, and political framework conditions.
- 13 OECD, 2010, proposes a conceptual innovation policy framework of this sort.
- 14 See also OECD, 2014.
- 15 Technopolis, 2011.
- 16 Chaminade et al., 2009; Lundvall et al., 2009; Gault et al., 2010. This heterogeneity is well reflected in the 11 countries chosen as developing-country outperformers this year, which range from Armenia and China to Uganda.
- 17 Kraemer-Mbula and Wamae, 2010; WIPO, 2011b.
- 18 Maharajh and Kraemer-Mbula, 2010.

- 19 Mashelkar, 2012.
- 20 Fu et al., 2014; Kraemer-Mbula and Wunsch-Vincent, forthcoming.
- 21 Srinivas and Sutz, 2008.
- 22 China, which relies heavily on the number of patents, is an exception to this finding.
- 23 The Russian Federation, which is now classified as a high-income economy, is an exception to this finding.
- 24 Economies are grouped according to the World Bank classification, which divides them according to 2011 gross national income (GNI) per capita, calculated using the World Bank Atlas method. The groups are: low income, US\$1,025 or less; lower-middle income, US\$1,026 to US\$4,035; upper-middle income, US\$4,036 to US\$12,475; and high income, US\$12,476 or more.
- 25 Since 2012, the regional groups have been based on the United Nations Classification: EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.
- 26 Note the change in UN methodology for indicators 3.1.3 and 3.1.4 (see Annex 2).
- 27 Note the change in UN methodology for indicators 3.1.3 and 3.1.4 (see Annex 2).
- 28 Ireland's improvements in these sub-pillars are partly the result of missing data for indicator 7.1.1 (domestic res trademark app./bn PPP\$ GDP).
- 29 Please note the change in UN methodology at the source for indicators 3.1.3 and 3.1.4 (see Annex 2).
- 30 This variable was introduced into the GII model in 2015.
- 31 Following the financial crisis, the Icelandic government introduced a number of measures, including capital controls. These measures strongly affected the patterns of FDI net outflows in Iceland, making a significant impact on Iceland's performance in Knowledge and technology outputs.
- 32 It should be noted that Cambodia has a significantly high number of missing values (23), which may impact its overall GII ranking.
- 33 The trend line is defined as a polynomial of degree 3 with intercept.
- 34 Despite some changes in the UN e-Government Survey methodology questionnaire to better reflect new trends, Sri-Lanka makes very good progress in e-government development.

- 35 This regional ranking, however, should take into account the fact that a significant number of variables are missing for Barbados. If Barbados was disregarded in the rankings due to low data coverage, Chile would be ranked 1st in the region. Conversely, Colombia is one of the best-performing economies in terms of data coverage, with only one missing value. Colombia also improved its overall GII ranking by one place this year.
- 36 In order to make it into the top 25, typically a country needs a score of 50. However, there have been instances where a country has had a score of over 50, but did not make it into the top 50, because there were already 50 countries above it.

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The Global Innovation Index (GII) Conceptual Framework

The rationale for the Global Innovation Index

The Global Innovation Index (GII) project was launched by INSEAD in 2007 with the simple goal of determining how to find metrics and approaches that better capture the richness of innovation in society and go beyond such traditional measures of innovation as the number of research articles and the level of research and development (R&D) expenditures.¹

There were several motivations for setting this goal. First, innovation is important for driving economic progress and competitiveness—both for developed and developing economies. Many governments are putting innovation at the centre of their growth strategies. Second, the definition of innovation has broadened—it is no longer restricted to R&D laboratories and to published scientific papers. Innovation could be and is more general and horizontal in nature, and includes social innovations and business model innovations as well as technical ones. Last but not least, recognizing and celebrating innovation in emerging markets is seen as critical for inspiring people—especially the next generation of entrepreneurs and innovators.

The GII helps to create an environment in which innovation factors are under continual evaluation, and it provides a key tool and a rich database of detailed metrics for refining innovation policies.

The GII is not meant to be the ultimate and definitive ranking of economies with respect to innovation. Measuring innovation outputs and impacts remains difficult; hence great emphasis is placed on measuring the climate and infrastructure for innovation and on assessing related outcomes.

Although the end results take the shape of several rankings, the GII is more concerned with improving the ‘journey’ to better measure and understand innovation and with identifying targeted policies, good practices, and other levers that foster innovation. The rich metrics can be used—on the level of the index, the sub-indices, or the actual raw data of individual variables—to monitor performance over time and to benchmark developments against countries in the same region or of the same income category.

Drawing on the expertise of the GII’s Knowledge Partners and its prominent Advisory Board, the GII model is continually updated to reflect the improved availability of statistics and our understanding of innovation. This year, however, the model has reached a level of maturity that requires only minor updates (refer to Annex 2).

An inclusive perspective on innovation

The GII adopts a broad notion of innovation, originally elaborated in the *Oslo Manual* developed by the European Communities and

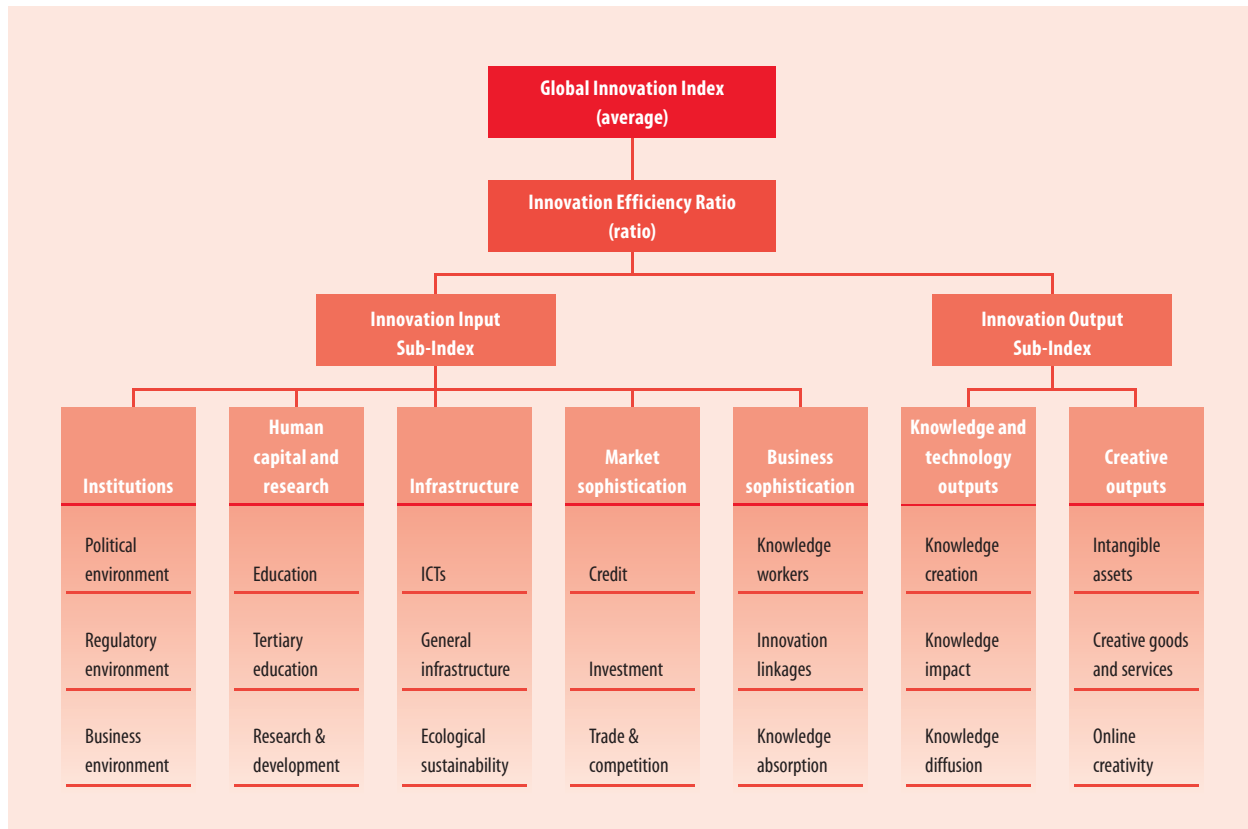
the Organisation for Economic Co-operation and Development (OECD):²

An innovation is the implementation of a new or significantly improved product (good or service), a new process, a new marketing method, or a new organizational method in business practices, workplace organization, or external relations.

This definition reflects the evolution of the way innovation has been perceived and understood over the last two decades.³

Previously economists and policy makers focused on R&D-based technological product innovation, largely produced in-house and mostly in manufacturing industries. This type of innovation was performed by a highly educated labour force in R&D-intensive companies. The process leading to such innovation was conceptualized as closed, internal, and localized. Technological breakthroughs were necessarily ‘radical’ and took place at the ‘global knowledge frontier’. This characterization implied the existence of leading and lagging countries, with low- or middle-income economies only catching up.

Today, innovation capability is seen more as the ability to exploit new technological combinations; it embraces the notion of incremental innovation and ‘innovation without research’. Non-R&D innovative expenditure is an important component of reaping the rewards of technological innovation. Interest in

Figure 1: Framework of the Global Innovation Index 2015

understanding how innovation takes place in low- and middle-income countries is increasing, along with an awareness that incremental forms of innovation can impact development. Furthermore, the process of innovation itself has changed significantly. Investment in innovation-related activity has consistently intensified at the firm, country, and global levels, adding both new innovation actors from outside high-income economies and nonprofit actors. The structure of knowledge production activity is more complex and geographically dispersed than ever.

A key challenge is to find metrics that capture innovation as it actually happens in the world today.⁴ Direct official measures that quantify innovation outputs remain extremely scarce.⁵ For example, there are no official statistics on the amount of

innovative activity—defined as the number of new products, processes, or other innovations—for any given innovation actor, let alone for any given country (see Box 1, Annex 1 of Chapter 1 in the GII 2013). Most measures also struggle to appropriately capture the innovation outputs of a wider spectrum of innovation actors, such as the services sector or public entities.

The GII aims to move beyond the mere measurement of such simple innovation metrics. To do so will require the integration of new variables, with a trade-off between the quality of the variable on the one hand and achieving good country coverage on the other hand.

The timeliest possible indicators are used for the GII: 29.8% of data obtained are from 2014, 31.9% are from 2013, 12.5% are from 2012, 4.4%

from 2011, and the small remainder (5.6%) are from earlier years.⁶

The GII conceptual framework

The GII is an evolving project that builds on its previous editions while incorporating newly available data and that is inspired by the latest research on the measurement of innovation. This year the GII model includes 141 countries/economies that represent 95.1% of the world's population and 98.6% of the world's GDP (in current US dollars). The GII relies on two sub-indices—the Innovation Input Sub-Index and the Innovation Output Sub-Index—each built around pillars. Four measures are calculated (see Figure 1):

- 1. Innovation Input Sub-Index:** Five input pillars capture elements

of the national economy that enable innovative activities.

2. Innovation Output Sub-Index:

Innovation outputs are the results of innovative activities within the economy. Although the Output Sub-Index includes only two pillars, it has the same weight in calculating the overall GII scores as the Input Sub-Index.

3. The overall GII score is the simple average of the Input and Output Sub-Indices.

4. The Innovation Efficiency Ratio is the ratio of the Output Sub-Index to the Input Sub-Index. It shows how much innovation output a given country is getting for its inputs.

Each pillar is divided into three sub-pillars, each of which is composed of individual indicators, for a total of 79 indicators. The GII pays special attention to presenting a scoreboard for each economy that includes strengths and weaknesses (Appendix I Country/Economy Profiles), making accessible the data series (Appendix II Data Tables), and providing data sources and definitions (Appendix III) and detailed technical notes (Appendix IV). Adjustments to the GII framework, including a detailed analysis of the factors influencing year-on-year changes, are detailed in Annex 2. In addition, since 2011 the GII has been submitted to an independent statistical audit performed by the Joint Research Centre of the European Union (results are detailed in Annex 3).

A table is included here for each pillar. That table provides a list of the pillar's indicators, specifying their type (composite indicators are identified with an asterisk '**', survey questions with a dagger '+', and the remaining indicators are hard data);

Table 1a: Institutions pillar

| Indicator | Average value by income group | | | | Mean |
|---|-------------------------------|---------------------|---------------------|------------|-------|
| | High income | Upper-middle income | Lower-middle income | Low income | |
| 1 Institutions | | | | | |
| 1.1 Political environment | | | | | |
| 1.1.1 Political stability*..... | 0.70 | -0.23 | -0.57 | -0.83 | -0.08 |
| 1.1.2 Government effectiveness*..... | 1.18 | -0.10 | -0.48 | -0.84 | 0.14 |
| 1.2 Regulatory environment | | | | | |
| 1.2.1 Regulatory quality ^a | 1.12 | -0.07 | -0.42 | -0.70 | 0.16 |
| 1.2.2 Rule of law ^a | 1.13 | -0.30 | -0.59 | -0.81 | 0.04 |
| 1.2.3 Cost of redundancy dismissal, salary weeks ^b | 14.55 | 18.98 | 25.63 | 20.05 | 19.23 |
| 1.3 Business environment | | | | | |
| 1.3.1 Ease of starting a business*..... | 89.53 | 82.42 | 82.20 | 68.95 | 82.78 |
| 1.3.2 Ease of resolving insolvency*..... | 68.18 | 49.08 | 36.67 | 36.62 | 50.73 |
| 1.3.3 Ease of paying taxes*..... | 83.06 | 69.42 | 61.05 | 62.94 | 71.08 |

Note: (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

their weight in the index (indicators with half weight are identified with the letter 'a'); and the direction of their effect (indicators for which higher values imply worse outcomes are identified with the letter 'b'). The table then provides each indicator's average values (in their respective units) per income group (World Bank classification) and for the whole sample of 141 economies retained in the final computation (Tables 1a through 1g).

The Innovation Input Sub-Index

The first sub-index of the GII, the Innovation Input Sub-Index, has five enabler pillars: Institutions, Human capital and research, Infrastructure, Market sophistication, and Business sophistication. Enabler pillars define aspects of the environment conducive to innovation within an economy.

Pillar 1: Institutions

Nurturing an institutional framework that attracts business and fosters growth by providing good governance and the correct levels of protection and incentives is essential to innovation. The Institutions pillar captures the institutional framework of a country (Table 1a).

The Political environment sub-pillar includes three indices that reflect perceptions of the likelihood that a government might be destabilized; the quality of public and civil services, policy formulation, and implementation.

The Regulatory environment sub-pillar draws on two indices aimed at capturing perceptions on the ability of the government to formulate and implement cohesive policies that promote the development of the private sector and at evaluating the extent to which the rule of law prevails (in aspects such as contract enforcement, property rights, the police, and the courts). The third indicator evaluates the cost of redundancy dismissal as the sum, in salary weeks, of the cost of advance notice requirements added to severance payments due when terminating a redundant worker.

The Business environment sub-pillar expands on three aspects that directly affect private entrepreneurial endeavours by using the World Bank indices on the ease of starting a business; the ease of resolving insolvency (based on the recovery rate recorded as the cents on the dollar recouped by creditors through reorganization, liquidation, or debt

Table 1b: Human capital & research pillar

| Indicator | Average value by income group | | | | Mean |
|--|-------------------------------|---------------------|---------------------|------------|----------|
| | High income | Upper-middle income | Lower-middle income | Low income | |
| 2 Human capital and research | | | | | |
| 2.1 Education | | | | | |
| 2.1.1 Expenditure on education, % GDP..... | 5.25 | 4.66 | 4.79 | 4.02 | 4.79 |
| 2.1.2 Govt expend. on edu./pupil, secondary ¹ | 25.32 | 17.82 | 20.17 | 25.45 | 22.38 |
| 2.1.3 School life expectancy, years..... | 16.10 | 13.85 | 11.49 | 9.65 | 13.37 |
| 2.1.4 PISA scales in reading, maths & science ^a | 496.34 | 427.85 | 360.19 | n/a | 469.85 |
| 2.1.5 Pupil-teacher ratio, secondary ^{a,b} | 10.89 | 15.46 | 19.75 | 29.25 | 17.39 |
| 2.2 Tertiary education | | | | | |
| 2.2.1 Tertiary enrolment, % gross ^a | 65.03 | 42.16 | 24.31 | 7.73 | 40.44 |
| 2.2.2 Graduates in science & engineering, %..... | 22.70 | 21.40 | 18.96 | 17.59 | 20.98 |
| 2.2.3 Tertiary inbound mobility, % ^a | 9.52 | 4.04 | 1.50 | 1.94 | 5.31 |
| 2.3 Research and development (R&D) | | | | | |
| 2.3.1 Researchers, FTE/mn pop..... | 3,683.00 | 733.34 | 266.97 | 53.44 | 1,761.81 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 1.64 | 0.55 | 0.28 | 0.38 | 0.91 |
| 2.3.3 QS university ranking, average score top 3*..... | 43.92 | 17.58 | 5.81 | 0.63 | 21.18 |

Note: (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.
 1. Scaled by percent of GDP per capita.

Table 1c: Infrastructure pillar

| Indicator | Average value by income group | | | | Mean |
|--|-------------------------------|---------------------|---------------------|------------|----------|
| | High income | Upper-middle income | Lower-middle income | Low income | |
| 3 Infrastructure | | | | | |
| 3.1 Information and communication technologies (ICTs) | | | | | |
| 3.1.1 ICT access*..... | 7.99 | 5.58 | 4.07 | 2.53 | 5.63 |
| 3.1.2 ICT use*..... | 6.24 | 3.13 | 1.59 | 0.49 | 3.47 |
| 3.1.3 Government's online service*..... | 0.71 | 0.46 | 0.36 | 0.22 | 0.48 |
| 3.1.4 E-participation*..... | 0.67 | 0.46 | 0.39 | 0.25 | 0.48 |
| 3.2 General infrastructure | | | | | |
| 3.2.1 Electricity output, kWh/cap ^a | 9,572.81 | 2,788.14 | 1,401.56 | 412.03 | 4,841.24 |
| 3.2.2 Logistics performance ^a | 3.54 | 2.89 | 2.64 | 2.50 | 3.00 |
| 3.2.3 Gross capital formation, % GDP..... | 20.55 | 25.16 | 24.32 | 24.36 | 23.25 |
| 3.3 Ecological sustainability | | | | | |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 8.09 | 8.58 | 7.23 | 4.48 | 7.71 |
| 3.3.2 Environmental performance*..... | 70.37 | 53.78 | 42.71 | 33.17 | 53.57 |
| 3.3.3 ISO 14001 environ. certificates/bn PPP& GDP ^b | 4.16 | 2.60 | 0.43 | 0.49 | 2.33 |

Note: (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

enforcement/foreclosure proceedings); and the ease of paying taxes.

Pillar 2: Human capital and research

The level and standard of education and research activity in a country are prime determinants of the innovation capacity of a nation. This pillar tries to gauge the human capital of countries (Table 1b).

The first sub-pillar includes a mix of indicators aimed at capturing achievements at the elementary and secondary education levels. Education expenditure and school

life expectancy are good proxies for coverage. Government expenditure per pupil, secondary gives a sense of the level of priority given to secondary education by the state. The quality of education is measured through the results to the OECD Programme for International Student Assessment (PISA), which examines 15-year-old students' performances in reading, mathematics, and science, as well as the pupil-teacher ratio.

Higher education is crucial for economies to move up the value chain beyond simple production processes

and products. The sub-pillar on tertiary education aims at capturing coverage (tertiary enrolment); priority is given to the sectors traditionally associated with innovation (with a series on the percentage of tertiary graduates in science and engineering, manufacturing, and construction); and the inbound and mobility of tertiary students, which plays a crucial role in the exchange of ideas and skills necessary for innovation.

The last sub-pillar, on R&D, measures the level and quality of R&D activities, with indicators on researchers (full-time equivalence), gross expenditure, and the quality of scientific and research institutions as measured by the average score of the top three universities in the QS World University Ranking of 2014. By design, this indicator aims at capturing the availability of at least three higher education institutions of quality within each economy (i.e., included in the global top 700), and is not aimed at assessing the average level of all institutions within a particular economy.

Pillar 3: Infrastructure

The third pillar includes three sub-pillars: Information and communication technologies (ICTs), General infrastructure, and Ecological sustainability (Table 1c).

Good and ecologically friendly communication, transport, and energy infrastructures facilitate the production and exchange of ideas, services, and goods and feed into the innovation system through increased productivity and efficiency, lower transaction costs, better access to markets, and sustainable growth.

The ICTs sub-pillar includes four indices developed by international organizations on ICT access, ICT use, online service by governments, and online participation of citizens.

The sub-pillar on general infrastructure includes the average of electricity output in kWh per capita; a composite indicator on logistics performance; and gross capital formation, which consists of outlays on additions to the fixed assets and net inventories of the economy, including land improvements (fences, ditches, drains); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings.

The sub-pillar on ecological sustainability includes three indicators: GDP per unit of energy use (a measure of efficiency in the use of energy), the Environmental Performance Index of Yale and Columbia Universities, and the number of certificates of conformity with standard ISO 14001 on environmental management systems issued.

Pillar 4: Market sophistication

The ongoing global financial crisis has underscored how crucial the availability of credit, investment funds, and access to international markets is for businesses to prosper. The Market sophistication pillar has three sub-pillars structured around market conditions and the total level of transactions (Table 1d).

The Credit sub-pillar includes a measure on the ease of getting credit aimed at measuring the degree to which collateral and bankruptcy laws facilitate lending by protecting the rights of borrowers and lenders, as well as the rules and practices affecting the coverage, scope, and accessibility of credit information. Transactions are given by the total value of domestic credit and, in an attempt to make the model more applicable to emerging markets, by the gross loan portfolio of microfinance institutions.

Table 1d: Market sophistication pillar

| Indicator | Average value by income group | | | | Mean |
|--|-------------------------------|---------------------|---------------------|------------|-------|
| | High income | Upper-middle income | Lower-middle income | Low income | |
| 4 Market sophistication | | | | | |
| 4.1 Credit | | | | | |
| 4.1.1 Ease of getting credit* | 57.71 | 53.16 | 49.26 | 31.67 | 50.57 |
| 4.1.2 Domestic credit to private sector, % GDP | 110.10 | 56.65 | 37.21 | 22.92 | 65.64 |
| 4.1.3 Microfinance gross loans, % GDP | 0.14 | 0.89 | 2.66 | 2.74 | 1.88 |
| 4.2 Investment | | | | | |
| 4.2.1 Ease of protecting investors* | 60.90 | 56.12 | 48.97 | 47.26 | 54.70 |
| 4.2.2 Market capitalization, % GDP ^a | 64.61 | 42.25 | 24.27 | 31.35 | 47.65 |
| 4.2.3 Total value of stocks traded, % GDP ^a | 38.95 | 13.09 | 3.50 | 3.59 | 21.76 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP ^a | 0.23 | 0.08 | 0.03 | 0.04 | 0.15 |
| 4.3 Trade and competition | | | | | |
| 4.3.1 Applied tariff rate, weighted mean, % ^{a,b} | 2.32 | 5.79 | 6.38 | 8.76 | 5.19 |
| 4.3.2 Intensity of local competition [†] | 5.45 | 4.77 | 4.79 | 4.73 | 5.02 |

Note: (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

Table 1e: Business sophistication pillar

| Indicator | Average value by income group | | | | Mean |
|---|-------------------------------|---------------------|---------------------|------------|-------|
| | High income | Upper-middle income | Lower-middle income | Low income | |
| 5 Business sophistication | | | | | |
| 5.1 Knowledge workers | | | | | |
| 5.1.1 Knowledge-intensive employment, % | 38.46 | 22.40 | 17.34 | 5.35 | 26.26 |
| 5.1.2 Firms offering formal training, % firms | 40.64 | 41.47 | 31.98 | 30.72 | 36.37 |
| 5.1.3 GERD performed by business, % ^a | 1.09 | 0.27 | 0.08 | 0.07 | 0.63 |
| 5.1.4 GERD financed by business, % ^a | 43.44 | 27.45 | 17.12 | 6.08 | 31.66 |
| 5.1.5 Females emp. w/ adv. degrees, % tot. emp. ^a | 18.48 | 12.56 | 10.34 | 2.45 | 14.29 |
| 5.2 Innovation linkages | | | | | |
| 5.2.1 University/industry research collaboration ^{†a} | 4.50 | 3.52 | 3.24 | 3.10 | 3.75 |
| 5.2.2 State of cluster development [†] | 4.36 | 3.67 | 3.61 | 3.40 | 3.87 |
| 5.2.3 GERD financed by abroad, % | 13.16 | 9.98 | 10.60 | 31.15 | 14.09 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP ^a | 0.03 | 0.01 | 0.01 | 0.01 | 0.02 |
| 5.2.5 Patent families filed in 3+ offices/bn PPP\$ GDP ^a | 0.98 | 0.10 | 0.03 | 0.06 | 0.46 |
| 5.3 Knowledge absorption | | | | | |
| 5.3.1 Royalty & license fees pay'ts, % total trade ^a | 1.74 | 0.55 | 0.50 | 0.12 | 0.87 |
| 5.3.2 High-tech imports less re-imports, % tot. trade | 9.25 | 9.13 | 6.86 | 7.32 | 8.42 |
| 5.3.3 Comm., comp. & info services imp., % tot. trade | 1.41 | 0.86 | 0.82 | 1.75 | 1.16 |
| 5.3.4 FDI net inflows, % GDP | 4.02 | 3.89 | 3.66 | 5.22 | 4.07 |

Note: (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

The Investment sub-pillar includes the ease of protecting investors index as well as three indicators on the level of transactions. To show whether market size is matched by market dynamism, stock market capitalization is complemented by the total value of shares traded. The last metric is a hard data metric on venture capital deals, taking into account a total of 19,462 deals in 73 countries in 2014.

The last sub-pillar tackles trade and competition. The market

conditions for trade are given in the first indicator measuring the average tariff rate weighted by import shares. The second indicator is a survey question that reflects on the intensity of competition in local markets. Efforts made at finding hard data on competition have so far proved unsuccessful.

Pillar 5: Business sophistication

The last enabler pillar tries to capture the level of business sophistication to assess how conducive firms are to innovation activity (Table 1e).

The Human capital and research pillar (pillar 2) made the case that the accumulation of human capital through education, and particularly higher education and the prioritization of R&D activities, is an indispensable condition for innovation to take place. That logic is taken one step further here with the assertion that businesses foster their productivity, competitiveness, and innovation potential with the employment of highly qualified professionals and technicians.

The first sub-pillar includes four quantitative indicators on knowledge workers: employment in knowledge-intensive services; the availability of formal training at the firm level; R&D performed by business enterprise (GERD) as a percentage of GDP (i.e., GERD over GDP); and the percentage of total gross expenditure of R&D that is financed by business enterprise. In addition, the sub-pillar includes an indicator related to the percentage of females employed with advanced degrees. This indicator, in addition to providing a glimpse into the gender labour distributions of nations, offers more information about the degree of sophistication of the local human capital currently employed.

Innovation linkages and public/private/academic partnerships are essential to innovation. In emerging markets, pockets of wealth have developed around industrial or technological clusters and networks, in sharp contrast to the poverty that may prevail in the rest of the territory. The Innovation linkages sub-pillar draws on both qualitative and quantitative data regarding business/university collaboration on R&D, the prevalence of well-developed and deep clusters, the level of gross R&D expenditure financed by abroad, and the number of deals on joint ventures and

strategic alliances. The latter covers a total of 1,623 deals announced in 2014, with firms headquartered in 104 participating economies.⁷ In addition, the total number of Patent Cooperation Treaty (PCT) and national office published patent family applications filed by residents in at least three offices proxies for international linkages.

In broad terms, pillar 4 on market sophistication makes the case that well-functioning markets contribute to the innovation environment through competitive pressure, efficiency gains, and economies of transaction and by allowing supply to meet demand. Markets that are open to foreign trade and investment have the additional effect of exposing domestic firms to best practices around the globe, which is critical to innovation through knowledge absorption and diffusion, which are considered in pillars 5 and 6. The rationale behind sub-pillars 5.3 on knowledge absorption (an enabler) and 6.3 on knowledge diffusion (a result)—two sub-pillars designed to be mirror images of each other—is precisely that together they will reveal how good countries are at absorbing and diffusing knowledge.

Sub-pillar 5.3 includes four statistics that are linked to sectors with high-tech content or are key to innovation: royalty and license fees payments as a percentage of total trade; high-tech imports (net of re-imports) as a percentage of total imports; imports of communication, computer and information services as a percentage of total trade; and net inflows of foreign direct investment (FDI) as a percentage of GDP.

The Innovation Output Sub-Index

Innovation outputs are the results of innovative activities within the economy. Although the Output

Sub-Index includes only two pillars, it has the same weight in calculating the overall GII scores as the Input Sub-Index. There are two output pillars: Knowledge and technology outputs and Creative outputs.

Pillar 6: Knowledge and technology outputs

This pillar covers all those variables that are traditionally thought to be the fruits of inventions and/or innovations (Table 1f). The first sub-pillar refers to the creation of knowledge. It includes five indicators that are the result of inventive and innovative activities: patent applications filed by residents both at the national patent office and at the international level through the PCT; utility model applications filed by residents at the national office; scientific and technical published articles in peer-reviewed journals; and an economy's number of articles (H) that have received at least H citations.

The second sub-pillar, on knowledge impact, includes statistics representing the impact of innovation activities at the micro- and macro-economic level or related proxies: increases in labour productivity, the entry density of new firms, spending on computer software, and the number of certificates of conformity with standard ISO 9001 on quality management systems issued. To strengthen the sub-pillar, the measure of high- and medium-high-tech industrial output over total manufactures output is also included.

The third sub-pillar, on knowledge diffusion, is the mirror image of the knowledge absorption sub-pillar of pillar 5. It includes four statistics all linked to sectors with high-tech content or that are key to innovation: royalty and license fees receipts as a percentage of total trade; high-tech exports (net of re-exports) as a percentage of total exports (net

of re-exports); exports of communication, computer and information services as a percentage of total trade; and net outflows of FDI as a percentage of GDP.

Pillar 7: Creative outputs

The role of creativity for innovation is still largely underappreciated in innovation measurement and policy debates. Since its inception, the GII has always emphasized measuring creativity as part of its Innovation Output Sub-Index. The last pillar, on creative outputs, has three sub-pillars (Table 1g).

The first sub-pillar on intangible assets includes statistics on trademark applications by residents at the national office; trademark applications under the Madrid System by country of origin, and two survey questions regarding the use of ICTs in business and organizational models, new areas that are increasingly linked to process innovations in the literature.

The second sub-pillar on creative goods and services includes proxies to get at creativity and the creative outputs of an economy. Last year, in an attempt to include broader sectoral coverage, a global entertainment and media output composite was added. In addition, the indicator on audio-visual and related services exports was renamed 'Cultural and creative services exports' and expanded to include information services, advertising, market research and public opinion polling, and other, personal, cultural and recreational services (as a percentage of total trade). These two indicators complement the remainder of the sub-pillar, which measures national feature films produced in a given country (per capita count); printing and publishing output (as a percentage of total manufactures output); and creative goods exports

Table 1f: Knowledge & technology outputs pillar

| Indicator | Average value by income group | | | | Mean |
|---|-------------------------------|---------------------|---------------------|------------|--------|
| | High income | Upper-middle income | Lower-middle income | Low income | |
| 6 Knowledge and technology outputs | | | | | |
| 6.1 Knowledge creation | | | | | |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP ^a | 6.87 | 2.89 | 1.73 | 0.48 | 4.04 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP ^a | 3.54 | 0.27 | 0.08 | 0.07 | 1.66 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | 1.70 | 3.46 | 4.30 | 1.14 | 2.79 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP ^a | 29.72 | 11.10 | 6.03 | 8.89 | 15.79 |
| 6.1.5 Citable documents H index ^{*a} | 355.48 | 128.16 | 82.79 | 69.29 | 185.84 |
| 6.2 Knowledge impact | | | | | |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 0.72 | 1.62 | 3.20 | 2.61 | 1.70 |
| 6.2.2 New businesses/th pop. 15–64 ^a | 6.03 | 3.41 | 0.94 | 0.37 | 3.58 |
| 6.2.3 Computer software spending, % GDP ^a | 0.49 | 0.31 | 0.25 | 0.27 | 0.38 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP ^a | 15.27 | 9.60 | 2.61 | 1.16 | 8.59 |
| 6.2.5 High- & medium-high-tech manufactures, % ^a | 31.81 | 24.43 | 15.82 | 6.30 | 24.39 |
| 6.3 Knowledge diffusion | | | | | |
| 6.3.1 Royalty & license fees receipts, % total trade ^a | 1.08 | 0.11 | 0.22 | 0.18 | 0.50 |
| 6.3.2 High-tech exports less re-exports, % tot. trade ^b | 6.44 | 4.35 | 1.53 | 0.28 | 3.90 |
| 6.3.3 Comm., comp. & info. services exp., % tot. trade ^a | 2.41 | 1.48 | 2.06 | 2.02 | 2.02 |
| 6.3.4 FDI net outflows, % GDP | 16.13 | 6.80 | 0.33 | 0.63 | 8.24 |

Note: (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

Table 1g: Creative outputs pillar

| Indicator | Average value by income group | | | | Mean |
|---|-------------------------------|---------------------|---------------------|------------|----------|
| | High income | Upper-middle income | Lower-middle income | Low income | |
| 7 Creative outputs | | | | | |
| 7.1 Intangible assets | | | | | |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | 61.69 | 51.77 | 57.27 | 21.96 | 54.44 |
| 7.1.2 Madrid trademark applications/bn PPP\$ GDP ^a | 2.01 | 0.67 | 0.61 | 0.05 | 1.31 |
| 7.1.3 ICTs & business model creation [†] | 4.92 | 4.20 | 4.06 | 3.85 | 4.38 |
| 7.1.4 ICTs & organizational models creation [†] | 4.77 | 4.01 | 3.87 | 3.60 | 4.19 |
| 7.2 Creative goods and services | | | | | |
| 7.2.1 Cultural & creative services exp., % total trade ^a | 0.80 | 0.47 | 0.22 | 0.04 | 0.52 |
| 7.2.2 National feature films/mn pop. 15–69 ^a | 8.95 | 4.11 | 5.23 | 1.07 | 6.10 |
| 7.2.3 Global ent. & media output/th pop. 15–69 ^a | 1.34 | 0.25 | 0.05 | 0.07 | 0.87 |
| 7.2.4 Printing & publishing manufactures, % | 2.99 | 1.75 | 1.35 | 1.63 | 2.22 |
| 7.2.5 Creative goods exports, % total trade | 1.73 | 1.90 | 0.65 | 0.10 | 1.31 |
| 7.3 Online creativity | | | | | |
| 7.3.1 Generic TLDs/th pop. 15–69 | 37.96 | 9.19 | 1.60 | 0.35 | 15.84 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 38.02 | 8.95 | 1.17 | 0.18 | 15.66 |
| 7.3.3 Wikipedia monthly edits/mn pop. 15–69 | 5,306.45 | 1,704.75 | 577.19 | 55.38 | 2,413.32 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 85.59 | 70.47 | 48.95 | 21.28 | 74.32 |

Note: (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes. Scores rather than values are presented for indicators 7.3.1, 7.3.2, and 7.3.4.

(as a percentage of total trade), all which are aimed at providing an overall sense of the international reach of creative activities in the country.

The third sub-pillar on online creativity includes four indicators, all scaled by population aged 15 through 69 years old: generic (biz, info, org, net, and com) and

country-code top level domains, average monthly edits to Wikipedia; and video uploads on YouTube. Attempts made to strengthen this sub-pillar with indicators in areas such as blog posting, online gaming, the development of applications, and have so far proved unsuccessful.

Notes

- 1 For a fuller introduction to the Global Innovation Index, see the GII 2011. Examples of other composite innovation indices were reviewed there too. The Global Innovation Policy Index of the Information Technology and Innovation Foundation, which is quite complementary to the GII, was formulated in 2012.
- 2 Eurostat and OECD, 2005.
- 3 OECD, 2010; INSEAD, 2011; and WIPO, 2011.
- 4 INSEAD, 2011; OECD Scoreboard, 2013; WIPO, 2011.
- 5 INSEAD, 2011; OECD, 2011; WIPO, 2011
- 6 For completeness, 2.3% of data points are from 2010, 1.1% from 2009, 0.8% from 2008, 0.5% from 2007, 0.4% from 2006, 0.3% from 2005, and 0.2% from 2004. In addition, the GII is calculated on the basis of 9,386 data points (compared to 11,139 with complete series), implying that 15.7% of data points are missing. Data Tables (Appendix II) include the reference year for each data point and mark missing data as not available (n/a).
- 7 These data were determined from a query on joint ventures/strategic alliances deals announced in 2014 from Thomson Reuters SDC Platinum database. A count variable was created: each participating nation of each company in a deal (n countries per deal) gets, per deal, a score equivalent to $1/n$ so that all country scores add up to the total number of deals.

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Adjustments to the Global Innovation Index Framework and Year-on-Year Comparability of Results

The Global Innovation Index (GII) is a cross-country performance assessment, compiled on an annual basis, which continuously seeks to update and improve the way innovation is measured. The GII report pays special attention to making accessible the statistics used in the Country/Economy Profiles and Data Tables, providing data sources and definitions and detailing the computation methodology (Appendices I, II, III, and IV, respectively). This annex summarizes the changes made this year and provides an assessment of the impact of these changes on the comparability of rankings.

Adjustments to the Global Innovation Index framework

The GII model is revised every year in a transparent exercise. This year, no change was made at the pillar or sub-pillar level.

Beyond the use of World Intellectual Property Organization (WIPO) data, we collaborate with both public international bodies such as the International Energy Agency; the United Nations Educational, Scientific and Cultural Organization (UNESCO); and the International Telecommunication Union (ITU) as well as private organizations such as the International Organization for Standardization (ISO); IHS Global Insight; QS Quacquarelli Symonds Ltd; ZookNIC Inc; Google; and PwC to obtain the best available

Table 1: Changes to the Global Innovation Index framework

| GII 2014 | Adjustment | GII 2015 |
|--|---------------------|--|
| 1.1.3 Press Freedom Index* | Deleted | |
| 2.3.1 Researchers, headcounts/mn pop. | Methodology changed | 2.3.1 Researchers, FTE/mn pop. |
| 4.3.2 Non-agricultural mkt access weighted tariff, % | Deleted | |
| 4.3.3 Intensity of local competition | Number changed | 4.3.2 Intensity of local competition |
| 5.1.4 GERD performed by business enterprise, % | Methodology changed | 5.1.4 GERD financed by business enterprise, % |
| 5.1.5 GMAT test takers/mn pop. 20–34 | Replaced | 5.1.5 Females employed with advanced degrees, % total employed |

* Currently searching for a better variable to capture the openness of an economy to innovation.

data on innovation measurement globally.

Although the rationale for the adjustments made to the GII framework is explained in detail in Annex 1, Table 1 provides a summary of these changes for quick reference. A total of six indicators were modified this year: three indicators were deleted or replaced, two underwent methodological changes (new computation methodology at the source), and one changed its indicator number as a result of the framework adjustments.

The statistical audit performed by the Joint Research Centre (see Annex 3) provides a confidence interval for each ranking following a robustness and uncertainty analysis of the modelling assumptions.

Sources of changes in the rankings

The GII compares the performance of national innovation systems across

economies, but it also presents changes in economy rankings over time.

Importantly, scores and rankings from one year to the next are not directly comparable (see Annex 2 of the GII 2013 for a full explanation). Making inferences about absolute or relative performance on the basis of year-on-year differences in rankings can be misleading. Each ranking reflects the relative positioning of that particular country/economy on the basis of the conceptual framework, the data coverage, and the sample of economies—elements that change from one year to another.

A few particular factors influence the year-on-year ranking of a country/economy:

- the actual performance of the economy in question;
- adjustments made to the GII framework;

Table 2: Changes in GDP PPP\$ values

| Economy | GDP PPP\$ per former ICP | GDP PPP\$ per revised ICP | Change |
|----------------------|--------------------------|---------------------------|--------|
| Zimbabwe | 7.40 | 25.92 | 246% |
| Zambia | 25.45 | 57.08 | 124% |
| United Arab Emirates | 269.82 | 570.57 | 111% |
| Nigeria | 478.53 | 972.65 | 103% |
| Myanmar | 111.12 | 221.48 | 99% |
| Indonesia | 1,284.78 | 2,511.44 | 95% |
| Jordan | 40.02 | 76.11 | 90% |
| Mongolia | 17.03 | 31.78 | 87% |
| Algeria | 284.68 | 522.31 | 83% |
| Kuwait | 154.23 | 276.31 | 79% |
| Sudan | 89.97 | 151.69 | 69% |
| Bahrain | 34.96 | 58.28 | 67% |
| Egypt | 551.44 | 909.82 | 65% |
| Saudi Arabia | 927.76 | 1,527.73 | 65% |
| Oman | 94.86 | 155.46 | 64% |
| Yemen | 62.61 | 102.33 | 63% |
| Kazakhstan | 243.56 | 395.46 | 62% |

- data updates, the treatment of outliers, and missing values; and
- the inclusion or exclusion of countries/economies in the sample.

Additionally, the following characteristics complicate the time-series analysis based on simple GII scores or rankings:

- **Missing values.** The GII produces relative index scores, which means that a missing value for one economy affects the index score of other economies. Because the number of missing values decreases every year, this problem is reduced over time.
- **Reference year.** The data underlying the GII do not refer to a single year but to several years, depending on the latest available year for any given variable. In addition, the reference years for different variables are not the same for each economy. The motivation for this approach is that it widens the set of data

points for cross-economy comparability.

- **Normalization factor.** Most GII variables are normalized using either GDP or population. This approach is also intended to enable cross-economy comparability. Yet, again, year-on-year changes in individual variables may be driven either by the variable's numerator or by its denominator.
- **Consistent data collection.** Finally, measuring year-on-year performance changes relies on the consistent collection of data over time. Changes in the definition of variables or in the data collection process could create movements in the rankings that are unrelated to true performance.

A detailed economy study based on the GII database and the country/economy profile over time, coupled with analytical work on grounds that include innovation actors and

decision makers, yields the best results in terms of grasping an economy's innovation performance over time as well as possible avenues for improvement.

Methodology and data

The revision of the computation methodology for certain individual indicators has caused significant shifts in the results for several countries. The methodologies underpinning indicators 3.1.3 Government Online Service Index and 3.1.4 E-Participation Index,¹ both computed by the United Nations, have been revised.

Similarly, the World Bank's International Comparison Programme (ICP) has revised the methodology used to compute the purchasing power parity (PPP) conversion factor. This factor is used to compute the GDP in PPP current international dollars (PPP\$ GDP), a scaling factor used to enable country comparisons for variables 3.3.3, 4.2.4, 5.2.4, 5.2.5, 6.1.1, 6.1.2, 6.1.3, 6.1.4, 6.2.4, 7.1.1, and 7.1.2. This choice of denominator was dictated by a willingness to appropriately account for differences in development stages; in addition, scaling these variables by population would improperly bias results to the detriment of economies with large young or large ageing populations.

As a result, PPP estimates are not comparable with those published in previous editions and, in some countries, they differ significantly. Table 2 details those countries that were most affected by the revised PPP values, using the 2013 reference year as an example.

Because of a larger revised PPP\$ GDP figure, some of the GII scores for the variables scaled by this factor have decreased for those countries, partly affecting their rankings in these variables.² However, in some

instances an economy's numerator for these variables has actually decreased from last year to this year, which can be another, unrelated reason for a lower score. The impact of the PPP\$ GDP revision in the overall GII rankings is negligible.

Missing values

When it comes to country coverage, the objective is to include as many economies as possible. To be included in the GII, economies must have a minimum data coverage of 48 indicators out of 79 (60%) and scores for at least two sub-pillars per pillar. Missing values are indicated with 'n/a' and are not considered in the sub-pillar score.

Since its inception, the GII has had a positive influence on data availability, increasing awareness of the importance of submitting timely data. The number of data points submitted by economies to international data agencies has substantially increased in recent years. However, eradicating missing values can have an initial negative affect on an economy's GII ranking (this can be viewed as a structural break in the time series). Over time, these results are smoothed out and the effect is a more positive and accurate ranking.

For several economies, the number of missing data points remains very high. Table 3 lists the countries that have the highest number of missing data points (20 or more), ranking them according to how many data points are missing.

Conversely, Table 4 lists those economies with the best data coverage, ranking them according to the least number of missed data points. These economies are missing at most only five data points; some are missing none at all.

Table 3: GII economies with the most missing values

| Economy | Number of missing values |
|------------------------|--------------------------|
| Seychelles | 31 |
| Angola | 31 |
| Togo | 31 |
| Gambia | 30 |
| Uzbekistan | 30 |
| Myanmar | 30 |
| Sudan | 30 |
| Cabo Verde | 29 |
| Lesotho | 29 |
| Burundi | 29 |
| Fiji | 28 |
| Swaziland | 28 |
| Niger | 28 |
| Guinea | 28 |
| Guyana | 27 |
| Bhutan | 27 |
| Nicaragua | 27 |
| Barbados | 26 |
| Bosnia and Herzegovina | 24 |
| Cambodia | 23 |
| Malawi | 23 |
| Honduras | 23 |
| Zimbabwe | 23 |
| Yemen | 23 |
| Rwanda | 22 |
| Cameroon | 22 |
| Côte d'Ivoire | 22 |
| Nepal | 22 |
| United Arab Emirates | 21 |
| Trinidad and Tobago | 21 |
| Mali | 21 |
| Tajikistan | 21 |
| Zambia | 21 |
| Kuwait | 20 |
| Jamaica | 20 |
| Burkina Faso | 20 |

Table 4: GII economies with the fewest missing values

| Economy | Number of missing values |
|--------------------------|--------------------------|
| Hungary | 0 |
| Poland | 0 |
| Germany | 1 |
| Czech Republic | 1 |
| Spain | 1 |
| Portugal | 1 |
| Russian Federation | 1 |
| Colombia | 1 |
| Finland | 2 |
| Korea, Rep. | 2 |
| Austria | 2 |
| Japan | 2 |
| France | 2 |
| Italy | 2 |
| Malaysia | 2 |
| Bulgaria | 2 |
| Greece | 2 |
| Romania | 2 |
| Turkey | 2 |
| Ukraine | 2 |
| United Kingdom | 3 |
| Sweden | 3 |
| Netherlands | 3 |
| Denmark | 3 |
| New Zealand | 3 |
| Australia | 3 |
| Israel | 3 |
| Estonia | 3 |
| Chile | 3 |
| Thailand | 3 |
| Brazil | 3 |
| Ireland | 4 |
| Norway | 4 |
| Belgium | 4 |
| Slovenia | 4 |
| Latvia | 4 |
| Slovakia | 4 |
| Lithuania | 4 |
| Mexico | 4 |
| Serbia | 4 |
| Indonesia | 4 |
| United States of America | 5 |
| Costa Rica | 5 |
| South Africa | 5 |
| Argentina | 5 |
| Philippines | 5 |

Notes

- 1 The Government Online Service Index this year focuses more on e-participation in particular, and on the presence of open data initiatives on government websites, than it did in previous editions. The 2014 version of the E-Government Survey expanded the assessment of e-participation so as to include also the use of e-government programmes to engage citizens in public policy making and implementation. The survey was updated to improve the accuracy of the information collected on e-consultation and e-decision-making initiatives. New questions and updates were also made to better assess data publishing and sharing by government agencies; the availability of information on the citizens' rights to access government information; the provision of outcome on feedback received from citizens concerning the improvement of its online services; and the provision of tools in order to obtain public opinion for public policy deliberation through social media, online polls, petition tools, voting tools, online-bulletin boards, and online discussion forums.
- 2 Notable instances of decreased scores include Bahrain (for indicator 7.1.1), Indonesia (3.3.3, 6.2.4), Jordan (7.1.1), Kazakhstan (7.1.1), Saudi Arabia (3.3.3, 6.1.4), Sudan (3.3.3), and United Arab Emirates (3.3.3).

Joint Research Centre Statistical Audit of the 2015 Global Innovation Index

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Conceptual and practical challenges are inevitable when trying to understand and model the fundamentals of innovation at the national level worldwide. The Global Innovation Index (GII) considers these conceptual challenges in Chapter 1 and deals with practical challenges—related to data quality and methodological choices—by grouping country-level data into 21 sub-pillars, 7 pillars, 2 sub-indices, and, finally, an overall index. The object of this annex is to offer a detailed insight into the practical issues related to the construction of the index, analysing in-depth the statistical soundness of the calculations and assumptions made to arrive at the final index rankings. Notwithstanding, statistical soundness should be regarded as a necessary but not sufficient condition for a sound GII, since the correlations underpinning the majority of the statistical analyses carried out herein ‘need not necessarily represent the real influence of the individual indicators on the phenomenon being measured’.¹ Consequently, the development of the GII must be nurtured by a dynamic iterative dialogue between the principles of statistical and conceptual soundness or, to put it another way, between the theoretical understanding of innovation and the empirical observations of the data underlying the variables.

The Econometrics and Applied Statistics at the European Commission Joint Research Centre (JRC) in Ispra

has been invited for the fifth consecutive year to audit the GII. As in previous editions, the present JRC audit will focus on the statistical soundness of the multi-level structure of the index as well as on the impact of key modelling assumptions on the results.² The external qualitative check provided by the JRC guarantees the transparency and reliability of the index for both policy makers and other stakeholders, thus facilitating more accurate priority setting and policy formulation in this particular field.

As in past GII reports, the JRC analysis complements the country rankings with confidence intervals for the GII, the Innovation Input Sub-Index and the Innovation Output Sub-Index, in order to better appreciate the robustness of these ranks to the computation methodology. In addition, the JRC analysis includes an assessment of the added value of the GII, and a measure of distance to the efficient frontier of innovation by using data envelopment analysis.

Conceptual and statistical coherence in the GII framework

An earlier version of the GII model was assessed by the JRC in April–May 2015. Fine-tuning suggestions were taken into account in the final computation of the rankings in an iterative process with the JRC aimed at setting the foundation for a balanced index. The entire process followed four steps (see Figure 1).

Step 1: Conceptual consistency

Seventy-nine indicators were selected for their relevance to a specific innovation pillar on the basis of the literature review, expert opinion, country coverage, and timeliness. To represent a fair picture of country differences, indicators were scaled either at the source or by the GII team as appropriate and where needed.

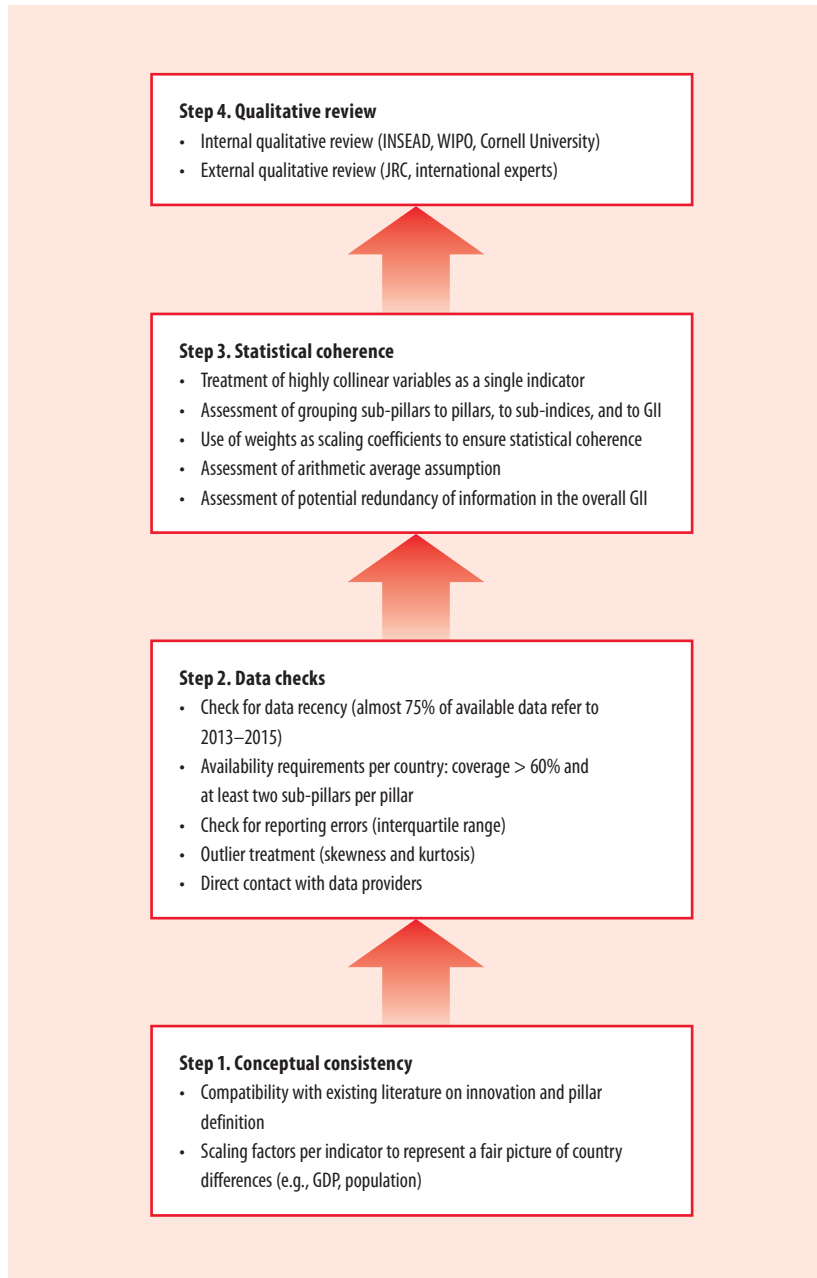
Step 2: Data checks

The most recently released data within the period 2004–14 were used for each economy. Almost 75% of the available data refer to 2013 or more recent years. Countries were included if data availability was at least 60% (i.e., 47 out of 79 variables) and at least two of the three sub-pillars in each pillar could be computed. Potentially problematic indicators that could bias the overall results were identified as those having absolute skewness greater than 2 and kurtosis greater than 3.5;³ these were treated either by winsorization or by taking the natural logarithm (in case of more than five outliers). These criteria were decided jointly with the JRC back in 2011 (see Appendix IV Technical Notes in this report for details).

Step 3: Statistical Coherence

Weights as scaling coefficients

Weights of 0.5 or 1.0 were jointly decided between the JRC and the GII team in 2012 to be scaling coefficients and not importance

Figure 1: Conceptual and statistical coherence in the GII 2015 framework

Source: Saisana and Domínguez-Torreiro, European Commission Joint Research Centre, 2015.

coefficients, with the aim of arriving at sub-pillar and pillar scores that were balanced in their underlying components (i.e., that indicators and sub-pillars can explain a similar amount of variance in their respective sub-pillars/pillars). Paruolo et

al. (2013) show that, in weighted arithmetic averages, the ratio of two nominal weights gives the rate of substitutability between the two indicators, and hence can be used to reveal the relative importance of individual indicators. This importance

can then be compared with ex-post measures of variables' importance, such as the non-linear Pearson correlation ratio. As a result of this analysis, 36 out of 79 indicators and two sub-pillars—7.2 Creative goods and services and 7.3 Creation of online content—were assigned half weight while all other indicators and sub-pillars were assigned a weight of 1.0. Nevertheless, for five indicators with Pearson correlation coefficients that have respective sub-pillar scores below 0.5, some further reflection is needed because they seem to behave as 'noise' at all aggregation levels in the GII framework. This applies to 5.2.3 GERD financed by abroad; 5.3.4 Foreign direct investment, net inflows; 6.2.1 Growth rate of GDP per person engaged; 6.2.2 New business density; and 7.2.4 Printing and publishing output.

Principal components analysis and reliability item analysis

Principal component analysis (PCA) was used to assess to what extent the conceptual framework is confirmed by statistical approaches. PCA results confirm the presence of a single latent dimension in each of the seven pillars (one component with an eigenvalue greater than 1.0) that captures between 61% (pillar 4: Market sophistication) up to 85% (pillar 1: Institutions) of the total variance in the three underlying sub-pillars. These results reveal that the adjustments made to the 2015 GII framework have further improved the already good statistical coherence properties of the previous version. Furthermore, results confirm the expectation that the sub-pillars are more correlated to their own pillar than to any other pillar and that all coefficients are greater than 0.75 (see Table 1).

The five input pillars share a single statistical dimension that

Table 1: Statistical coherence in the GII: Correlations between sub-pillars and pillars

| Sub-pillar | Institutions | Human capital and research | Infrastructure | Market sophistication | Business sophistication | Knowledge and technology outputs | Creative outputs |
|---|--------------|----------------------------|----------------|-----------------------|-------------------------|----------------------------------|------------------|
| Political environment | 0.94 | 0.75 | 0.79 | 0.69 | 0.75 | 0.67 | 0.80 |
| Regulatory environment | 0.92 | 0.64 | 0.65 | 0.64 | 0.63 | 0.59 | 0.71 |
| Business environment | 0.89 | 0.73 | 0.76 | 0.74 | 0.71 | 0.69 | 0.76 |
| Education | 0.64 | 0.82 | 0.63 | 0.52 | 0.67 | 0.64 | 0.67 |
| Tertiary education | 0.56 | 0.79 | 0.60 | 0.39 | 0.45 | 0.51 | 0.59 |
| Research and development (R&D) | 0.71 | 0.89 | 0.79 | 0.70 | 0.80 | 0.87 | 0.80 |
| Information and communication technologies (ICTs) | 0.76 | 0.80 | 0.95 | 0.70 | 0.73 | 0.75 | 0.80 |
| INPUT | | | | | | | |
| General infrastructure | 0.60 | 0.61 | 0.78 | 0.54 | 0.55 | 0.58 | 0.59 |
| Ecological sustainability | 0.67 | 0.68 | 0.83 | 0.65 | 0.65 | 0.69 | 0.75 |
| Credit | 0.44 | 0.33 | 0.40 | 0.75 | 0.46 | 0.40 | 0.45 |
| Investment | 0.67 | 0.67 | 0.68 | 0.80 | 0.70 | 0.71 | 0.68 |
| Trade and competition | 0.60 | 0.53 | 0.62 | 0.79 | 0.60 | 0.59 | 0.71 |
| Knowledge workers | 0.62 | 0.75 | 0.72 | 0.65 | 0.86 | 0.77 | 0.74 |
| Innovation linkages | 0.72 | 0.65 | 0.65 | 0.70 | 0.76 | 0.67 | 0.74 |
| Knowledge absorption | 0.48 | 0.44 | 0.41 | 0.47 | 0.79 | 0.57 | 0.51 |
| Knowledge creation | 0.58 | 0.78 | 0.64 | 0.57 | 0.69 | 0.85 | 0.69 |
| Knowledge impact | 0.53 | 0.67 | 0.72 | 0.63 | 0.63 | 0.83 | 0.69 |
| Knowledge diffusion | 0.64 | 0.62 | 0.61 | 0.65 | 0.81 | 0.83 | 0.71 |
| OUTPUT | | | | | | | |
| Intangible assets | 0.68 | 0.66 | 0.70 | 0.73 | 0.72 | 0.71 | 0.90 |
| Creative goods and services | 0.71 | 0.77 | 0.76 | 0.72 | 0.76 | 0.76 | 0.87 |
| Online creativity | 0.81 | 0.85 | 0.81 | 0.69 | 0.78 | 0.77 | 0.90 |

Source: Saisana and Dominguez-Torreiro, European Commission Joint Research Centre, 2015.

summarizes 81% of the total variance, and the five loadings (correlation coefficients) of these pillars are very similar to each other. This similarity suggests that the five pillars make roughly equal contributions to the variation of the Innovation Input Sub-Index scores, as envisaged by the developing team. The reliability of the Input Sub-Index, measured by the Cronbach alpha value, is very high at 0.95—well above the 0.70 threshold for a reliable aggregate.⁴

The two output pillars—Knowledge and technology outputs and Creative outputs—are strongly correlated to each other (0.83); they are also both strongly correlated with the Innovation Output Sub-index (0.95). This result suggests that the Output Sub-index is also well balanced in its two pillars.

Finally, building the GII as the simple average of the Input

Sub-Index and Output Sub-Index is also statistically justifiable because the Pearson correlation coefficient of either sub-index with the overall GII is 0.98; the two sub-indices have a correlation of 0.93. Thus far, results show that the grouping of sub-pillars into pillars, sub-indices, and the GII 2015 is statistically coherent, and that the GII has a balanced structure at each aggregation level.

Added value of the GII

As already discussed, the Input and Output Sub-Indices correlate strongly with each other and with the overall GII. Furthermore, the five pillars in the Input Sub-Index have a very high statistical reliability. These results—the strong correlation between Input and Output Sub-Indices and the high statistical reliability of the five input pillars—may be interpreted by some as a sign

of redundancy of information in the GII. However, this is not the case here. In fact, for more than 50.4% (up to 69.5%) of the 141 economies included in the GII 2015, the GII ranking and any of the seven pillar rankings differ by 10 positions or more (see Table 2). This is a desired outcome because it demonstrates the added value of the GII ranking, which helps to highlight other aspects of innovation that do not emerge directly by looking into the seven pillars separately. At the same time, this result points to the value of duly taking into account the GII pillars, sub-pillars, and individual indicators on their own merit. By doing so, country-specific strengths and bottlenecks on innovation can be identified and serve as an input for evidence-based policymaking.

Table 2: Distribution of differences between pillar and GII rankings

| Rank differences (positions) | Innovation Input Sub-Index | | | | Innovation Output Sub-Index | | |
|------------------------------|----------------------------|--------------------------------|--------------------|---------------------------|-----------------------------|--------------------------------------|----------------------|
| | Institutions (%) | Human capital and research (%) | Infrastructure (%) | Market sophistication (%) | Business sophistication (%) | Knowledge and technology outputs (%) | Creative outputs (%) |
| More than 30 | 15.6 | 14.2 | 12.1 | 27.0 | 25.5 | 17.7 | 7.8 |
| 20–29 | 12.1 | 17.0 | 15.6 | 14.2 | 10.6 | 14.9 | 12.8 |
| 10–19 | 24.1 | 22.7 | 26.2 | 28.4 | 24.8 | 27.0 | 29.8 |
| 10 or more* | 51.8 | 53.9 | 53.9 | 69.5 | 61.0 | 59.6 | 50.4 |
| 5–9 | 25.5 | 25.5 | 22.7 | 14.9 | 17.7 | 17.0 | 22.0 |
| Less than 5 | 19.1 | 19.9 | 20.6 | 14.2 | 19.1 | 22.0 | 24.8 |
| Same rank | 3.5 | 0.7 | 2.8 | 1.4 | 2.1 | 1.4 | 2.8 |
| Total† | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: Saisana and Dominguez-Torreiro, European Commission Joint Research Centre, 2015.

* This column is the sum of the prior three rows.

† This column is the sum of all white rows.

Step 4: Qualitative Review

Finally, the GII results—including overall country classifications and relative performances in terms of the Innovation Input or Output Sub-Indices—were evaluated to verify that the overall results are, to a great extent, consistent with current evidence, existing research, and prevailing theory. Notwithstanding these statistical tests and the positive outcomes on the statistical coherence of the GII structure, the GII model is and has to remain open for future improvements as better data, more comprehensive surveys and assessments, and new relevant research studies become available.

The impact of modelling assumptions on the GII results

Setting up an underlying structure for the index based on a battery of pillars; choosing the individual variables to be used as indicators; deciding whether or not to impute missing data; selecting the normalization approach to be applied, the weights to be assigned, the rule of aggregation to be implemented, and other elements of the index are all modelling assumptions with a direct

impact on the GII scores and rankings. The rationale for these choices is manifold. For instance, expert opinion is behind the selection of the individual indicators, common practice suggests the use of a min-max normalization approach in the [0–100] range, the treatment of outliers is driven by statistical analysis, and simplicity and parsimony criteria seem to advocate for not imputing missing data. The unavoidable uncertainty stemming from the above-mentioned modelling choices is accounted for in the robustness assessment carried out by the JRC. More precisely, the methodology applied herein allows for the joint and simultaneous analysis of the impact of such choices on the national scores, resulting in error estimates and confidence intervals calculated for the GII 2015 individual country rankings.

As suggested in the relevant literature on composite indicators,⁵ the robustness assessment was based on Monte Carlo simulation and multi-modelling approaches, applied to ‘error-free’ data where potential outliers and eventual errors and typos have already been corrected in a preliminary stage. In

particular, the three key modelling issues considered in the assessment of the GII were the pillar weights, the treatment of missing data, and the aggregation formula used.

Monte Carlo simulation comprised 1,000 runs of different sets of weights for the seven pillars in the GII. The weights were assigned to the pillars based on uniform continuous distributions centred in the reference values. The ranges of simulated weights were defined by taking into account both the need for a wide enough interval to allow for meaningful robustness checks and the need to respect the underlying principle of the GII that the Input and the Output Sub-Indices should be placed on equal footings. As a result of these considerations, the limit values of uncertainty for the five input pillars are 10%–30%; the limit values for the two output pillars are 40%–60% (see Table 3).

The GII developing team, for transparency and replicability, has always opted not to estimate missing data. The ‘no imputation’ choice, which is common in similar contexts, might encourage economies not to report low data values. In fact, with arithmetic average, the

Table 3: Uncertainty parameters: Missing values, aggregation, and weights

| | | Reference | Alternative |
|---|----------------------------------|--------------------------------|---|
| I. Uncertainty in the treatment of missing values | | No estimation of missing data | Expectation Maximization (EM) |
| II. Uncertainty in the aggregation formula at the pillar level | | Arithmetic average | Geometric average |
| III. Uncertainty intervals for the GII weights | | | |
| GII Sub-Index | Pillar | Reference value for the weight | Distribution assigned for robustness analysis |
| Innovation Input | Institutions | 0.2 | U[0.1, 0.3] |
| | Human capital and research | 0.2 | U[0.1, 0.3] |
| | Infrastructure | 0.2 | U[0.1, 0.3] |
| | Market sophistication | 0.2 | U[0.1, 0.3] |
| | Business sophistication | 0.2 | U[0.1, 0.3] |
| Innovation Output | Knowledge and technology outputs | 0.5 | U[0.4, 0.6] |
| | Creative outputs | 0.5 | U[0.4, 0.6] |

Source: Saisana and Domínguez-Torreiro, European Commission Joint Research Centre, 2015.

'no imputation' choice is equivalent to replacing missing values with the average of the available (normalized) data within each sub-pillar. To overcome this limitation, the JRC estimated missing data using the Expectation Maximization (EM) algorithm.⁶

Regarding the aggregation formula, decision-theory practitioners have challenged the use of simple arithmetic averages because of their fully compensatory nature, in which a comparative high advantage on a few indicators can compensate a comparative disadvantage on many indicators.⁷ The JRC relaxed this strong perfect substitutability assumption inherent in the arithmetic average and considered instead the geometric average, which is a partially compensatory approach that rewards economies with balanced profiles and motivates economies to improve in the GII pillars in which they perform poorly, and not just in *any* GII pillar.⁸

Four models were tested based on the combination of no imputation versus EM imputation, and arithmetic versus geometric average, combined with 1,000 simulations per model (random weights versus

fixed weights), for a total of 4,000 simulations for the GII and each of the two sub-indices (see Table 3 for a summary of the uncertainties considered).

Uncertainty analysis results

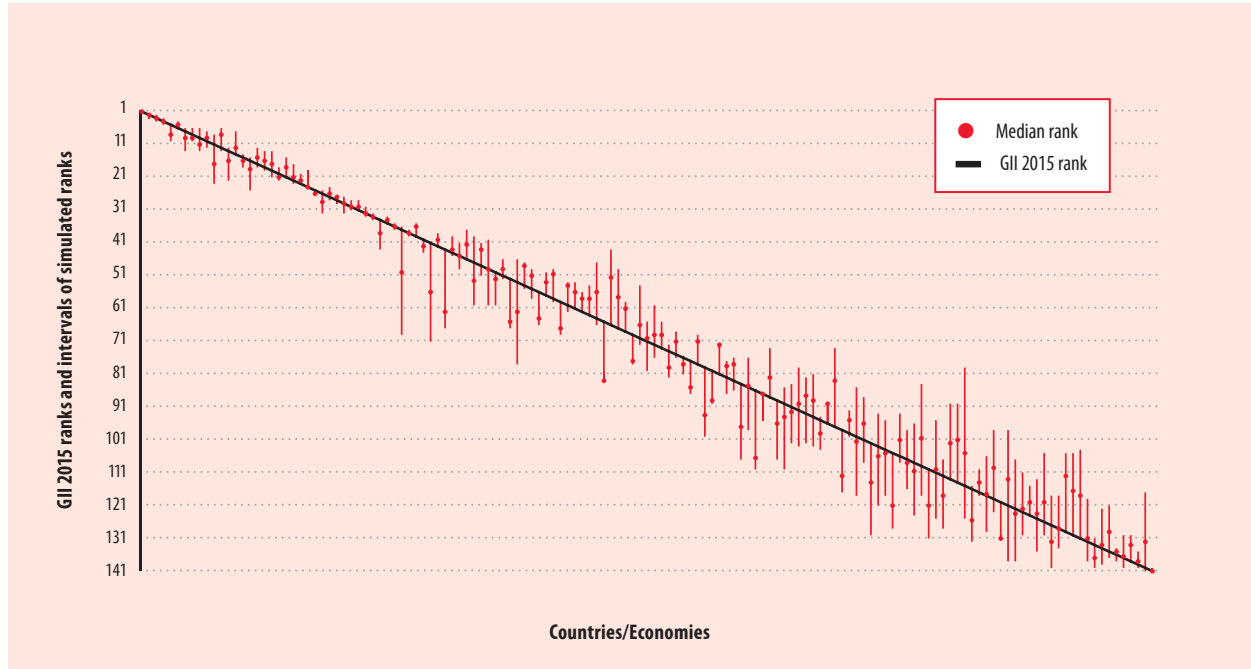
The main results of the robustness analysis are shown in Figure 2 with median ranks and 90% confidence intervals computed across the 4,000 Monte Carlo simulations for the GII and the two sub-indices. The figure orders economies from best to worst according to their reference rank (black line), the dot being the median rank.

All published GII 2015 ranks lay within the simulated 90% confidence intervals, and for most economies these intervals are narrow enough for meaningful inferences to be drawn: there are fewer than 10 positions for 80 of the 141 economies. However, it is also true that some economy ranks vary significantly with changes in weights and aggregation formula and, where applicable, they also vary because of the estimation of missing data. Indeed, 32 economies have 90% confidence interval widths between 20 and 29. Confidence interval widths

for another 7 economies lie between 30 and 39 (Montenegro, Uganda, Uzbekistan, Belarus, Barbados, Egypt, Kyrgyzstan), and for 2 countries (Bhutan and Fiji) the widths are 40 or greater. For these economies the GII ranks should be interpreted cautiously and certainly not taken at face value. Some caution is also warranted in the Input Sub-Index for 37 economies that have 90% confidence interval widths over 20 (up to 53 for Bosnia and Herzegovina). The Output Sub-Index is slightly more sensitive to the methodological choices: 48 countries have 90% confidence interval widths over 20 (up to 48 for Togo). This sensitivity is mostly the consequence of the estimation of missing data and the fact that there are only two pillars: this means that changes to the imputation method, weights, or aggregation formula have a more notable impact on the country ranks.

Although some economy ranks, in the GII 2015 overall or in the two sub-indices, appear to be sensitive to the methodological choices, the published rankings for the vast majority can be considered as representative of the plurality of scenarios simulated herein. Taking

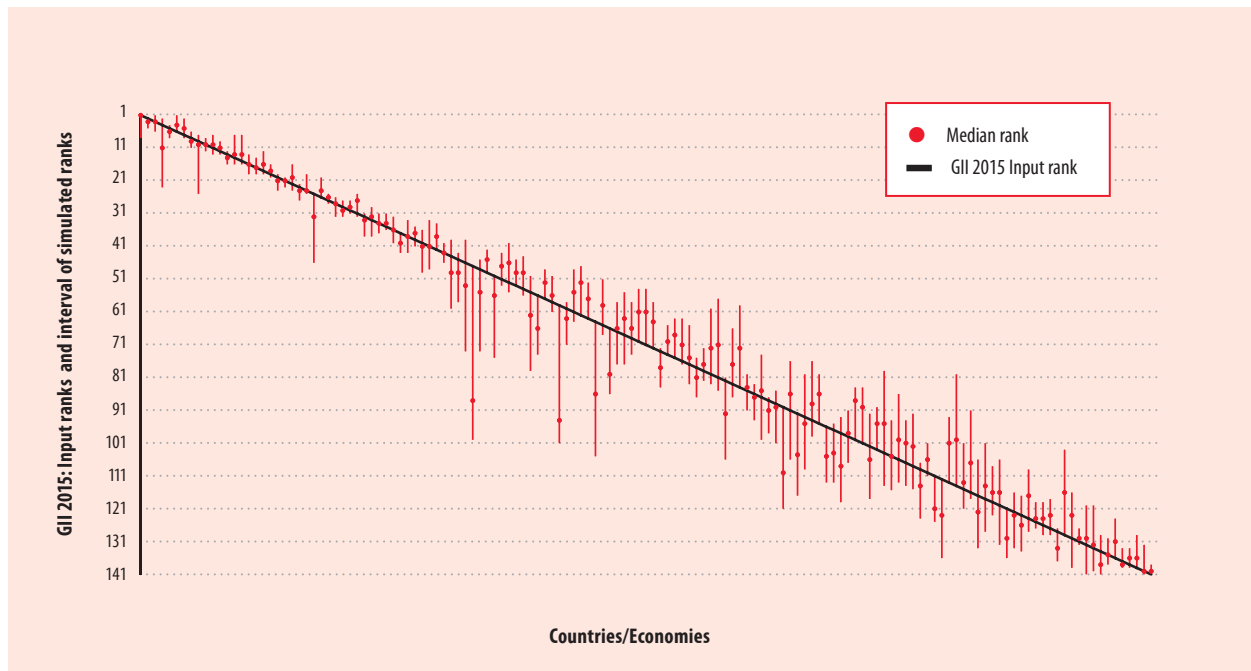
Figure 2a: Robustness analysis (GII rank vs. median rank, 90% confidence intervals)



Source: Saisana and Dominguez-Torreiro, European Commission Joint Research Centre, 2015.

Notes: Median ranks and intervals are calculated over 4,000 simulated scenarios combining random weights, imputed versus missing values, and geometric versus arithmetic average at the pillar level. The Spearman rank correlation between the median rank and the GI 2015 rank is 0.986.

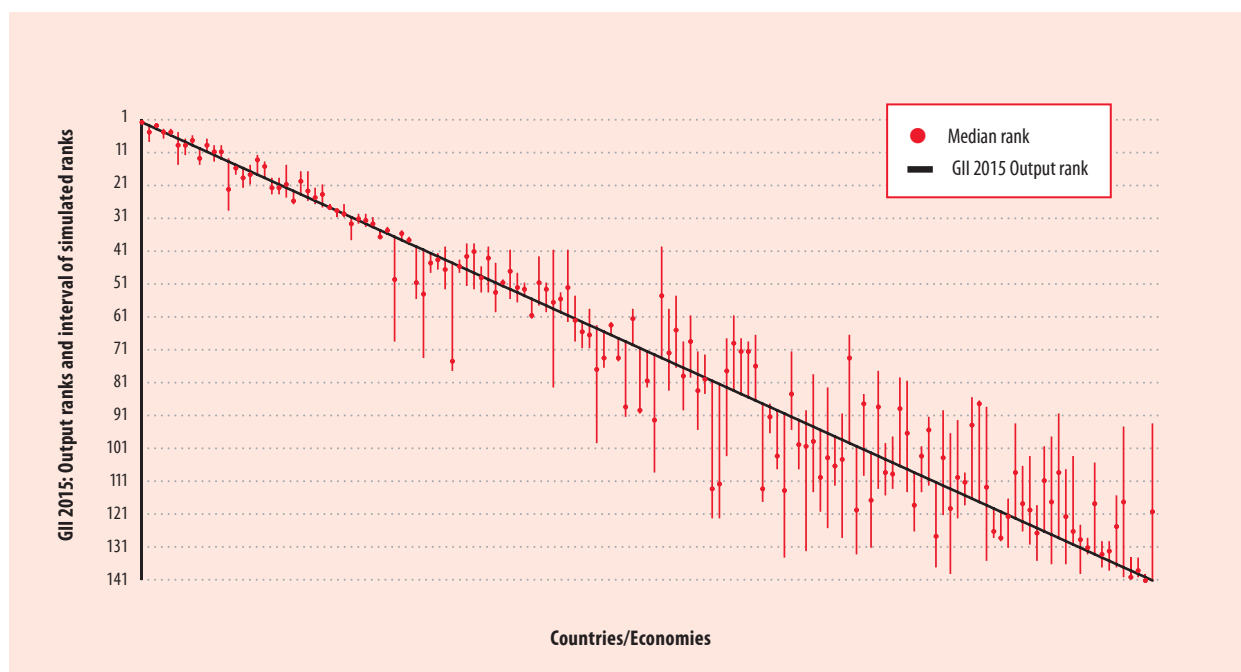
Figure 2b: Robustness analysis (Input rank vs. median rank, 90% confidence intervals)



Source: Saisana and Dominguez-Torreiro, European Commission Joint Research Centre, 2015.

Notes: Median ranks and intervals are calculated over 4,000 simulated scenarios combining random weights, imputed versus missing values, and geometric versus arithmetic average at the pillar level. The Spearman rank correlation between the median rank and the Innovation Input 2015 rank is 0.983.

Figure 2c: Robustness analysis (Output rank vs. median rank, 90% confidence intervals)



Source: Saisana and Domínguez-Torreiro, European Commission Joint Research Centre, 2015.

Notes: Median ranks and intervals are calculated over 4,000 simulated scenarios combining random weights, imputation versus no imputation of missing values, and geometric versus arithmetic average at the pillar level. The Spearman rank correlation between the median rank and the Innovation Output 2015 rank is 0.966.

the median rank as the yardstick for an economy's expected rank in the realm of the GII's unavoidable methodological uncertainties, 75% of the economies are found to shift fewer than seven positions with respect to the median rank in the GII (seven and eleven positions in the Input and Output Sub-Index, respectively).

For full transparency and information, Table 4 reports the GII 2015 Index and Input and Output Sub-Indices economy ranks together with the simulated 90% confidence intervals in order to better appreciate the robustness of the results to the choice of weights, of the aggregation formula and the impact of estimating missing data (where applicable).

Sensitivity analysis results

Complementary to the uncertainty analysis, sensitivity analysis has been used to identify which of the

modelling assumptions have the highest impact on certain country ranks. Table 5 summarizes the impact of one-at-a-time changes of either the EM imputation method or the geometric aggregation formula, with random weights. The most influential assumption is the choice of no imputation versus EM imputation; this is particularly influential for the GII, and least for the Input Sub-Index. This sensitivity is the result of the data availability, which is less satisfactory in the case of the Output Sub-Index: 29 countries have data coverage well below the 60% threshold over the 27 variables in the Output Sub-Index. Instead, data coverage is satisfactory in the case of the Input Sub-Index (all economies have indicator coverage more than 65% over the 52 variables). This factor has affected the

uncertainty analysis as well, and has propagated from the Output Sub-Index to the estimation of the overall GII. The choice of the aggregation formula has a very limited impact on the economies' ranks.

Our recommendation would be to consider country ranks in the GII 2015 and in the Input and Output Sub-Indexes not only at face value but also within the 90% confidence intervals in order to better appreciate to what degree a country's rank depends on the modelling choices. Furthermore, the 60% indicator coverage threshold needs to be applied separately to the Input and the Output Sub-Indices.

Table 4: GII 2015 and Input/Output Sub-Indices: Ranks and 90% confidence intervals

| Country/Economy | GII 2015 | | Input Sub-Index | | Output Sub-Index | |
|--------------------------|----------|----------|-----------------|-----------|------------------|-----------|
| | Rank | Interval | Rank | Interval | Rank | Interval |
| Switzerland | 1 | [1, 1] | 2 | [2, 5] | 1 | [1, 1] |
| United Kingdom | 2 | [2, 3] | 6 | [1, 6] | 5 | [3, 5] |
| Sweden | 3 | [2, 4] | 7 | [2, 8] | 4 | [3, 6] |
| Netherlands | 4 | [3, 5] | 11 | [7, 13] | 3 | [2, 3] |
| United States of America | 5 | [5, 10] | 5 | [4, 8] | 9 | [9, 14] |
| Finland | 6 | [4, 6] | 3 | [1, 6] | 10 | [6, 10] |
| Singapore | 7 | [6, 13] | 1 | [1, 8] | 20 | [18, 23] |
| Ireland | 8 | [6, 10] | 14 | [7, 16] | 7 | [6, 11] |
| Luxembourg | 9 | [6, 13] | 20 | [19, 24] | 2 | [2, 7] |
| Denmark | 10 | [7, 12] | 8 | [6, 11] | 12 | [8, 12] |
| Hong Kong (China) | 11 | [8, 23] | 4 | [2, 23] | 19 | [18, 23] |
| Germany | 12 | [6, 13] | 18 | [12, 19] | 8 | [5, 8] |
| Iceland | 13 | [12, 22] | 23 | [22, 27] | 6 | [4, 14] |
| Korea, Republic of | 14 | [7, 14] | 15 | [7, 16] | 11 | [8, 13] |
| New Zealand | 15 | [14, 18] | 13 | [12, 16] | 15 | [15, 21] |
| Canada | 16 | [15, 25] | 9 | [7, 25] | 22 | [22, 26] |
| Australia | 17 | [12, 18] | 10 | [8, 12] | 24 | [16, 25] |
| Austria | 18 | [13, 19] | 19 | [16, 20] | 18 | [13, 18] |
| Japan | 19 | [13, 21] | 12 | [9, 13] | 26 | [20, 27] |
| Norway | 20 | [18, 22] | 16 | [13, 19] | 25 | [21, 26] |
| France | 21 | [15, 21] | 17 | [14, 19] | 23 | [16, 23] |
| Israel | 22 | [17, 23] | 22 | [16, 24] | 16 | [14, 20] |
| Estonia | 23 | [20, 23] | 26 | [20, 26] | 14 | [14, 17] |
| Czech Republic | 24 | [19, 24] | 27 | [25, 28] | 17 | [11, 17] |
| Belgium | 25 | [25, 26] | 21 | [20, 23] | 28 | [28, 30] |
| Malta | 26 | [25, 32] | 33 | [29, 38] | 13 | [12, 28] |
| Spain | 27 | [24, 28] | 24 | [19, 25] | 29 | [26, 30] |
| Slovenia | 28 | [27, 29] | 30 | [27, 31] | 27 | [26, 27] |
| China | 29 | [27, 32] | 41 | [33, 48] | 21 | [14, 24] |
| Portugal | 30 | [28, 31] | 28 | [26, 32] | 33 | [30, 33] |
| Italy | 31 | [28, 31] | 29 | [27, 32] | 32 | [29, 33] |
| Malaysia | 32 | [30, 33] | 31 | [25, 32] | 34 | [34, 36] |
| Latvia | 33 | [32, 34] | 34 | [31, 37] | 30 | [30, 37] |
| Cyprus | 34 | [34, 43] | 32 | [31, 38] | 43 | [39, 52] |
| Hungary | 35 | [33, 35] | 42 | [34, 42] | 37 | [34, 37] |
| Slovakia | 36 | [35, 37] | 37 | [37, 43] | 38 | [36, 38] |
| Barbados | 37 | [36, 69] | 46 | [39, 73] | 36 | [36, 68] |
| Lithuania | 38 | [37, 39] | 35 | [31, 36] | 42 | [41, 46] |
| Bulgaria | 39 | [35, 39] | 49 | [42, 49] | 35 | [33, 35] |
| Croatia | 40 | [40, 44] | 43 | [40, 46] | 41 | [41, 47] |
| Montenegro | 41 | [41, 71] | 50 | [50, 75] | 40 | [40, 73] |
| Chile | 42 | [38, 42] | 36 | [32, 40] | 48 | [45, 53] |
| Saudi Arabia | 43 | [43, 67] | 45 | [43, 58] | 44 | [44, 77] |
| Moldova, Republic of | 44 | [39, 45] | 74 | [65, 74] | 31 | [29, 32] |
| Greece | 45 | [41, 49] | 38 | [33, 43] | 57 | [50, 59] |
| Poland | 46 | [37, 46] | 39 | [35, 41] | 56 | [42, 57] |
| United Arab Emirates | 47 | [39, 60] | 25 | [25, 46] | 99 | [66, 99] |
| Russian Federation | 48 | [41, 51] | 52 | [40, 55] | 49 | [39, 53] |
| Mauritius | 49 | [40, 60] | 44 | [39, 60] | 60 | [40, 62] |
| Qatar | 50 | [50, 60] | 40 | [36, 49] | 62 | [62, 70] |
| Costa Rica | 51 | [46, 52] | 61 | [48, 64] | 45 | [43, 47] |
| Viet Nam | 52 | [52, 67] | 78 | [75, 87] | 39 | [39, 55] |
| Belarus | 53 | [46, 78] | 55 | [50, 79] | 58 | [40, 82] |
| Romania | 54 | [47, 55] | 57 | [48, 57] | 52 | [40, 55] |
| Thailand | 55 | [49, 58] | 62 | [47, 62] | 50 | [44, 59] |
| TFYR Macedonia | 56 | [56, 66] | 56 | [56, 74] | 55 | [55, 61] |
| Mexico | 57 | [50, 57] | 58 | [50, 61] | 54 | [50, 54] |
| Turkey | 58 | [49, 59] | 71 | [54, 71] | 46 | [38, 51] |
| Bahrain | 59 | [59, 69] | 48 | [45, 73] | 65 | [65, 76] |
| South Africa | 60 | [53, 62] | 54 | [44, 56] | 61 | [54, 68] |
| Armenia | 61 | [53, 61] | 69 | [58, 74] | 51 | [49, 51] |
| Panama | 62 | [56, 62] | 72 | [58, 72] | 53 | [47, 56] |
| Serbia | 63 | [54, 63] | 70 | [54, 70] | 59 | [53, 59] |
| Ukraine | 64 | [47, 66] | 84 | [59, 84] | 47 | [38, 52] |
| Seychelles | 65 | [65, 80] | 59 | [59, 101] | 64 | [63, 99] |
| Mongolia | 66 | [43, 66] | 53 | [45, 53] | 73 | [39, 73] |
| Colombia | 67 | [49, 67] | 51 | [43, 53] | 75 | [54, 76] |
| Uruguay | 68 | [59, 68] | 63 | [52, 63] | 66 | [62, 66] |
| Oman | 69 | [69, 78] | 68 | [55, 77] | 68 | [68, 91] |
| Brazil | 70 | [54, 72] | 65 | [51, 68] | 74 | [58, 83] |
| Peru | 71 | [65, 80] | 60 | [58, 71] | 82 | [67, 103] |

Table 4: GII 2015 and Input/Output Sub-Indices: Ranks and 90% confidence intervals (continued)

| Country/Economy | GII 2015 | | Input Sub-Index | | Output Sub-Index | |
|-----------------------------------|----------|------------|-----------------|------------|------------------|------------|
| | Rank | Interval | Rank | Interval | Rank | Interval |
| Argentina | 72 | [60, 76] | 81 | [57, 85] | 63 | [58, 70] |
| Georgia | 73 | [65, 73] | 67 | [58, 77] | 86 | [66, 86] |
| Lebanon | 74 | [72, 82] | 77 | [65, 83] | 76 | [68, 89] |
| Jordan | 75 | [68, 76] | 80 | [60, 83] | 67 | [67, 74] |
| Tunisia | 76 | [76, 81] | 83 | [66, 87] | 71 | [71, 82] |
| Kuwait | 77 | [77, 87] | 87 | [74, 100] | 70 | [70, 90] |
| Morocco | 78 | [69, 78] | 76 | [63, 77] | 84 | [67, 84] |
| Bosnia and Herzegovina | 79 | [79, 100] | 47 | [47, 100] | 122 | [93, 122] |
| Trinidad and Tobago | 80 | [80, 90] | 86 | [83, 94] | 88 | [87, 96] |
| India | 81 | [73, 81] | 100 | [84, 100] | 69 | [58, 69] |
| Kazakhstan | 82 | [77, 87] | 75 | [63, 75] | 107 | [80, 114] |
| Philippines | 83 | [76, 86] | 101 | [84, 101] | 77 | [60, 79] |
| Senegal | 84 | [84, 107] | 110 | [101, 111] | 72 | [72, 108] |
| Sri Lanka | 85 | [76, 98] | 104 | [79, 114] | 79 | [72, 84] |
| Guyana | 86 | [86, 110] | 90 | [90, 121] | 93 | [89, 132] |
| Albania | 87 | [87, 95] | 73 | [72, 84] | 112 | [89, 121] |
| Paraguay | 88 | [73, 88] | 103 | [90, 103] | 83 | [60, 83] |
| Dominican Republic | 89 | [89, 107] | 88 | [87, 98] | 98 | [90, 128] |
| Botswana | 90 | [85, 110] | 79 | [72, 82] | 108 | [108, 126] |
| Cambodia | 91 | [84, 102] | 96 | [96, 113] | 91 | [71, 95] |
| Kenya | 92 | [79, 103] | 113 | [93, 113] | 78 | [71, 95] |
| Azerbaijan | 93 | [82, 102] | 89 | [85, 101] | 103 | [77, 113] |
| Rwanda | 94 | [81, 103] | 66 | [66, 86] | 128 | [90, 128] |
| Mozambique | 95 | [94, 104] | 93 | [80, 109] | 97 | [97, 112] |
| Jamaica | 96 | [96, 96] | 85 | [80, 91] | 110 | [91, 112] |
| Indonesia | 97 | [73, 97] | 114 | [80, 114] | 85 | [68, 85] |
| Malawi | 98 | [98, 117] | 111 | [111, 125] | 89 | [89, 107] |
| El Salvador | 99 | [92, 100] | 95 | [80, 95] | 104 | [99, 115] |
| Egypt | 100 | [85, 118] | 108 | [92, 115] | 96 | [82, 125] |
| Guatemala | 101 | [88, 108] | 107 | [94, 114] | 101 | [84, 109] |
| Burkina Faso | 102 | [102, 130] | 109 | [107, 124] | 100 | [100, 133] |
| Cabo Verde | 103 | [93, 121] | 92 | [92, 117] | 114 | [92, 122] |
| Bolivia, Plurinational State of | 104 | [95, 118] | 118 | [101, 128] | 92 | [92, 107] |
| Mali | 105 | [105, 128] | 125 | [119, 127] | 81 | [81, 122] |
| Iran, Islamic Republic of | 106 | [93, 108] | 106 | [86, 113] | 105 | [97, 113] |
| Namibia | 107 | [98, 116] | 91 | [76, 106] | 119 | [119, 128] |
| Ghana | 108 | [96, 124] | 116 | [91, 118] | 102 | [102, 131] |
| Kyrgyzstan | 109 | [84, 118] | 94 | [76, 99] | 118 | [88, 135] |
| Cameroon | 110 | [110, 131] | 126 | [119, 129] | 90 | [90, 134] |
| Uganda | 111 | [95, 125] | 102 | [92, 118] | 113 | [96, 139] |
| Gambia | 112 | [107, 128] | 121 | [121, 136] | 94 | [78, 114] |
| Honduras | 113 | [90, 113] | 105 | [94, 115] | 116 | [85, 116] |
| Tajikistan | 114 | [90, 114] | 115 | [101, 121] | 106 | [79, 106] |
| Fiji | 115 | [79, 125] | 64 | [64, 105] | 137 | [94, 140] |
| Côte d'Ivoire | 116 | [115, 132] | 131 | [127, 132] | 87 | [87, 117] |
| Tanzania, United Republic of | 117 | [110, 118] | 124 | [109, 128] | 95 | [95, 120] |
| Lesotho | 118 | [106, 129] | 97 | [95, 113] | 125 | [118, 135] |
| Ecuador | 119 | [98, 123] | 99 | [91, 107] | 124 | [103, 130] |
| Angola | 120 | [120, 130] | 137 | [133, 139] | 80 | [80, 122] |
| Bhutan | 121 | [98, 138] | 82 | [81, 106] | 135 | [129, 138] |
| Uzbekistan | 122 | [107, 138] | 112 | [112, 136] | 127 | [97, 136] |
| Swaziland | 123 | [111, 130] | 98 | [93, 119] | 132 | [128, 133] |
| Zambia | 124 | [115, 124] | 130 | [116, 139] | 115 | [108, 118] |
| Madagascar | 125 | [113, 135] | 123 | [117, 134] | 123 | [106, 126] |
| Algeria | 126 | [105, 130] | 119 | [108, 123] | 129 | [107, 136] |
| Ethiopia | 127 | [118, 140] | 132 | [120, 141] | 111 | [111, 137] |
| Nigeria | 128 | [118, 134] | 135 | [130, 138] | 109 | [100, 114] |
| Bangladesh | 129 | [105, 129] | 129 | [103, 129] | 126 | [100, 126] |
| Nicaragua | 130 | [105, 130] | 120 | [106, 132] | 133 | [105, 133] |
| Pakistan | 131 | [104, 131] | 136 | [124, 136] | 117 | [86, 117] |
| Venezuela, Bolivarian Republic of | 132 | [119, 138] | 133 | [120, 140] | 121 | [116, 131] |
| Zimbabwe | 133 | [131, 140] | 134 | [129, 141] | 120 | [120, 129] |
| Niger | 134 | [122, 139] | 117 | [106, 133] | 139 | [134, 140] |
| Nepal | 135 | [121, 137] | 127 | [118, 129] | 136 | [115, 137] |
| Burundi | 136 | [134, 138] | 122 | [116, 133] | 138 | [134, 140] |
| Yemen | 137 | [130, 140] | 138 | [133, 139] | 131 | [124, 139] |
| Myanmar | 138 | [130, 138] | 139 | [129, 139] | 130 | [103, 130] |
| Guinea | 139 | [135, 140] | 140 | [132, 141] | 134 | [129, 137] |
| Togo | 140 | [117, 141] | 128 | [127, 137] | 141 | [93, 141] |
| Sudan | 141 | [140, 141] | 141 | [138, 141] | 140 | [139, 141] |

Source: Saisana and Dominguez-Torreiro, European Commission Joint Research Centre, 2015.

Table 5: Sensitivity analysis: Impact of modelling choices on economies with most sensitive ranks

| Index or Sub-Index | Uncertainty tested (pillar level only) | Number of economies that <i>improve</i> by 20 or more positions | Number of economies that <i>deteriorate</i> by 20 or more positions |
|-------------------------|---|---|---|
| GII | Geometric vs. arithmetic average | 0 | 1 |
| | EM imputation vs. no imputation of missing data | 8 | 2 |
| | Geometric average and EM imputation vs. arithmetic average and missing values | 8 | 4 |
| Input Sub-Index | Geometric vs. arithmetic average | 1 | 1 |
| | EM imputation vs. no imputation of missing data | 1 | 1 |
| | Geometric average and EM imputation vs. arithmetic average and missing values | 1 | 1 |
| Output Sub-Index | Geometric vs. arithmetic average | 2 | 1 |
| | EM imputation vs. no imputation of missing data | 15 | 18 |
| | Geometric average and EM imputation vs. arithmetic average and missing values | 15 | 18 |

Source: Saisana and Dominguez-Torreiro, European Commission Joint Research Centre, 2015.

Conclusion

The JRC analysis suggests that the conceptualized multi-level structure of the GII 2015—with its 21 sub-pillars, 7 pillars, 2 sub-indices, up to an overall index—is statistically sound and balanced: that is, each sub-pillar makes a similar contribution to the variation of its respective pillar. The no-imputation choice for not treating missing values, common in relevant contexts and justified on grounds of transparency and replicability, can at times have an undesirable impact on some country scores for the Innovation Output Sub-Index in particular, with the additional negative side-effect that it may encourage countries not to report low data values. The choice of the GII team this year to use weights as scaling coefficients during the development of the index (the same choice that has been made since 2012) constitutes a significant departure from the traditional vision of weights as a reflection of indicators' importance in a weighted average. It is hoped that such a consideration will be made also by other developers of composite indicators.

The strong correlations between the GII components are proven

not to be a sign of redundancy of information in the GII. For more than 50.4% (up to 69.5%) of the 141 economies included in the GII 2015, the GII ranking and the rankings of any of the seven pillars differ by 10 positions or more. This demonstrates the added value of the GII ranking, which helps to highlight other components of innovation that do not emerge directly by looking into the seven pillars separately.

All published GII 2015 ranks lay within the simulated 90% confidence intervals that take into account the unavoidable uncertainties in the estimation of missing data, the weights (fixed vs. random), and the aggregation formula (arithmetic vs. geometric average) at the pillar level. For most countries these intervals are narrow enough for meaningful inferences to be drawn: the intervals comprise fewer than 10 positions for 80 of the 141 economies. Caution is needed for some countries with ranks that are highly sensitive to the methodological choices. The Output Sub-Index is more sensitive to the methodological choices; sensitivity is mostly the consequence of the estimation of missing data and the fact that there

are only two pillars; hence changes to the imputation method, weights, or aggregation formula have a more notable impact on the country ranks. Nevertheless, country ranks, either in the GII 2015 or in the two sub-indices, can be considered representative of the many possible scenarios: 75% of the countries shift fewer than seven positions with respect to the median rank in the GII (seven and eleven positions, respectively, in the Input and Output Sub-Indices).

All things considered, the present JRC audit endorses the statistical soundness and reliability of the GII index as a benchmarking tool for innovation practices at the country level around the world. Needless to say, the usefulness of the GII index as a standalone policy evaluation tool should be enhanced by simultaneously reading and reflecting on the wealth of information on innovation issues gathered and disseminated within the overall GII framework, which in any case should be regarded as a sound attempt to pave the way for better and more informed innovation policies worldwide.

Notes

- 1 OECD/EC JRC, 2008, p. 26.
- 2 The JRC analysis was based on the recommendations of the OECD/EC JRC (2008) *Handbook on Composite Indicators* and on more recent research from the JRC. The JRC audits on composite indicators are conducted upon request of the index developers and are available at <https://ec.europa.eu/jrc/en/coin>.
- 3 Groeneveld and Meeden (1984) set the criteria for absolute skewness above 1 and kurtosis above 3.5. The skewness criterion was relaxed to account for the small sample (141 economies).
- 4 Nunnally, 1978.
- 5 Saisana et al., 2005; Saisana et al., 2011.
- 6 The Expectation-Maximization (EM) algorithm (Little and Rubin, 2002) is an iterative procedure that finds the maximum likelihood estimates of the parameter vector by repeating two steps: (1) The expectation E-step: Given a set of parameter estimates, such as a mean vector and covariance matrix for a multivariate normal distribution, the E-step calculates the conditional expectation of the complete-data log likelihood given the observed data and the parameter estimates. (2) The maximization M-step: Given a complete-data log likelihood, the M-step finds the parameter estimates to maximize the complete-data log likelihood from the E-step. The two steps are iterated until the iterations converge.
- 7 Munda, 2008.
- 8 In the geometric average, pillars are multiplied as opposed to summed in the arithmetic average. Pillar weights appear as exponents in the multiplication. All pillar scores were greater than zero, hence there was no reason to rescale them to avoid zero values that would have led to zero geometric averages.

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Benchmarking Innovation Outperformance at the Global and Country Levels

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National innovation policies and programmes are flourishing. Especially in developing countries, the emphasis on fostering innovation has now also increased. At the global level, the need to spur innovation to foster economic growth and to find solutions to social challenges is increasingly recognized.

Accordingly, benchmarking innovation performance is becoming a greater priority. Taking advantage of the wealth of information produced by the Global Innovation Index (GII) over the last years, this chapter compares the innovation performance of specific countries, identifies developing nations that persistently outperform their peers on innovation performance, and analyses how their local efforts have improved their capacity to innovate. This will help other countries look ahead to policy changes they might want to implement themselves.

The chapter first discusses why measuring innovation is important. It then identifies those developing countries that performed persistently above their peers.¹ This is followed by a discussion of innovation achievers—those with scores in the overall GI that are higher than expected for their level of development—and a consideration of their strengths and weaknesses. This is followed by a look at pillar outperformer countries—those that perform above their income-group peers in more than half the pillars of the GI. The next section examines the 11 innovation

outperformers this year—these are countries that have attained both innovation achiever and pillar outperformer status—and takes a look at their policy strategies. Finally, the chapter zeros in on the role that education and research systems play for the innovation outperformers. The conclusions that end the chapter note characteristics common to the persistent outperforming countries.

The importance of measuring innovation performance

Measuring progress in innovation has become essential for policy makers seeking ways to assess the effectiveness of their innovation systems and policies. Interest in innovation measurement has even permeated high-level international development-related discussions. At the global level, the United Nations (UN) Sustainable Development Goals (SDGs), for instance, will set a new development agenda (see Box 1). Innovation has a large role to play in this agenda, both as a means to achieve improvements in health, environmental protection, food security, and so on, and as a goal in itself. The identification of cross-cutting indicators that can capture innovation progress is thus an ongoing process in the respective UN fora as well.

As discussed in Chapter 1, innovation needs to be understood broadly and also to be recognized as the result

of complex interactions among various actors, such as firms, education and research organizations, and the public sector. Successful innovation also must incorporate the coevolution of institutions and regulations as well as science, technology, and innovation policies. To produce a comprehensive measure for benchmarking innovation performance, it is necessary to go beyond readily available one-dimensional statistics such as research and development (R&D) expenditure and the number of patents.

Identifying developing countries with persistently high innovation performance

By comparing respective innovation performances and identifying those developing countries that outperform others at similar levels of economic development, the GI can help identify areas of strengths and weaknesses in innovation efforts and point to priority areas for improvement.

To recap, the GI traditionally relies on two sub-indices: the Innovation Input Sub-Index and the Innovation Output Sub-Index, which have a total of seven pillars between them. Five innovation inputs are used to build the Innovation Input Sub-Index. These capture the characteristics of the enabling environment for innovation and include: (1) Institutions, (2) Human capital and research, (3) Infrastructure,

Box 1: The Post 2015 Development Agenda: From Millennium Development Goals to Sustainable Development Goals

In September 2015, the Member States of the United Nations (UN) are expected to agree on the various elements that make up the Post 2015 Development Agenda. Central to this agreement will be the adoption of the Sustainable Development Goals (SDGs), which are intended to build on the Millennium Development Goals (MDGs) and will provide the main basis for a comprehensive set of targets that will shape development in the period 2015–30.

The Post 2015 Development Agenda calls for a transformative shift to a low carbon and socially equitable economy that balances economic progress with safeguarding the environment. In a shift from the approach of the MDGs, which focused on developing countries, the SDGs will be universal in their application and implementation.

It is ever more recognized, especially within the UN, that innovation is key for this

purpose. The development and transfer of technologies requires an enabling environment: a national innovation system that promotes the development of domestic technological solutions as well as north-south, south-south, and triangular technology transfer and cooperation. Countries able to build and nurture effective national innovation systems are best able to harness technologies—both old and new.

However, as the Global Innovation Index (GII) demonstrates, such systems are highly complex and interactive. Policy makers require evidence to support effective decision making in building such systems. Data are important for monitoring, reviewing, and accountability in terms of SDG progress; they are of even greater significance in guiding policy makers to make the right decisions at the national level. The SDGs will establish 17 Goals with 169 targets. This will provide the framework for monitoring,

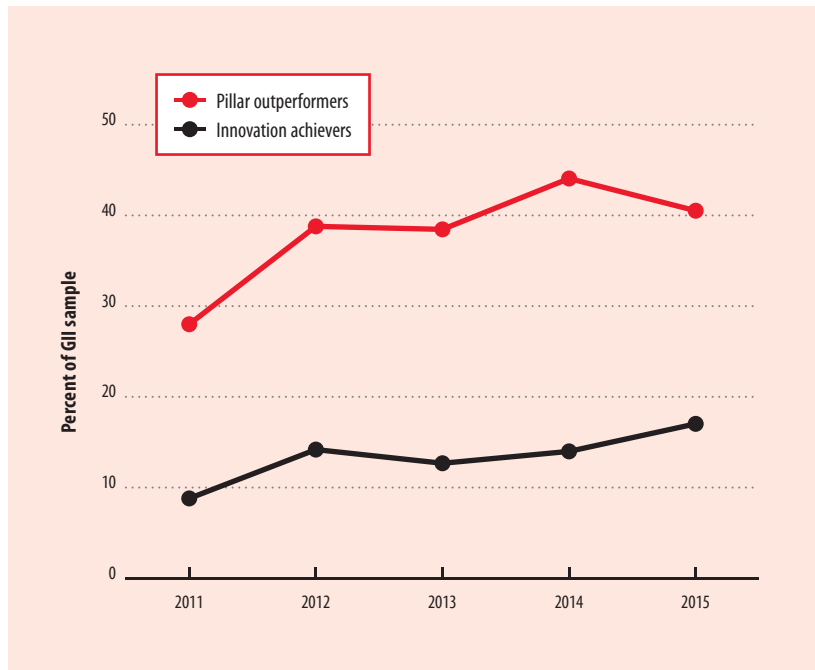
review, and accountability at the global, regional, and national levels. Technology and innovation as a cross-cutting issue feeds into several of these goals and targets. Goal 9, in particular—‘Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation’—makes explicit reference to innovation and refers to several elements that compose the GI, namely infrastructures, access to credit, market access, resource efficiency and environmentally friendly technologies, access to ICT, scientific research, and technological capabilities.

As the indicator framework for the SDGs is developed over the coming months, the GI can provide an important contribution and the critical data required to monitor innovation.

Source

UNDESA, 2015.

Figure 1: Percentage of economies outperforming at the GII score and pillar level, 2011–14



Note: Innovation achievers are those with GII levels higher than expected based on their level of economic development. Pillar outperformers are those performing above their income group in four or more pillars.

(4) Market sophistication, and (5) Business sophistication. Two innovation outputs compose the Innovation Output Sub-Index: (6) Knowledge and technology outputs and (7) Creative outputs.

This chapter benchmarks national innovation performance by taking into account both the overall GII scores and those of the seven individual GII pillars. Countries are termed ‘innovation achievers’ and said to outperform their peers if their GII scores are higher than expected based on their level of economic development (as measured by GDP per capita) (see Box 2). Countries also have the opportunity to be ‘pillar outperformers’ if they outperform their peers on more than half of the seven GII pillars. Countries that meet both of these benchmarks are hereto referred to as ‘innovation outperformers’. These

Table 1: Innovation achievers and pillar outperformers, 2011–14

| Economy | Income group | Region | Years as an innovation achiever (total) | Years as a pillar outperformer (total) |
|----------------------|---------------------|--------|---|--|
| Armenia | Lower-middle income | NAWA | 2014, 2013, 2012 (3) | 2014, 2013, 2012 (3) |
| Burkina Faso | Low income | SSF | 2014 (1) | 2014, 2013, 2012 (3) |
| China | Upper-middle income | SEAO | 2014, 2013, 2012, 2011 (4) | 2014, 2013, 2012, 2011 (4) |
| Costa Rica | Upper-middle income | LCN | 2013 (1) | 2014, 2013, 2012, 2011 (4) |
| Czech Republic | High income | EUR | 2014 (1) | 2014 (1) |
| Georgia | Lower-middle income | NAWA | 2014, 2013, 2012 (3) | 2014, 2013, 2012, 2011 (4) |
| Ghana* | Lower-middle income | SSF | 2011 (1) | 2014, 2013, 2012, 2011 (4) |
| Gambia | Low income | SSF | 2014 (1) | 2014 (1) |
| Guyana | Lower-middle income | LCN | 2011 (1) | 2013, 2012, 2011 (3) |
| Hungary [†] | Upper-middle income | EUR | 2013, 2012 (2) | 2014, 2013, 2012, 2011 (4) |
| India | Lower-middle income | CSA | 2014, 2013, 2012, 2011 (4) | 2014, 2013, 2012, 2011 (4) |
| Jordan | Upper-middle income | NAWA | 2014, 2013, 2012, 2011 (4) | 2014, 2013, 2011 (3) |
| Kenya | Low income | SSF | 2014, 2013, 2012, 2011 (4) | 2014, 2013, 2012, 2011 (4) |
| Moldova, Rep. | Lower-middle income | EUR | 2014, 2013, 2012, 2011 (4) | 2014, 2013, 2012, 2011 (4) |
| Mali | Low income | SSF | 2013 (1) | 2013, 2012 (2) |
| Montenegro | Upper-middle income | EUR | 2013, 2012 (2) | 2014, 2013, 2012 (3) |
| Mongolia | Lower-middle income | SEAO | 2014, 2013, 2012, 2011 (4) | 2014, 2013, 2012, 2011 (4) |
| Mozambique | Low income | SSF | 2014, 2012 (2) | 2014, 2013, 2012 (3) |
| Malawi | Low income | SSF | 2014, 2012 (2) | 2014, 2012, 2011 (3) |
| Malaysia | Upper-middle income | SEAO | 2014, 2013, 2012, 2011 (4) | 2014, 2013, 2012, 2011 (4) |
| Rwanda | Low income | SSF | 2014, 2012 (2) | 2014, 2013, 2012, 2011 (4) |
| Serbia | Upper-middle income | EUR | 2012 (1) | 2014, 2013, 2012, 2011 (4) |
| Thailand | Upper-middle income | SEAO | 2014, 2011 (2) | 2014, 2013, 2012, 2011 (4) |
| Tajikistan | Low income | CSA | 2013 (1) | 2013, 2012 (2) |
| Uganda | Low income | SSF | 2014, 2013 (2) | 2014, 2013 (2) |
| Ukraine | Lower-middle income | EUR | 2014, 2012 (2) | 2014, 2013, 2012, 2011 (4) |
| Viet Nam | Lower-middle income | SEAO | 2014, 2013, 2012, 2011 (4) | 2014, 2013, 2012, 2011 (4) |
| Zimbabwe | Low income | SSF | 2012 (1) | 2014, 2013, 2012 (3) |

Note: Regions are based on the United Nations Classification: EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; SSF = Sub-Saharan Africa. * Low income in 2011, lower-middle income in all other years. [†] Upper-middle income in 2014, high income in all previous years.

outperformers provide the basis of the following analysis.

This approach has some limitations. As with most year-on-year comparisons, movements in and out of the outperformer group can be the result of methodological changes in the GII framework, newly available data, and relative numerator versus denominator changes that do not necessarily correspond to improved or worsened innovation performance (refer to Chapter 1 Annex 2).

With these caveats in mind, this chapter looks into the performance of those countries that do well on either or both these criteria.

This analysis finds that the percentage of countries with above-par performance as defined above exhibits an upward trend (Figure 1). The number of innovation achievers continues to increase through the period under study here, namely 2011–14, and beyond into 2015: This year it reached 24 economies, or 17% of the economies included in the GII sample. This is the highest percentage since 2011, when it reached 9%. The number of pillar outperformers reached 41% in 2015, up from 28% in 2011. An increasing number of countries are thus doing strictly better on innovation than

their development levels would suggest. No inference can be made from these data about whether the absolute level of innovation performance globally has increased. Instead, these countries are able to detach themselves from their peer group, leading to a more unequal distribution of innovation performance, at least until their income levels increase to such an extent that they will need to compare themselves with more-advanced country peers.

As Table 1 shows, eight economies (China, India, Jordan, Kenya, the Republic of Moldova, Mongolia, Malaysia, and Viet Nam), signalled

Box 2: How innovation performance relative to GDP is identified and classified

Since 2012 the process of determining a country's innovation status has relied on both its Global Innovation Index (GII) score and its level of economic development, as measured by gross domestic product (GDP) per capita. Once the GII scores for each country are determined, these are contrasted with their current year's GDP based on per capita purchasing power parity (GDP PC PPP\$).¹ To facilitate the comparison between GDP per capita and GII scores (on a scale of 0–100), and given that GDP per capita in PPP\$ (ln scale) for each country follows a log-normal distribution, the latter are transformed using natural logarithms. The GII scores (Y axis) for all countries are then plotted against their GDP per capita (X axis).² The plotted data points for all countries help define a trend line—a polynomial regression of the form $y = f(x)$ —and its equation, which models the relationship between these variables. Using the equation that defines this trend line, the expected GII score for each country can be calculated (the dependent variable), given its degree of economic development as measured by GDP per capita (the independent variable).³ These expected scores help define the range within which a country's

score is perceived as performing in line with its level of economic development.

For each country, the upper bound in this range is determined by increasing its expected score by 10%; the lower bound is determined by decreasing its expected score by 10%. A country is considered to be an 'innovation achiever' if its GII score falls above its upper bound. When a country's GII score falls within bounds it is considered to be performing as expected for its level of development; when a country's GII score falls below the lower bound it is considered to be performing below its level of development. Figure 2.1 shows a close-up of the trend line and bounds for the GII 2015 as well as the data points for three economies: Montenegro (GII 41), an innovation achiever; Costa Rica (GII 51) performing in line with its economic development; and the Islamic Republic of Iran (GII 106), performing below its level of development.

In addition to the above, other conditions help to determine each economy's status with respect to innovation capacity. Table 2.1 summarizes the complete set of conditions. This process locates all innovation achievers above the defined trend line, while those economies identified

as innovating below capacity are located below it.

Figure 2.2 shows the distribution of all countries in the GII 2015 once their scores are plotted versus the natural logarithm of their current GDP per capita. The figure also shows the trend line, which defines the relationship between the independent variable (GDP per capita) and the dependent variable (GII score). The trend line's equation and the coefficient of determination (R^2), which indicates how well it explains the relationship between these two variables, are also displayed in the figure.

Innovation achievers (shown in red) are identified as performing above their level of economic development and thus are always located above the trend line. Economies performing at levels expected for their economic development (shown in black) are located above, on, or below the trend line. Their distribution is, however, constrained by the bounds set by their expected scores: 10% plus or minus these scores as defined by the trend line's equation. Nations whose innovation performance is noted as being below their level of economic development (shown in grey), are located below the trend line.

Table 2.1: Rules for determining innovation performance with respect to GDP

| Status | GII score | Difference between GII score and 10% above trend line ($x = \ln \text{GDP per capita}$)($x = \ln \text{GDP per capita}$) | Difference between GII score and 10% below trend line ($x = \ln \text{GDP per capita}$) |
|------------------------------|------------------|---|--|
| Innovation achievers | $< 50^{\dagger}$ | $> 0^*$ | > 0 |
| Innovators at development | $< 50^{\dagger}$ | < 0 | > 0 |
| Innovators below development | $< 50^{\dagger}$ | < 0 | $< 0^*$ |

Note: * A necessary condition; [†] Not a necessary condition. In some cases, economies with a GII score of 50 or more that are not among the top 25 can be considered innovation achievers.

(Continued)

as innovation achievers, outperform their peers on the overall GII score during 2011–14. By excelling in all four years, these countries demonstrate the most persistent innovation performance measured as GII score relative to their GDP. These innovation achievers are all upper- and

lower-middle-income countries, with the exception of low-income Kenya.

The table also shows that 15 economies (China, Costa Rica, Georgia, Ghana, Hungary, India, Kenya, the Republic of Moldova, Mongolia, Malaysia, Rwanda,

Serbia, Thailand, Ukraine, and Viet Nam) qualify as pillar outperformers—that is, they outperform their peers in at least four innovation input or output pillars for all four years during 2011–14. There is some overlap between the eight innovation achievers listed above and these

Box 2: How innovation performance relative to GDP is identified and classified

Figure 2.1: Innovation capacity of three countries: Trend line, upper and lower bounds

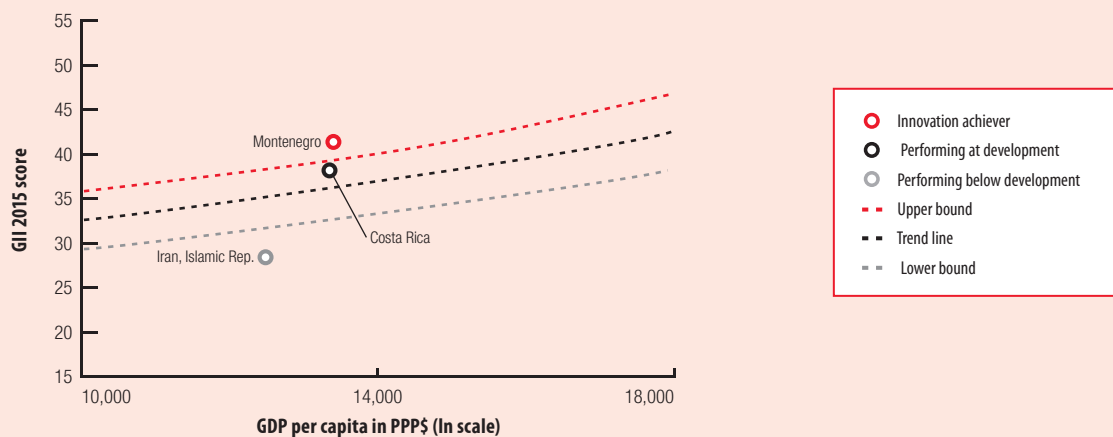
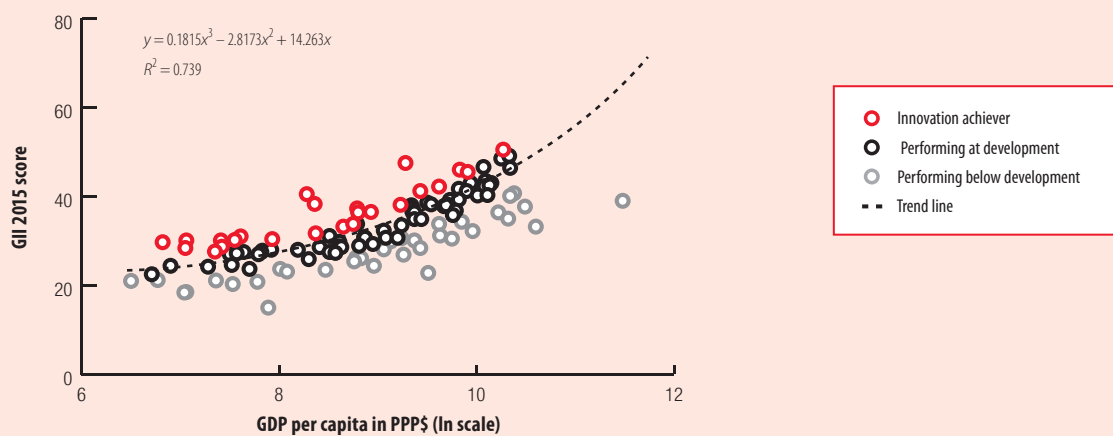


Figure 2.2 Distribution of innovation performance in the GII 2015



Notes

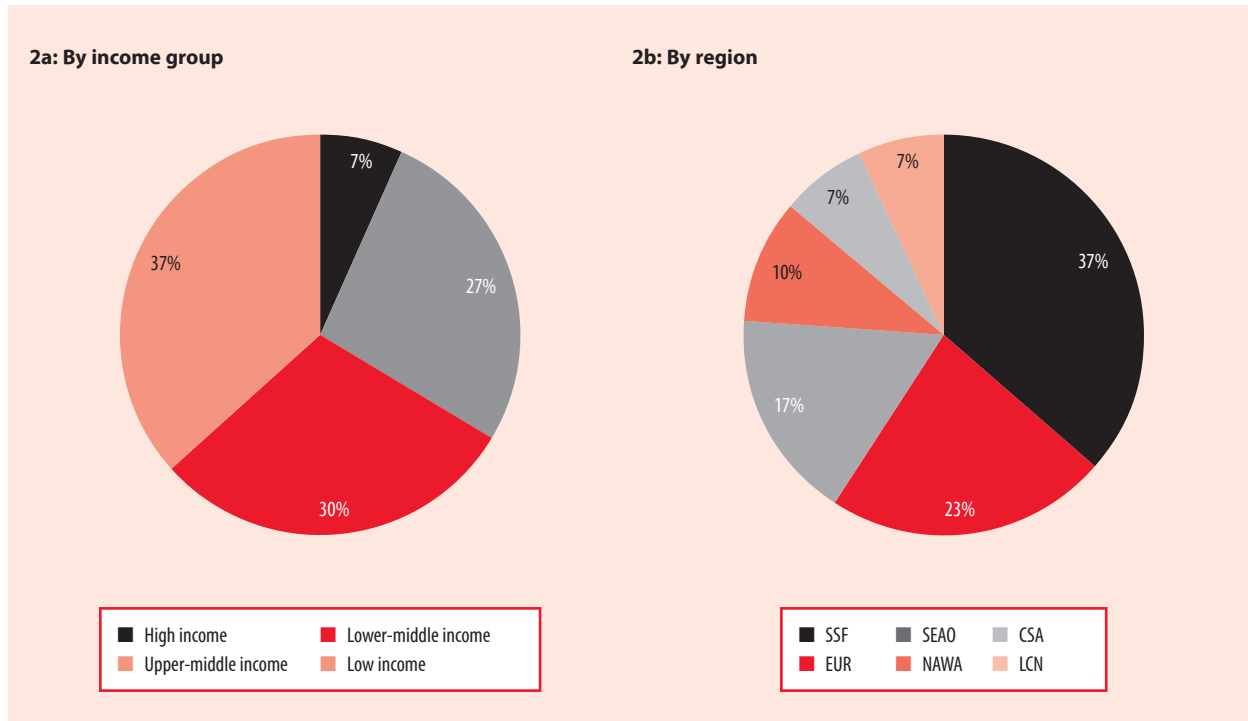
- 1 Population is also considered in this process (illustrated by the size of the data point in Figure 6 of Chapter 1). This is done to provide an additional dimension. This parameter, however, does not influence either the distribution or the resulting plotted trend line, and it is therefore not considered in Figure 2.2
- 2 Each year since 2013 the trend line has been defined as a polynomial regression of degree 3 with intercept. For the year 2012, the trend line was defined as a polynomial of degree 4 without intercept, which is why it was re-calculated for this exercise.
- 3 The high-income economies that lead the GII rankings (see Figure 3 in Chapter 1) are not considered in Chapter 2.

pillar outperformers. The table also includes countries that qualify in either category for fewer than all four years.

Going further, 11 developing countries—Armenia, China, Georgia, India, Jordan, Kenya, Malaysia, the Republic of Moldova,

Mongolia, Uganda, and Viet Nam—are labelled ‘innovation outperformers’ because they conform to both rules: (1) being an innovation achiever for two or more recent years (including 2013 and 2014), and (2) being a pillar outperformer for two or more years (including 2013

and 2014). Countries that outperform on one of these two criteria are discussed in the following sections.

Figure 2: Innovation achievers, 2011–14

Note: Regions are based on the United Nations Classification: CSA = Central and Southern Asia; EUR = Europe; LCN = Latin America and the Caribbean; NAWA = Northern Africa and Western Asia; SEAO = South East Asia and Oceania; SSF = Sub-Saharan Africa.

Innovation achievers by income group and region

Since 2011, innovation achievers—countries that outperform in their overall GII score relative to their level of development—are mostly found in the low (11 countries), and lower-middle (9 countries) income groups. In regional terms, they are mostly from Sub-Saharan Africa (11 countries), followed by some countries in Europe (7): namely the Czech Republic, Hungary, Latvia, the Republic of Moldova, Montenegro, Ukraine, and Serbia. The European economies are all transition economies, currently implementing various strategies to improve their innovation performance and bring it closer to that of other European countries. Naturally, this suggests that producing above-par innovation capacity—that is, breaking out from the group of innovation

peers—is relatively easier at lower income levels (Figures 2a and 2b).

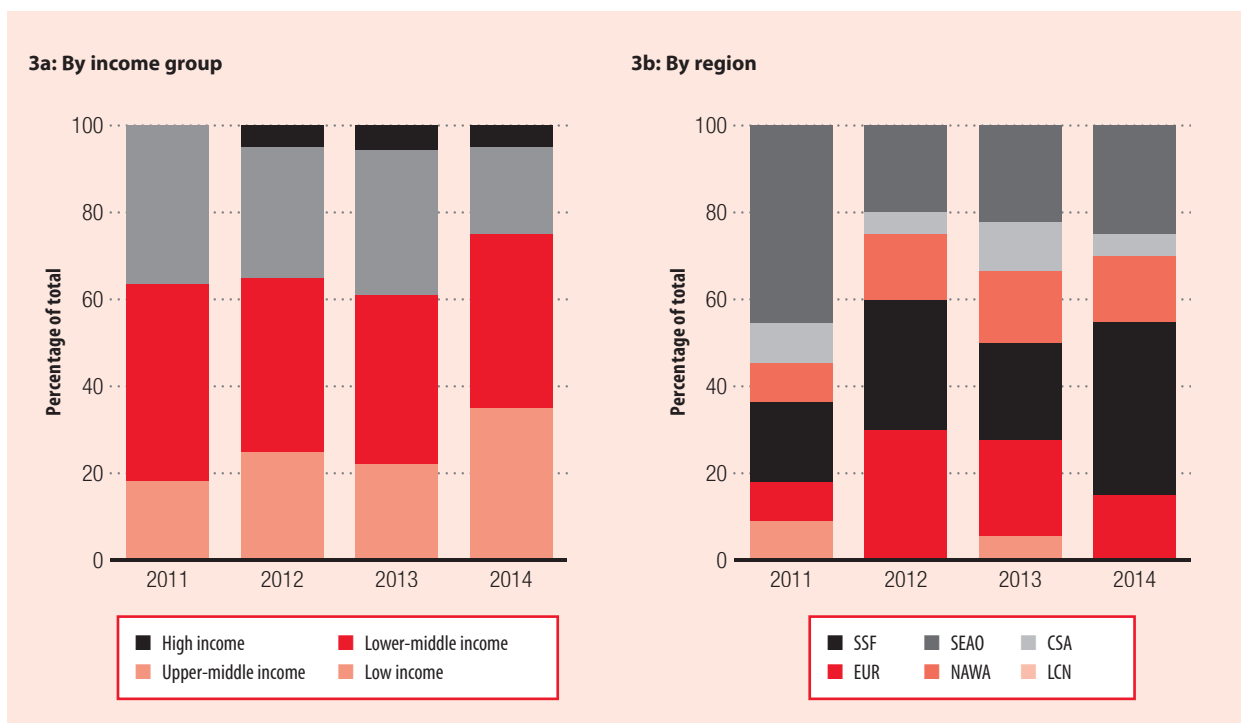
During 2011–13 the number of innovation outperforming countries as measured by innovation achiever status among lower-income countries initially remained quite stable. However, this group increased considerably in 2014, pointing to a homogeneous innovation performance in the past but an increasing number of excelling countries more recently (Burkina Faso, Gambia, Kenya, Mozambique, Malawi, Rwanda, and Uganda) (see Figure 3a). The decrease in the percentage of upper-middle-income innovation achievers, especially from 2013 to 2014, is mainly the result of more low-income economies—particularly those from Sub-Saharan Africa—attaining innovation achiever status. Indeed, the number of Sub-Saharan African innovation achievers has

expanded more than other groups over recent years (see Figure 3b). Among these countries, some have consistently reached innovation achiever status (Uganda since 2013, Senegal since 2012, Kenya over the whole period). Others (e.g., Rwanda and Mozambique), however, have qualified as innovation achievers only sporadically.

Strengths and weaknesses of innovation achievers

This section identifies the GII strengths and weaknesses of innovation achievers relative to their peers in the same income group. Certain technical issues, such as consistency and availability of data, normalization, and the inclusion of new indicators bias the reliability of these results, however, and need to be kept in mind.

Figure 3: Percentage of innovation achievers, 2011–14



Note: The income group for each economy is that of the reported year. Regions are based on the United Nations Classification: CSA = Central and Southern Asia; EUR = Europe; LCN = Latin America and the Caribbean; NAWA = Northern Africa and Western Asia; SEAO = South East Asia and Oceania; SSF = Sub-Saharan Africa.

Low-income innovation achievers

Relative to the other low-income economies, innovation achievers in this group perform particularly well in the Market sophistication and Business sophistication pillars. Access to credit and innovation linkages are their areas of strongest performance. These are key inputs in the innovation process of developing countries, particularly given the financial constraints faced by their local firms and the fragmentation of their local innovation systems.

As discussed in Chapter 1, the innovation system literature puts great emphasis on the role of human capital and institutions for innovation and development. Yet these innovation input factors seem to be the most difficult of all inputs in which to achieve good scores, both in general and for low-income countries in particular. Two low-income

countries that show good scores in the Institutions pillar (Burkina Faso and Malawi in 2012) score the highest in Regulatory environments and, in particular, labour market flexibilities. Only a few low-income economies outperform in Human capital and research: Kenya, Mozambique, Rwanda, Tajikistan, Uganda, Burkina Faso, Malawi, and Zimbabwe.

Lower-middle-income innovation achievers

Lower-middle-income innovation achievers also perform well in Market sophistication, thanks either to their relatively more developed financial systems (India) or to effective credit markets (e.g., Armenia, Georgia, and Mongolia). Most of these countries have their highest scores in Knowledge and technology outputs, in the form of Knowledge creation through utility models (the

Republic of Moldova and Ukraine), Knowledge diffusion through communications, computer and information services exports (India), or Knowledge impact through ISO certifications (Viet Nam). Despite these heterogeneities—which often relate to the different innovation strategies adopted—this finding hints at innovation systems that are more highly developed.

Similarly, few lower-middle-income innovation achievers excel in Institutions. When they do so, their performance is driven by high scores in labour market flexibilities. Ukraine is the sole country to perform exceptionally well in Human capital and research, thanks to its performance in Tertiary education, in particular tertiary enrolment; other lower-middle-income innovation achievers find it difficult to excel in this area.

Upper-middle-income innovation achievers

A different story emerges when looking at upper-middle-income innovation achievers, which present a persistently strong performance in the Knowledge and technology outputs and Human capital and research pillars. As the data show, high scores in Knowledge and technology outputs can be either the result of efforts in boosting labour productivity, patent activity, and use of utility models (China) or the result of surges in ICT exports (Costa Rica in 2013).² Results such as these illustrate why some countries manage to be persistent innovation achievers while others do not, and how some strategies can be greatly effective in producing tangible results. Furthermore, countries adopt different strategies to support human capital and research, which results in different areas of excellence. For example, relative to their income-group peers, Malaysia and Thailand excel in the number of graduates in science and engineering, while China excels at improving basic education and the quality of universities.

Another important area of strength for upper-middle-income innovation achievers is found in the Business sophistication pillar, particularly in Knowledge workers and Knowledge absorption. Innovation achievers at higher levels of GDP focus on improving their share of knowledge workers. Knowledge absorption seems to still play a role at higher income levels. This is not surprising considering that most innovation achievers identified here are heavily embedded in global value and innovation networks. These offer great learning opportunities for local firms interacting with global market leaders.

Conclusions and possible policy implications

A few conclusions from this analysis emerge: First, innovation achievers seem to perform the most strongly in Market sophistication and Knowledge and technology outputs. At lower income levels, countries that outperform their peers focus on removing structural obstacles to innovation, such as poor access to finance and poor linkages within the innovation systems. At higher income levels, efforts concentrate on increasing investments, spurring growth in innovation outputs, and improving human capital.

Second, although the literature emphasizes the important role of human capital and institutions in development and innovation, low- and lower-middle-income innovation achievers are progressing slowly in these areas (especially in Human capital and research). These results do not necessarily imply a lack of policy interest on the part of these countries in these areas; rather, in contrast to other innovation input factors, pursuing and excelling in these elements takes more time. While efforts in certain areas bring more immediate benefits, however, longer-term objectives should not be neglected, and persistence is key.

Countries with above-par performance on innovation input or output factors

Another way to look at global progress in innovation is to analyse the pillar outperformer economies—those that perform above their income-group peers in more than half the innovation input and output pillars. Because of the structure of the GII, monitoring performance at the pillar level helps capture the outcome of policy efforts in particular areas known to be associated with innovation. Noting progress in at least four pillars demonstrates a

positive performance in over half of the areas in which the GII focuses to measure innovation.

The number of economies with above-par performance in at least four innovation inputs or outputs has witnessed a steady expansion during 2011–14, increasing from 28 economies in 2011 to 52 economies in 2014.³ Overall, 67 economies can be identified as outperforming their peers in four or more innovation inputs or outputs in at least one year during 2011–14. Although percentages show a small drop in 2013, the sheer number of countries remained above its 2011 level, confirming the upward trend in outperforming countries (Figure 4). This increase is attributable mainly to more upper-middle- and low-income countries joining the group.

The majority of these economies are from the upper- and lower-middle-income groups (37% and 34%, respectively); only 24% are from the low-income group.

Reviewing the pillar outperformers sheds light on the areas for which countries across different income levels can more easily outperform their peers. The high-income economies in this group outperformed in Human capital and research, implying large differences in educational and research systems among these countries. Results for upper- and lower-middle-income countries are more difficult to interpret, and they point to a frequency of outperformance in Creative outputs for upper-middle-income economies and in Creative outputs as well as Infrastructure for lower-middle-income ones. Low-income economies with above-par performance in at least four innovation inputs or outputs outperform most frequently in Business sophistication; some of them face obstacles to improving in Human capital and research. Finally,

as suggested in the previous analysis of innovation achievers, Knowledge and technology outputs appears to be the most challenging pillar for achieving the outperformance status, given the difficulties of transforming innovation efforts into outputs.

Identifying innovation outperformers and their policy strategies

As indicated earlier, 11 developing countries can be labelled ‘innovation outperformers’ because they conform to the following two more stringent rules: namely, (1) their GII score relative to their GDP is significantly higher than that of other economies for two or more recent years (including at least 2013 and 2014), and (2) they outperform their income-group peers in a minimum of four innovation inputs or outputs pillars for two or more years (including at least 2013 and 2014). By setting a minimum number of years in which countries have to outperform their peers, the importance of perseverance in innovation policy is emphasized (see Chapter 1).⁴ According to the GII database 2011–14, these innovation outperformers are from five regions:

Southeast Asia and Oceania

- China
- Malaysia
- Mongolia
- Viet Nam

Northern Africa and Western Asia

- Armenia
- Georgia
- Jordan

Sub-Saharan Africa

- Kenya
- Uganda

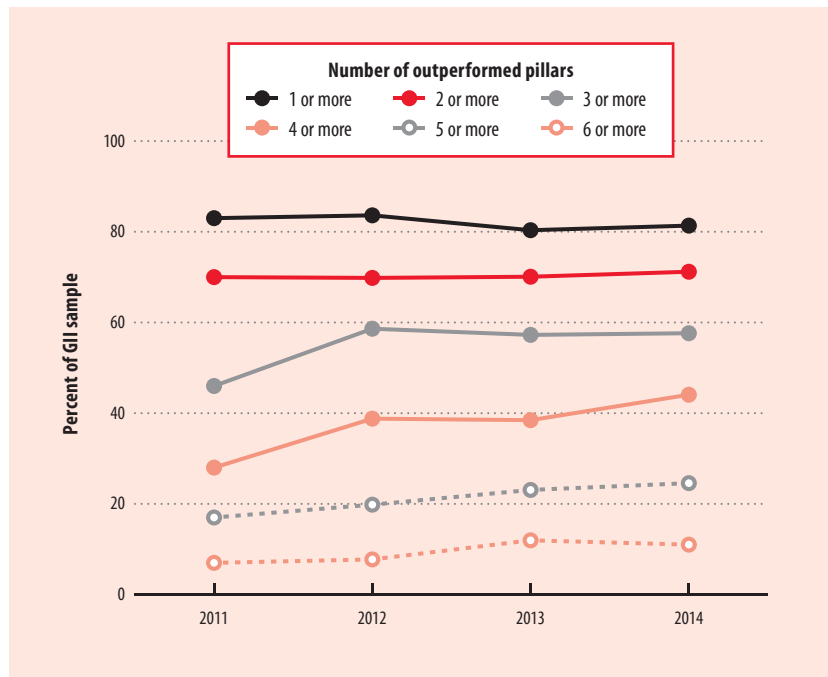
Central and Southern Asia

- India

Europe

- Republic of Moldova

Figure 4: Pillar outperformers, percentage of GII sample, 2011–14



Note: This figure does not include the GII top 25 economies in each year.

The group of countries identified above is quite heterogeneous. This section presents a brief review of policies and their outcomes in each of these countries. Some of them—namely China (Chapter 6), Georgia (Chapter 7), India (Chapter 8), Kenya (Chapter 9), Malaysia (Chapter 10), and Uganda (Chapter 11)—are reviewed in more detail in the corresponding country chapters.

Armenia, from the lower-middle-income group, was both an innovation achiever and a pillar outperformer in all seven pillars during 2012–14. Armenia is making considerable efforts to strengthen its innovation system, which has become one of the strategic priorities of the Armenian authorities. Its strongest performances are in Institutions, thanks to its favourable business environment and labour market flexibilities; and in Knowledge and technology outputs, the result of high scores in domestic patent and

utility model applications, scientific publications, and communications, computer and information services exports. High scores in ICT exports might be explained by the narrow strategic focus adopted by the Armenian innovation strategy. Many new initiatives—such as incubators, initiatives to revert the diaspora, and a strategy for the growth of export-oriented industries—explicitly target the ICT industry. Although this policy seems to have been quite successful (Armenia was ranked 91st in ICT service exports in 2012 and jumped to 30th position in 2013, 23rd in 2014, and 21st in 2015), these policies could usefully be extended to other industries. Poor linkages, especially between universities and industry, reduce the innovation performance of the country. This weakness is related to the narrow interpretation of innovation adopted by Armenian authorities, who are focusing on frontier

technological innovations while leaving aside other aspects of the innovation system such as linkages. Science and innovation are separately managed even at the highest levels of government, split between the State Committee of Science and the Ministry of Economy.⁵

China is the only country that has moved rapidly closer to the group of top 25 countries of the GII, a sign of its exceptional policy persistence in science, innovation, and intellectual property matters. It scored above the average of the upper-middle-income group in five to six innovation inputs and outputs for each of the years 2011–14. By 2014, taking account of the various scaling factors used in the GII, China excelled above almost all other economies in Knowledge and technology outputs, ranking 2nd worldwide, after Switzerland. China placed in the top three positions in the number of domestic resident patents and labour productivity growth. Its scores in utility model applications and high-tech exports also contributed to its strong performance in Knowledge and technology outputs. Despite the evident progress in the quantity of innovation outputs, the quality of these outputs has been questioned (see Chapter 6 by Chen et al.). In recent years, China has significantly improved the quality of its universities, but improvements in the other two indicators are limited (see Box 3 in Chapter 1).

Georgia has consistently outperformed its peers in Institutions, Human capital and research, and Knowledge and technology outputs during the period under consideration. In Chapter 7, Chaminade and Moskovko suggest that radical reforms beginning in the early 2000s were successful at developing a more business-friendly regulatory environment and reducing

corruption. These efforts facilitated business operations and attracted foreign direct investment (FDI). Although Georgia outperformed its peers in Human capital and research and Knowledge and technology outputs as well, these results seem to be the consequence of extraordinarily high scores in a few indicators only, namely the pupil-teacher ratio in secondary education and labour productivity growth. Improving the quality of its education and research systems is indeed among the biggest challenges ahead for Georgia.

India is the only country from the Central and Southern Asia region to appear in this group. During 2011–14, India performed above the lower-middle-income group average in Infrastructure, Market sophistication, Knowledge and technology outputs, and Creative outputs. In some of these inputs and outputs, the Indian performance can be explained by the singularity of the Indian case. Despite being a lower-middle-income country, India is considered an influential global player and an emerging industrializing economy. For its level of development, India has a strong specialization in software, a high-tech industry, and an impressive set of clusters of excellence (see the chapter ‘Innovation Clusters Initiative: Transforming India’s Industry Clusters for Inclusive Growth and Global Competition’ in the GII 2013).⁶ This partially explains the country’s performance in Knowledge and technology outputs, where its highest score is in communications, computer and information services exports. As Chapter 8 by Gopalakrishnan and Dasgupta discusses, a long series of innovation policies contributed to create the necessary conditions for transforming India into a knowledge-based society. Despite its remarkable performance, however,

India is still facing a number of challenges. Among others, its huge and young population puts the education system under stress and its regulatory environment discourages entrepreneurs from starting new businesses.

Jordan is one of three economies from the Northern Africa and Western Asia region and the only one that is signalled as an innovation achiever in all four years. Its performance was particularly strong in Institutions, thanks to its scores in Regulatory environment: Jordan has ranked 1st since 2012 in labour market flexibilities and the Creative outputs pillar. Despite being an innovation achiever every year since 2011, Jordan’s overall ranking in the GII fell from 41st in 2011 to 64th in 2014 (and now 75th in 2015). Between 2012 and 2014, Jordan’s main challenges related to its poor performance in Market sophistication, in particular in the indicators measuring ease of getting credit and protecting investors. Performance in this area improved in 2015, but not enough to compensate for the lower rankings in almost all other areas (except for Infrastructure). For example, although Jordan performed well in Business sophistication in the past because of solid improvements in innovation linkages, in 2015 it lost 34 spots in this area. Similarly, in Knowledge and technology outputs Jordan lost 23 positions in the 2015 rankings, almost reaching again the position it held in 2012. Limited evidence, however, exists to determine which policies can explain this performance.

Kenya is one of the two Sub-Saharan Africa nations identified in the group of innovation outperformers. In the most recent years Kenya obtained its highest scores in access to Credit and Trade and competition. Kenya is also performing well in Education as a result of

consistently high investments in education. As suggested in Chapter 9 by Ndemo, efforts by Kenya's local government and numerous entrepreneurial initiatives have activated a previously stagnant innovation system. Kenya is a country that is producing exciting new innovations by using modern technologies—mainly ICT-based ones. This new innovative spirit is converting Kenya into one of Africa's leaders in ICT and attracting multinational corporations to set up research laboratories in the country (the success of this attraction is also evidenced by the increasingly high scores in percentages of R&D financed by foreign firms). A comprehensive policy for science, technology, and innovation focused on stimulating entrepreneurship via incubators, technology parks, and other research infrastructure is expected to further encourage entrepreneurship. These efforts are also aimed at stimulating collaborations and partnerships, especially between universities and firms. Despite the existence of a policy framework, however, innovation is still not acknowledged as a key driver of economic growth. As a consequence, resource allocation to R&D is often not guaranteed and the little that is allocated to research organizations is spent on recurrent expenditures.

Malaysia is the only economy out of the 11 identified that outperformed consistently and in all innovation inputs and outputs throughout the whole period. In 2014 it performed better than 75% of the countries included in the entire GII sample in Human capital and research, Infrastructure, and Market and Business sophistication. In Human capital and research, Malaysia improved the most in R&D, moving from 54th position in 2011 to 32nd in 2014. The country

also made considerable gains in Institutions, improving especially its business environment. Since 2012 Malaysia has ranked 1st in ease of getting credit and very highly in investment-related variables. Apart from creating a favourable business environment, policies have focused on increasing the number of graduates in science and engineering, a variable in which the country has ranked persistently high. Between 2011 and 2014, Malaysia ranked in the top three positions also in high-tech imports and exports, reflecting its successful integration in global value chains. As discussed in Chapter 10 by Rasiah and Yap, such an extraordinary performance is the fruit of large public investments and policy coordination between the various government agencies in charge of science, technology, and innovation. Malaysia still needs to make considerable progress in fostering knowledge-based activities and reducing technological dependence, as confirmed by its low scores in Knowledge workers, Innovation linkages, and Knowledge creation. These are typical issues for net importers of technology; in these cases, developing domestic innovation capabilities is needed to move from absorbing foreign knowledge and technology to creating domestic new knowledge and technologies.

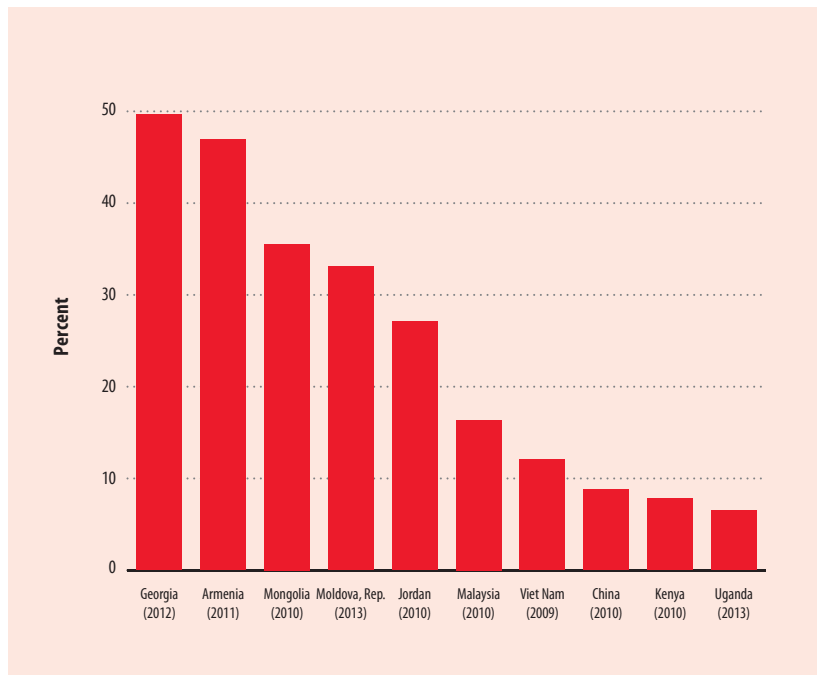
The Republic of Moldova has been identified as one of the rising innovators in Europe. Its performance has been consistent in almost all innovation inputs and outputs during 2011–14. It performed above 75% of the economies in the GII in Knowledge and technology outputs and Creative outputs. These high scores are the result of high numbers of utility model applications and trademark registrations. Indeed, government efforts towards increasing intellectual property rights

awareness and encouraging its use led to the establishment of the State Agency on Intellectual Property and the implementation of a National Intellectual Property Strategy, which have been in place since 2011 and 2012, respectively. These efforts may at least partially explain the country's high scores in these indicators. The Republic of Moldova performs poorly in Business sophistication, however, because of weak innovation linkages—in particular its limited cluster development and university–industry collaborations.

Mongolia scored above its lower-middle-income peers in all input-side variables during 2011–13, and in 2014 it outperformed its peers in all seven innovation inputs and outputs covered by the GII.⁷ In 2014 the country performed higher than 77% of all economies in the GII in Market sophistication. This signals improvements in access to credit. Mongolia performs well also in Infrastructure, more specifically in gross fixed capital formation. This is not surprising given the country's extremely high growth rates over the last few years. Despite being an innovation achiever also in 2015, Mongolia lost some positions in the GII ranking. This can be explained in part by the country's slowdown in economic performance and its lower position in FDI inflows (Mongolia ranked 1st in this indicator in 2014 but dropped to 6th this year). The next months will be critical to deciding Mongolia's future innovation path. The country lacks the financial resources to exploit new knowledge and it lacks adequate infrastructure to either guarantee supply or ensure logistical and technical support. It is therefore difficult for Mongolia to fully exploit its innovative potential.⁸

Uganda is the second country from Sub-Saharan Africa and the one that presents the least robust

Figure 5: Percentage of population aged 25 years and older with post-secondary education, by year



Source: UNESCO Institute for Statistics database, June 2015.

Note: 'Post-secondary education' refers to UNESCO's International Standard Classification of Education (ISCED) level 4 or higher.

innovation performance in this group of innovation outperformer countries. Between 2011 and 2014, Uganda outperformed its low-income peers in Institutions and Creative outputs and showed a strong performance in Business sophistication, in particular in innovation linkages (thanks to high R&D financed from abroad) and Knowledge absorption (thanks to high FDI inflows and high-tech imports). As detailed in Chapter 11 by Ecuru and Kawooya, Uganda has maintained political stability since 1986 and has accompanied this stability with institution-building reforms. These efforts may explain the country's performance in Institutions and FDI inflows. Uganda's main weaknesses relate to its Regulatory environment, which discourages entrepreneurship, and its poor performance in Tertiary education and R&D. The implementation of the Strategic Investment Plan for 2012–17 is expected to

mainstream business registration, thus improving Uganda's current low scores on the ease of starting a business. The policy focus on STEM (science, technology, engineering, and mathematics) might positively affect results on Tertiary education, improving especially the indicator on the number of graduates in science and engineering. The challenge in this area will be to match the policy commitments to STEM promotion with financial resource allocations.

Viet Nam is one of the four South East Asia and Oceania countries identified in this list. Its performance has been consistently high in Infrastructure, Knowledge and technology outputs, and Creative outputs. Viet Nam has been working towards developing its national innovation system by improving its regulatory framework and engaging in institution building.⁹ Integration in global trade via global value chains

and the attraction of FDI is creating opportunities for learning and upgrading. This is well captured by the GII, which evidences a good performance in Business sophistication, in particular in Knowledge absorption (through high-tech imports and FDI inflows) and Innovation linkages (via clusters). Improvements in these innovation inputs are also likely to have influenced Viet Nam's performance in Knowledge and technology outputs, as shown by its higher labour productivity and improved quality of production through ISO certifications. Viet Nam is performing weakly and having difficulty in improving all the dimensions of the Institutions pillar in addition to Research and development. It is also facing hurdles in its investment environment as well as trade and competition (Market sophistication).

Improved education and research systems: Benefitting innovation outperformers

Overcoming a poorly educated population is a crucial to improving innovative performance (see Chapters 1 and 2 of the GII 2014).

As previous sections have shown, developing countries with above-par performance in innovation often still perform poorly in Human capital and research. Are these 11 countries doing better in this regard? The analysis in this section shows to what extent continued poor performance in this pillar applies to the 11 countries identified as outperformers.

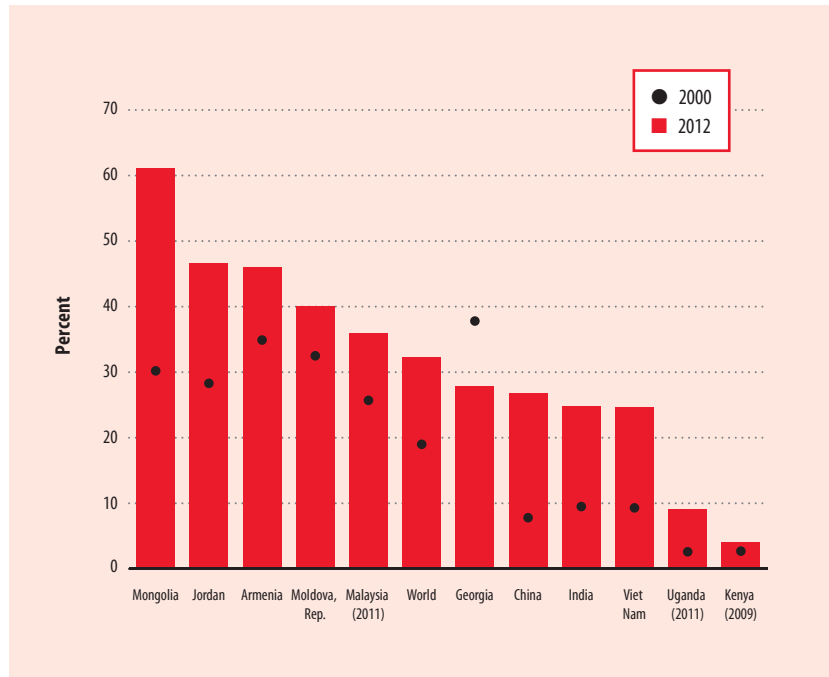
Figure 5 illustrates the educational attainment of the population, which provides an important context for innovation performance. Without a skilled workforce, proxied here by the level of qualification achieved, it is difficult to innovate in a significant way. The figure shows a

mixed picture for 10 of the innovation outperformers.¹⁰ Out of the 95 countries in the UNESCO Institute for Statistics database for which there are data, Georgia occupies 5th place, with half its population having attained a post-secondary degree, closely followed by Armenia in 8th place (47%). Mongolia, the Republic of Moldova, and Jordan are in the top half of the rankings, but the percentages of post-secondary graduates in Malaysia, Viet Nam, China, Kenya, and Uganda are rather low.

All the outperformer countries except Georgia have improved on their gross enrolment ratio (GER),¹¹ charted in Figure 6, since 2000. Five of the eleven are doing so in percentages above the global average. In Mongolia, the GER stood at 61.1% in 2012, up from 30.2% in 2000. For eight of the countries, the annual average growth rate was higher than the growth rate for the GII sample average. Uganda (12.0%) and China (10.8%) experienced double-digit growth rates, ahead of Viet Nam (8.4%) and India (8.3%). Lower-than-average growth rates were observed in Armenia, the Republic of Moldova, and Georgia.

Proposing and implementing policies that support R&D is one of the key strategies needed to secure technological potential and, therefore, innovation and economic growth. In order to reach the income levels of high-income countries, low- and middle-income countries need to expand their access and capacity to use technology. Domestic R&D is also critical to the process of ‘catching up’ and adapting technologies developed abroad.¹² In the absence of a sufficient level of R&D, the absorptive capacity needed to take full advantage of technology transfer is often lacking, as is the capacity to design new pathways to production and establish new markets.¹³

Figure 6: Gross enrolment ratio in tertiary education, 2000 and 2012



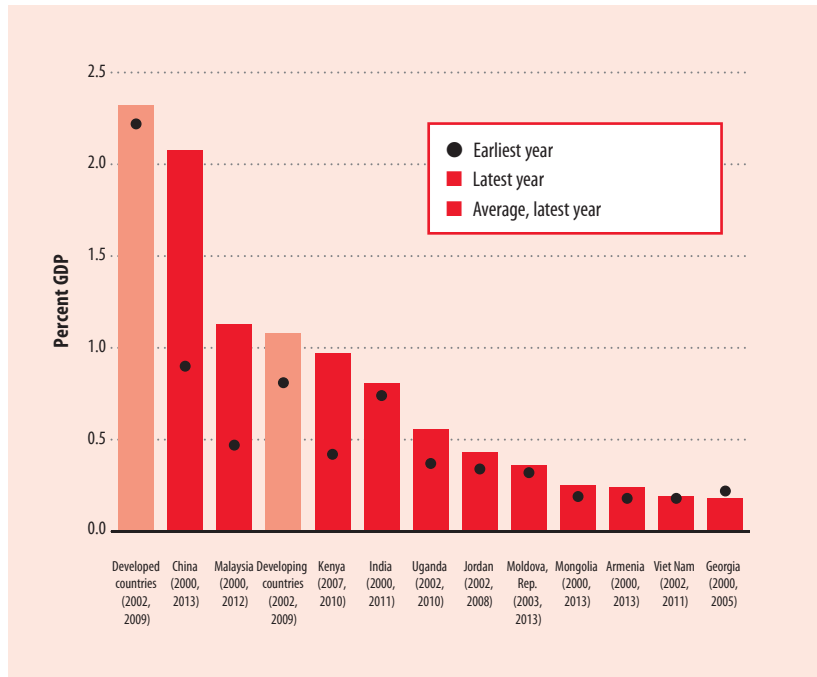
Source: UNESCO Institute for Statistics database, January 2015.
Note: Years in parentheses refer to the year of the latest available data.

Figure 7 shows the expenditure on R&D (expressed as a percentage of GDP) of these 11 economies. China’s progress has been remarkable: It is the only one that comes close to the developed countries’ average and, indeed, is poised to soon overtake it. However, only one innovation achiever—Malaysia—performs above the developing countries’ average. Kenya is close to the developing countries’ average and the 1% threshold that many governments have set as target. India’s R&D expenditure stands at 0.8%. The other countries, however, display lower R&D investment expenditures.

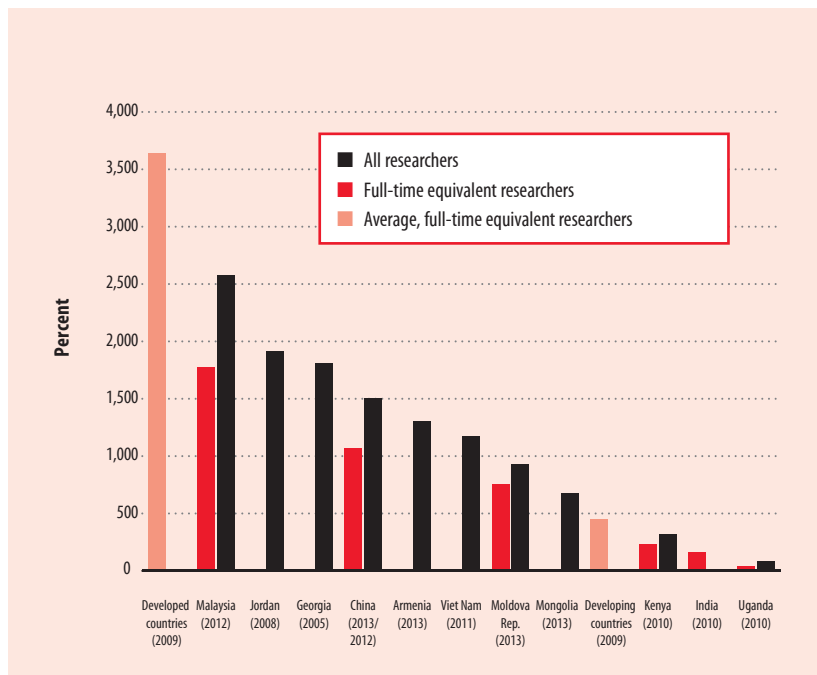
The number of researchers (expressed per million inhabitants) illustrates a somewhat different picture. Most of the innovation achievers are now above the developing countries’ average, led by Malaysia (see Figure 8). Especially Kenya, but also India and Uganda, which are doing relatively well in terms

of R&D expenditure, are doing much worse in terms of the number of researchers. This discrepancy is posing a bit of a puzzle, because wages and salaries of researchers are an important component of R&D expenditure, and therefore the two concepts are closely linked. Most likely it is a result of the methodological procedures adopted when collecting the data; these procedures present a reason for concern, and are something that should be addressed by these countries.

This section of the chapter has shown that the 11 economies identified in this report as persistent innovation outperformers do not show a homogeneous performance in indicators of Human capital and research. Countries such as Georgia, Mongolia, the Republic of Moldova, Jordan, and Malaysia have a more developed tertiary education system; others, like China and Malaysia, are stronger in R&D.

Figure 7: R&D expenditure as a percentage of GDP, around 2000–13

Source: UNESCO Institute for Statistics database, January 2015
 Note: Years in parentheses refer to the year of the latest available data.

Figure 8: Researchers per million inhabitants, latest year available

Source: UNESCO Institute for Statistics database, January 2015.
 Note: The year in parentheses is the year of the latest available data. Jordan, Georgia, Armenia, Viet Nam, and Mongolia have data only for the headcount number of all researchers (full and part time); data for full-time equivalent researchers are not available for these countries. India has data for only the full-time equivalent researchers.

Conclusions

In spite of the often fragmented innovation systems (which often depend on external sources of knowledge and technology), developing countries are capable of making strides in innovation.

Among the 11 outperforming economies, this chapter identifies some persistent outperformers. Relative to their peers, these countries have sustained a strong innovation performance over the last years. The degree of heterogeneity among these countries is significant: They range from relatively small European and Western Asian countries such as Georgia, the Republic of Moldova, and Jordan to important global players such as China and India. One commonality among them is their relatively stronger performance in production of knowledge and technologies.

Just how developing countries can further boost their innovation performance is the subject of policy debate (see Chapter 1). Improving innovation linkages and knowledge absorption is crucial for developing countries to outperform in innovation. Building critical strengths in innovation inputs such as institutions, education, and research takes time and is more difficult to achieve. Yet, in the more medium run, these factors will be essential to allowing developing countries to more effectively translate innovation efforts into knowledge and technology outputs.

Notes

- 1 The 25 high-income economies that lead the GII rankings (see Figure 3 in Chapter 1) are not considered in Chapter 2.
- 2 The high score of Costa Rica in Knowledge and technology outputs reflects the effect of foreign direct investment (FDI) and the country's integration in global value chains.

- 3 These figures exclude the top 25 innovation performers.
 - 4 With the exception of Georgia, which this year is identified as performing at development level, all other economies remained innovation achievers in 2015. Jordan did not show above-par performance in four or more innovation inputs and outputs. While Georgia remained quite close to the achiever 'borderline' and could easily become part of this group in upcoming years, Jordan will require additional efforts to sustain innovation.
 - 5 See also UNECE, 2014.
 - 6 Mitra, 2013.
 - 7 It has to be noted that for various indicators within pillar 6 (Knowledge and technology outputs) Mongolia has no available data. This happens mainly in sub-pillar 6.2, Knowledge impact.
 - 8 The authors thank Mike Turner, Chair of the Business Department at Broward College HCMC, Viet Nam Campus, for his contribution on the innovation system in in Mongolia.
 - 9 See also OECD and World Bank, 2014.
 - 10 No data exist for India.
 - 11 The 'gross enrolment ratio' is defined as the number of students enrolled in a given level of education, regardless of age, expressed as a percentage of the official school-age population corresponding to the same level of education. For the tertiary level, the population used is the 5-year age group starting from the official secondary school graduation age.
- 12 Archibugi and Pietrobelli, 2003.
- 13 UIS, 2014.
- Mitra, S. 2013. 'Innovation Clusters Initiative: Transforming India's Industry Clusters for Inclusive Growth and Global Competition'. In *The Global Innovation Index 2013: The Local Dynamics of Innovation*, eds. S. Dutta and B. Lanvin. Geneva, Ithaca, and Fontainebleau: Cornell, INSEAD, and WIPO. 107–14.
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Innovation Policies for Development

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Innovation is a key driver of economic success. Companies in developed economies innovate to reduce production costs, to develop new products, and to create new markets. Innovative enterprises are shown to be economically more successful than firms that rely on tried and true processes and approaches.¹ Innovation also generates unintended spillover benefits for other companies and consumers—for example, by lowering the prices or increasing the quality of intermediate or final demand products. Similar to investment in research and development (R&D) activities, investment in innovations by enterprises is at a level below what would be optimal for society because of market and system failures (Box 1). Governments in developed economies have therefore been supporting business innovation by offering various kinds of direct and indirect support programmes, including loans, grants, tax incentives, and tax reductions.

Globalization and innovation

With globalization, firms in emerging and developing economies find themselves under more and more pressure to engage in continuous innovation. R&D, software, design, engineering, training, marketing, and management all play an increasingly important role in the production of goods and services, even in more traditional industries, such as

textiles and food. In addition, rising international standards dominate in international trade and global value chains. The competitiveness of both companies and countries therefore depends on their ability to innovate and move in the direction of frontier technology and knowledge.

However, there is a wide heterogeneity among enterprises in emerging economies: some companies operate close to the technological frontier and rely more on their own research and innovation efforts, either alone or in collaboration with others, to develop new products and improve production processes. Emerging countries such as India, China, and the Republic of Korea host companies that are technological leaders in their respective industries. But besides those top-performing

companies, emerging economies are also hosting large groups of micro and small businesses, operating far below the frontier of innovation, with basic technologies and low levels of human capital. Raising the productivity of these smaller producers through innovation and the adoption of better technologies will have a substantial aggregate impact on a country's economic growth, employment, poverty alleviation, and sustainable development.

With such heterogeneity in the productive sector, innovation in emerging and developing countries is also diverse in nature; it is determined not only by the level of technological complexity, industry of activity, and firm size, but also by the institutions and infrastructure where the company operates. Innovation

Box 1: Market and system failures

Market failures are the result of (1) excessive uncertainty, (2) absence of markets for risks, (3) insufficient appropriability (leading to failure to appropriate returns from innovation and new knowledge), (4) financing problems in the presence of information asymmetries, (5) failure of markets to assign values to externalities (impacting knowledge diffusion), and (6) undervaluation of public good technologies in firms' strategies. The first two types of market failures involve risk aversion hampering innovation activity; this affects small and medium-sized enterprises in particular because these firms have

limited sources of funds.

Not only can markets fail to deliver optimal results but so can the lack of a favourable business environment for innovation, which is referred to as 'system failure'. The concept of system failure aims at ensuring that the innovation system works effectively as a whole by removing blockages that hinder the effective networking of its components.¹

Note

¹ European Commission, 2009.

Box 2: M-PESA: An example of inclusive innovation

M-PESA ('M' for mobile; 'pesa' is Swahili for money) is a mobile phone-based money transfer and micro-financing service, launched in 2007 by Vodafone for Safaricom and Vodacom. M-PESA allows users to deposit, withdraw, and transfer money easily with a mobile device. Users are charged a small fee for sending and withdrawing money using the service. M-PESA is a branchless banking service; its customers can deposit and withdraw money from a network of agents that includes airtime resellers and retail outlets

acting as banking agents. M-PESA has spread quickly, and by 2010 had become the most successful mobile phone-based financial service in the developing world. By 2015, a stock of about 20 million M-PESA accounts had been registered in Kenya. It has since expanded to South Africa and India, among others, and in 2014 to Romania.

Sources

The Economist, 2013; Mas and Radcliffe, 2010; Safaricom, no date.

surveys from developing countries have provided data on the characteristics of the innovation process in developing-country firms. At the aggregate level and in comparison with data from developed economies, innovation in developing countries is more incremental than radical and takes place in an informal setting more often than it does in formal R&D laboratories. Innovations are primarily driven by investments in and mastery of new machinery and equipment that embody more advanced technologies; innovations less often arise from new products or technologies developed through R&D. Furthermore, marketing and organizational innovations also play an important role, especially in countries that liberalized and privatized their economies, thus forcing their companies to restructure.²

In this context, governments are increasingly challenged to develop policies that stimulate innovation and facilitate large-scale diffusion of existing knowledge and improved technologies. This is a complex process that, depending on target groups and on the government's objectives—for example, employment

growth or reduced environmental impacts—combines interventions to stimulate embodied technology acquisition with policies to develop research capacity and raise the human resources needed to absorb, adapt, and master technologies developed elsewhere. For emerging countries that are catching up, experience shows that technology adoption alone is no longer sufficient to maintain a high-growth scenario. These countries too must invest in innovation, and governmental support is crucial for promoting it.

Social challenges and innovation policies in developing and emerging economies

In developing and emerging economies, the importance of innovation is widely recognized and innovation policies occupy a central role in their development plans and strategies. Emerging countries, by definition, are growing rapidly and expanding production at impressive rates. However, they also face particular challenges, two of which stand out. First, all emerging countries with the exception of China have very young and growing populations.

The rapidly expanding young labour force is often facing high levels of unemployment, resulting in fragile groups, widespread poverty, and unequal growth. Another problem that lines up with rapid development and demographic change is the increased pressure on natural resources and pollution—a pressure that is felt both locally and in international markets. As countries develop, their energy needs increase and a limited availability of energy can quickly become a binding constraint. In the same way, the availability of land for housing and food production is a critical factor. This is especially critical in countries where the agriculture sector and agro-processing comprise the driving force of growth, and where land tenure systems could encourage further land fragmentation.

In emerging countries, innovation is seen as key to addressing pressing societal problems such as pollution, health issues, poverty, and unemployment. The role and significance of innovation goes beyond the objective of economic success. Rather it should be seen through the lens of inclusive development because it can address poverty and health issues, and through the lens of environmental sustainable development because it can address problems of pollution and energy provision.

Illustrating this point, in many low-income developing countries local demand comes from individuals whose preferences, aspirations, and budgets are of a different nature than those in high-income countries. So-called inclusive innovations directed at this stretch of the population may be low-priced but have a high social value because they allow large segments of society to benefit from them. Low-cost manpowered irrigation pumps or folded-paper microscopes for US\$0.50 that

offer the same quality as desktop microscopes are examples. Another example from Kenya is M-PESA (see Box 2), as are the many useful mobile phone applications that have been developed to provide quick and accurate market information and production technologies to farmers in rural areas (such as M-Farm and iCow),³ to give health-related information (such as Mimba Bora),⁴ or to provide entertainment (such as Matatu and Afrinolly).⁵

Emerging economies have a high demand for agricultural and biotechnological research, as well as a need for more research on neglected tropical diseases such as dengue, river blindness, tropical parasites, and malaria, as well as acute respiratory infections, diarrhoea, tuberculosis, and HIV/AIDS. Influencing the direction of the international research agenda into these research domains has important consequences for multiple areas, such as agricultural production, nutrition, and health.

With innovation occupying a central place in a sustainable and inclusive development agenda, it is not surprising that innovation policies can be found in different policy domains, strategies, and pieces of legislation. For instance, in Uganda—one of the more successful countries in terms of innovation, and discussed more in detail in Chapter 11—numerous policies that support research and innovation are identified. These include the country's National Industrialization Policy; its National Science, Technology and Innovation Policy 2009; its National Development Plan 2010; and its Agricultural Sector Development Strategy and Plan. The same holds for Kenya, where the political institutions supporting innovation are so numerous that coordination and harmonization

Table 1: Science, technology, and innovation (STI) policies: Kenya and Uganda, 2014

| Policy characteristic | Kenya | Uganda |
|--|--|--|
| Title | <ul style="list-style-type: none"> • Science, Technology and Innovation Act (2013) • Draft National Science, Technology and Innovation Policy (2012) | <ul style="list-style-type: none"> • National Science Technology and Innovation Policy (2009) |
| Objectives and priorities (percent of goals reached as formulated in national policy) | | |
| Research capacity | 75% | 75% |
| Human resources | 75% | 50% |
| Network of researchers | 50% | 75% |
| ICTs | 50% | 75% |
| Institutional capacity | 25% | 50% |
| Links with the private sector | 25% | 25% |
| STI policy authority | <ul style="list-style-type: none"> • Presidential Advisory • Parliamentary Committee on Education, Research and Technology • National Commission on Science, Technology and Innovation • Ministry of Education, Science and Technology | <ul style="list-style-type: none"> • Uganda National Council for Science and Technology (UNCST) operates under Ministry of Finance, Planning and Economic Development)* |

Source: Iizuka et al., 2015. For more details on the entries in the table see <http://www.merit.unu.edu/deipafrika>.

* The UNCST is expected to become part of the new Ministry of Education, Sports, Science and Technology.

issues arise (Chapter 9). As Table 1 shows, experts assessed that by 2014 both countries had made considerable progress in meeting their science, technology, and innovation (STI) policy objectives and priorities.

Innovation policies have been recently introduced in most emerging economies. Even in developing and least-developed countries, innovation is at the core of the political debate. The Republic of Moldova, for example, introduced its innovation strategy 'Innovations for Competitiveness' for the period 2013–2020. This strategy aims to stimulate innovation in firms and society in general.⁶ In another example, recent policy initiatives in Viet Nam are setting the stage for developing a mature national innovation system.⁷

Broad tendencies of innovation policy frameworks

Governments in developed countries have a whole range of instruments at

their disposal to stimulate firms to invest more in research and innovation. These tools include direct and indirect support measures for R&D and innovation, institutional and competitive funding instruments, and supply-side and demand-side measures.⁸ In Europe the range of policy instruments is most diverse: not only are European Union (EU) Member States adapting measures to their own needs but also the European Commission is supporting research and innovation with instruments open to firms in all Member States and other European countries. A recent study, drawing lessons from 10 years of European innovation policies, shows that Europe is a thriving environment for such policies.⁹

By contrast, because of their reduced fiscal space, governments in developing and emerging countries have less room to manoeuvre. Given their limited tax income, in part the result of the large size of

their informal economy, these countries have less leeway to correct for market failures. Since innovation processes are also more oriented towards knowledge diffusion and absorption, as described above, the focus of innovation policies in these countries differs from policies in more advanced economies.

Because developing and emerging country governments do not have the same latitude as those in developed countries to hand out R&D tax credits, subsidies, or government procurement contracts, firms in these countries largely rely on themselves to build up a stock of technological knowledge. Instead of investing in R&D, to a large extent these firms try to reap the benefits of catching up through adoption and international technology transfer. Among the various possible channels for transfer are imports of capital goods, subcontracting agreements, technical assistance programmes, technology licensing contracts, international standards certification, and inward foreign direct investment.

In the context of such innovation processes, and considering that most of the firms in developing countries are small, without patents, and with little experience in intellectual property protection, these firms should favour tax incentives over direct R&D support in the form of grants or R&D subsidies. It gives them immediate funds to innovate and invest without having to write grant applications that would partially leak their innovative ideas. Moreover, given the small size of these firms' R&D budgets, the R&D tax incentives policy does not suffer from the presence of deadweight loss (financing R&D that would have taken place anyway).

In part for the reasons just mentioned, firms in developing countries

often do not have the technological expertise or the financial means to run R&D laboratories. This does not prevent them, however, from being creative and finding solutions to day-to-day problems by way of incremental innovations—on-the-shop-floor kinds of small improvements in engineering, management, or marketing and training their workforce. The success of these efforts depends on their technological capabilities. These capabilities are necessary to select and acquire the adequate technologies, to adapt those technologies to local circumstances, and to operate and develop them further, and they include skills, experiences, attitudes, and schooling. In cases of successful development of technological capabilities in an economy, local firms gradually move from adapting imported technology to indigenously developing technology, as in the cases of the Republic of Korea and Taiwan, Province of China.

The fact that companies rely less on formal R&D puts into perspective the policies of some emerging countries that aim to achieve target levels of R&D/GDP ratios (e.g., a 2% target is presently set for India) comparable to those of industrialized countries. Emphasis in emerging countries should be placed on reaching R&D levels as much as on providing the right framework conditions that stimulate a process of innovation and knowledge diffusion: political stability and supportive institutions; good and widespread technical and tertiary education to enhance absorptive capacity; reliable and widespread basic infrastructure; excellent provision of information and communication technology (ICT) property rights; and stronger links and interaction between publicly funded research institutes and private companies.

Each of these components is represented in the GII framework. In the context of emerging economies, some of the pillars cannot be overemphasized. Institutions are important because they create the proper framework conditions for doing business.¹⁰ All countries are currently developing legislation and innovation support plans. The success of this approach is seen in Uganda, which embarked on a period of political stability since 1986 accompanied by strong innovation and growth performance (see Chapter 11).

Human capital and research supply the necessary skills, but equally serve other social targets. There is usually a gap between the demand for education and the availability of resources. Improvements in primary education and in primary and secondary technical education are vital for basic technological capabilities. But the development of more specialized capabilities is also imperative in key areas where technologies—such as ICTs and biotechnology—are changing rapidly. This may require higher education in technical, scientific, and agricultural disciplines. In Uganda, for instance, scholarship schemes prioritize students in STEM (science, technology, engineering, and math) fields and attract diaspora in these fields. In Kenya, by contrast, tertiary education has been neglected, and various institutions are now created to coordinate technical education and vocational training.

Infrastructure, in particular ICTs, has a leveraging effect on the exchange of knowledge and new technologies. Low-cost ICTs facilitate inclusive innovations such that all people in society will benefit from the advantages of new products and processes. Access to ICTs will foster the diffusion of information

and knowledge that may have a more profound societal impact than the creation of new knowledge (such as the M-PESA example in Kenya).

There exists a broad consensus that stronger export orientation triggers innovation and the development of capabilities. Competing in international markets requires meeting international technology and quality standards. The body of standards that firms have to implement is rising and relates not only to product standards but increasingly also to process standards, labour standards, and standards for environmental conduct. For firms in developing countries, even more than for firms in advanced economies, the adherence to these standards and the acquisition of certifications are important to reduce transaction costs.¹¹ But the standards certification process also triggers innovation through improved managerial practices and company-wide operational improvements and training. Policy can play a crucial role in raising awareness of these standards and assisting local firms as they go through the difficult certification procedure.

An innovation policy for developing and emerging economies is thus necessarily multifaceted and complex, involving aspects of education policy, industrial policy, international trade policy, and various other institutional reforms. With limited budgets, most countries will have to make hard choices on where to invest to make the most of their available human and natural resources and their competitive advantage. Choices of smart specialization may also be done in collaboration with other countries.

The ultimate policy mix will depend on a country's broader development objectives, and will have to be made in collaboration with all

the stakeholders to maximize the chances of success. Good coordination between ministries and between the private and the government sectors is therefore essential. In other words, the systemic nature of innovation policy needs to be reinforced.

Padilla-Pérez and Gaudin identify the following eight barriers of innovation policy in Central America, but the same barriers are likely to apply to many developing and emerging economies: the absence of high-level political support for STI policies; frequent institutional changes and the absence of long-term planning; modest government support for STI; insufficient enforcement of institutions to promote innovations, such as intellectual property rights and competition; lack of coordination among government agencies and policies; a lack of absorptive capacity and weak educational system; difficulties in financing STI; and a lack of policy evaluations.¹²

The need for progress in metrics

It is essential to monitor the impact of innovation policies in order to determine whether policies have worked and which policies might be most effective. For this, governments need access to relevant, timely, and reliable statistical information. A wide range of statistics is available in developed countries, including, among others, data on educational skills, R&D expenditure, patent applications, trademarks and designs, and firms' innovation activities (these latter are collected using innovation surveys). High-quality indicators are essential for good STI policy making because decision making will otherwise be based on partial knowledge of the STI systems already in place.¹³

The first innovation surveys asking firms about their innovation

activities date back to the 1980s. Following the recommendations on measuring innovation in the *Oslo Manual*,¹⁴ the European Commission took the initiative in the early 1990s to develop a harmonized questionnaire—the Community Innovation Survey—which is currently used by most European countries and has inspired setting up innovation surveys in countries around the globe.¹⁵ A recent study by the United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute for Statistics (UIS) has identified fewer than 30 non-European or non-OECD countries that have introduced at least one innovation survey since the early 2000s.¹⁶ Many emerging economies have not yet introduced an innovation survey to measure firms' innovation activities. Not all of the indicators developed for more-advanced economies are equally relevant to less-developed economies. The international standards and protocols developed for collecting data in advanced economies are sometimes incompatible with the STI systems found in many developing countries. For emerging economies this might be less problematic because they are evolving into advanced economies, so the international standards and protocols are more applicable and thus achievable.

A great deal of GDP—as much as 40%—in developing economies is generated in the informal sector. In terms of total employment, the part played by the informal sector is even greater.¹⁷ Currently the innovation surveys conducted in developing countries, however, do not cover firms from the informal sector. As a report on innovation in Ghana shows,¹⁸ the proportion of innovating firms may be lower in the informal than in the formal sector, but nevertheless be quite sizeable. For instance, in Ghana, 72%

of the firms in the informal sector declared themselves to be innovative compared with 90% in the formal sector. Actual innovation surveys do not cover firms in the informal sector because these are not formally registered. It would be interesting to assess innovation in the informal sector and to understand what motivates these firms to be innovative. It is encouraging that new work aimed at better understanding innovation in the informal sector has been ongoing for the last three years.¹⁹ To better capture innovation, our measurement frameworks and tools will have to be adapted in this regard.²⁰

The 2015 GII is based on data available for all 141 countries included this year on the various pillars of innovation. This need for pervasive statistics for comparability purposes stands in conflict with the local nature of some innovation characteristics. M-PESA, for instance, is available in several countries but not yet in many others. The use of M-PESA would be a good indicator of creative output pillars, but given its local usage it cannot yet be used as a component of the GII.

Conclusions

Emerging economies are very conscious that innovation plays a key role in an environmentally sustainable and socially balanced growth agenda. Innovation policy has therefore moved to the centre of the policy debate. Because innovation is not only a process of knowledge diffusion, as countries develop, simply adopting existing technologies is no longer sufficient to maintain a high growth rate. Rather countries need to invest in research and innovation to develop products that address their particular needs. Governments are therefore developing innovation-support policies that

take into account the specificities of their domestic industries. A few emerging countries have successfully introduced such policies and provide interesting cases from which lessons can be learned on a diverse range of innovation policies.

Notes

- 1 Mohnen and Hall, 2013.
- 2 Bogliacino et al., 2012.
- 3 M-Farm provides Kenyan farmers price information for their products and inputs via SMS text. iCow provides small-scale dairy farmers in Kenya information, via SMS text, on different aspects of their cows' lifecycle, thus raising family incomes by improving milk production. More details are available at <http://www.mfarm.co.ke/> and <http://icow.co.ke/>.
- 4 Mimba Bora is a mobile application that helps expectant women to monitor their pregnancies. More details are available at <http://www.mimbabora.com/>.
- 5 Matatu is a two-player card game originating from Uganda available for smartphones. Afrinolly is an application that allows users in Africa to watch movie trailers, music videos, and concert videos on their smartphones. More details are available at <http://www.afrinolly.com/>.
- 6 European Commission, 2013.
- 7 OECD, 2014.
- 8 OECD, 2010.
- 9 Izsak and Markianidou, 2013.
- 10 Goedhuys and Srholec, 2014.
- 11 Goedhuys and Sleuwaegen, 2013.
- 12 Padilla-Pérez and Gaudin, 2014.
- 13 Tijssen and Hollanders, 2006.
- 14 OECD, 2005.
- 15 Arundel and Smith, 2013.
- 16 Information about the first UIS innovation data collection is available at <http://www.uis.unesco.org/ScienceTechnology/Pages/innovation-data-release.aspx>.
- 17 Iizuka et al., 2015.
- 18 Fu et al., 2014.
- 19 The full details of this project can be found at http://www.wipo.int/econ_stat/en/economics/studies/. See also de Beer et al., 2013.
- 20 Charnes et al., 2015.

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Principles for National Innovation Success

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For many decades, international economists assumed that developed nations innovated and developing nations received those innovations through foreign direct investment (FDI), licensing and other forms of technology transfer, or simply by purchasing products. But now—because the ubiquitous rise of technologies such as the Internet, growing access to the world’s knowledge pools, and deepening global supply chains have greatly reduced the cost of innovating—there is a growing recognition that innovation is something in which all nations can, and indeed should, be engaged.

Although few if any emerging economies can be at the global forefront of producing innovation in the most-advanced technology sectors, such as biotech and semiconductors, they can certainly engage in innovation in some specialized areas. They can also host production sites in innovation-based industries. Moreover, because innovation—as defined in the Global Innovation Index (GII) and elsewhere—is more than merely the development of advanced technology products but also involves the development of new processes and business models across all industries, all nations need to consider how they can best participate in and contribute to the global innovation economy.

But the real question is how. In fact, how to design and implement effective innovation policies in

the context of lower- and middle-income economies is the theme of this edition of the GII. The many examples of global best practices for supporting innovation include everything from enabling start-up firms to register online easily with the government to implementing research and development (R&D) tax credits and supporting broadband deployment. Guiding any actions to spur innovation should be a set of innovation policy principles that nations, both developed and developing, can follow to maximize innovation advantage. This chapter presents six key principles nations need to consider, in conjunction with the lessons drawn from Chapter 3, ‘Innovation Policies for Development’.

Principle 1: Innovation policy should focus on maximizing innovation in all industries

All too often when policy makers consider ways to spur innovation, their focus goes to the production of high-tech, high-value-added products. How can they open a data centre or attract a biotech firm to locate within their borders? How can they launch the next global technology company? A related but slightly more encompassing view focuses on spurring manufacturing above all else.

This focus on high-valued-added tradable goods mirrors a long

tradition in international development literature of trying to grow by shifting a nation’s industrial structure. A seminal 1943 paper by Rosenstein-Rodan, which argued for investment in manufacturing, set the stage for this framework when he discussed how ‘unemployed workers ... are taken from the land and put into a large new shoe factory.’¹ Fifteen years later Hirschman doubled down on manufacturing with his theory of forward and backward linkages, which was largely premised on the notion of large-scale capital formation in select manufacturing industries that in turn provided linkages and other economic activities.² As Dasgupta and Singh explain, Cambridge economist Nicholas Kaldor built on these concepts, arguing that ‘the rate of productivity growth depends on the expansion of the manufacturing sector. Expansion of the manufacturing sector will lead to more productivity growth from the manufacturing sector, which will lead to more productivity across the whole economy.’³ If development no longer focuses on the shoe factory, it now focuses on the semiconductor factory.

Despite this tradition—and, frankly, this bias—in development literature and development practice, more recent evidence suggests that it is not the shift to high-tech production that maximizes growth in developing nations but rather it is the spurring of innovation in all

sectors, *including* traditional sectors such as farming, retail, logistics, and business services.⁴ The ability to boost productivity in non-manufacturing sectors more easily through the application of information and communication technologies (ICTs) along with recognition of the increasing importance of traded services sectors has driven this new understanding. This explains why an increasingly robust body of economic literature finds that across-the-board productivity growth is actually the key driver of economic growth.⁵ In other words, the productivity and innovation capacity of all of a country's sectors matter more than whether or not the nation develops a few innovation-based industries. That is why Uganda's National Science, Technology, and Innovation Plan, launched in 2012, recognizes the need to 'develop a sector-wide' approach to stimulate innovation across all sectors of Uganda's economy, including the agricultural, energy, services, and information technology sectors.⁶ Likewise, Kenya envisions Konza, the Technology City of Kenya, as a hub for the development of innovative technologies empowering entrepreneurial start-ups launching innovative businesses in a range of sectors, from agriculture to mobile banking and ICT services.⁷ Similarly, Ghana established its Farmer Field Fora, a participatory extension approach that leverages elements of the innovation systems perspective, which has been demonstrated to help farmers innovate.⁸

In a 2010 report, the McKinsey Global Institute provided compelling evidence that the developing nations that emphasize an across-the-board productivity and innovation approach perform best.⁹ The report finds that countries that outperform their peers on productivity do not

have a more 'favorable' sector mix (e.g., more high-tech industries), but instead have more productive firms overall, regardless of sector. Similarly, Kucera and Roncolato find that productivity growth across all sectors is more powerful than re-allocating the mix of sectors towards those with higher productivity growth.¹⁰ For India, for example, the authors find that within-sector effects contributed 5% and re-allocation effects just 0.3% to India's average annual labour productivity growth from 1999 to 2008. That is, the growth effect accounted for 94% of all productivity growth. In short, while manufacturing generally, and high-tech manufacturing specifically, is an important component of innovation, maximizing innovation requires maximizing innovation across all industries.

Principle 2: Innovation policy should support all types and phases of innovation

To be most effective, countries' innovation activity should not only focus on all industries, it should also consider all points of the innovation value chain—in all types of innovation and along all phases of development. For the reality is that innovations can arise at many different points in the development process, including conception, R&D, transfer (the shift of the 'technology' to the production organization), and deployment or marketplace usage. Yet one of the biggest mistakes countries make with their innovation strategies is that they define innovation too narrowly, focusing mainly on developing and manufacturing high-tech products.

The Organisation for Economic Co-operation and Development (OECD) correctly notes in its *Oslo Manual* that innovation can entail

a new product, process, marketing method, or organizational innovation.¹¹ Keely and Waters go further, arguing in their book *Ten Types of Innovation: The Discipline of Building Breakthroughs* that when it comes to business innovations there are multiple types of innovation, including network innovations, business structure innovations, service innovations, and channel innovations.¹² Their research demonstrates that firms that focus only on product innovations achieve suboptimal innovation performance. The same is true for a nation. Nations that succeed in innovation need all organizations in all industries to be able to innovate in all areas, not just new products from firms in high-tech industries. Nations also increasingly recognize that if they are to succeed 'at innovation' (especially the type of innovation that is not purely technological in nature) they need to train their CEOs, entrepreneurs, government staff, and so on in the latest tools and methods available to stimulate the development of innovative concepts and business models. Indeed, an increasing number of tools—such as the Business Model Canvas, the Autodesk Innovation Genome, and the Ten Types of Innovation—can help individuals think about innovation in a structured, systemic way, providing a resource equally valuable to policy makers and to business people.

Moreover, just as innovation is more than the development of shiny new widgets, innovation policy is more than just science policy. Innovation policy involves the same set of policy issues that countries deal with all the time, but it focuses on ways to address those issues with a view towards maximizing innovation and productivity. For example, countries can operate their government procurement practices the

same way they always have, or they can reorganize their practices in a manner specifically designed to promote innovation. Likewise, they can organize their corporate tax systems simply to raise revenues or to raise revenues in ways that also drive innovation and traded-sector competitiveness. They can set up their science policies just to support science, or they can organize their investments in scientific research in ways that also support technology commercialization and the innovation needs of industry.

The most sophisticated countries recognize this. Their innovation strategies constitute a coherent approach that seeks to coordinate disparate policies towards scientific research, technology commercialization, ICT investments, education and skills development, tax, trade, intellectual property (IP), government procurement, and regulation in an integrated fashion that drives economic growth by fostering innovation. As Finland's National Innovation Strategy argues, it is vital that a nation's innovation strategies comprehensively address a broad set of policy issues because 'piecemeal policy measures will not suffice in ensuring a nation's pioneering position in innovation activity, and thus growth in national productivity and competitive ability.'¹³

Principle 3: Enable churn and creative destruction

If innovation across all industries and parts of the innovation value chain is the key to innovation success and growth, then one critical ingredient in allowing this to happen is the embrace of churn and what noted innovation economist Schumpeter called 'creative destruction'.¹⁴ That is, to succeed in innovation, nations need to do more than merely enable

some value-added innovation to supplement what is already going on in other, leading economies. They need to enable disruptive innovation, which is often generated by new market entrants, especially those emerging in their own economies.

A key factor in enabling disruptive innovation is the presence of competitive markets. As William Lewis, the former head of the McKinsey Global Institute, has argued, perhaps no factor is more essential to driving economic growth than the presence of competitive markets. He finds that '[d]ifferences in competition in product markets are much more important [than differences in labour and capital markets]. Policies governing competition in product markets are as important as macro-economic policies.'¹⁵

When countries design policies of all kinds to spur competition, this not only enables disruptive new entrants to gain market share, it also forces incumbent organizations to respond by becoming more innovative in order to survive. Countries that support competitive domestic markets create the conditions for new entrepreneurial ventures to flourish while at the same time incentivizing established firms to continue to innovate and to boost productivity. But countries that protect entrenched, incumbent, or politically favoured industries from market-based competition only damage their own country's productivity and economic growth potential.

One straightforward way countries can foster competition is to make it easier to start a new business, a process that is needlessly complex and time consuming in too many countries. In some nations it can take more than a year to start a new business. Yet the evidence clearly shows that delays caused by entry

regulations are associated with lower rates of firm entry. Malaysia requires just three procedures to start a business, ranking 15th in the 2014 GII for the ease of starting a business, while Armenia ranked 6th in this indicator.

However, just as an economy needs to make it easy for businesses to start, it also needs to make it easy for them to fail or to downsize so that innovators can take their place. This means reasonable bankruptcy policies and policies enabling labour market flexibility such that talent can be deployed (or redeployed) to the most productive pursuits. Yet many nations, desperate to keep employment high, do the opposite and try to protect workers from business downsizings and closings. Paradoxically, this situation results not in worker protection, but in employers deciding that they will minimize the numbers of workers they need. As the World Bank's World Development Report 2013 notes, 'Creative destruction, the mainstay of economic growth, happens to a large extent through labor reallocation. As workers move from jobs in low-productivity firms and obsolete firms to jobs in more dynamic economic units, output increases and the economy moves closer to the efficiency frontier.'¹⁶

One crucial driver of competitive markets is the ability of foreign firms to compete in domestic markets, either through exports or through direct investment. Research shows that FDI can contribute significantly to regional innovation capacity and economic growth. For example, foreign R&D investments have been shown to spur local companies in the receiving country to increase their own share of R&D, leading to regional clusters of innovation-based economic activity.¹⁷ Clearly this is not an either-or situation.

Innovation cannot thrive in nations that depend solely on either foreign or domestic enterprises alone. They need a healthy ecosystem of both.

Principle 4: Keep the price of capital goods imports, especially ICT imports, low

Innovation success is not just about coming up with good ideas. It is also about process innovation, which is enabled by investment in machinery, equipment, and software, particularly ICTs. This makes robust capital investment in machinery, equipment, and software a fundamental driver of innovation and productivity growth. Without new capital investment refreshing a nation's capital stock, innovation loses its power, productivity growth stagnates, and business competitiveness declines. Firms' investments in capital equipment are especially important because they produce spillovers that extend beyond the firm itself and benefit the broader economy. For example, van Ark finds that the spillovers from investment in new capital equipment are larger than the size of the benefits accrued by the investing firm.¹⁸ In other words, the total benefits to society from firms investing in ICTs are twice as large as the benefits received by the investing firm.

The impact on growth from investment in some capital goods—notably ICTs—is amplified because these investments enable downstream innovations in products, processes, marketing methods, and business organization. In fact, many economists consider ICTs to be a 'general purpose technology' that delivers outsized impacts—and not just in a few industries or application areas, but across virtually all industries and applications.¹⁹ For example, Hitt and Tambe find that

the spillovers from firms' investments in information processing, equipment, and software (IPES) are 'significant and almost as large in size as the effects of their own IPES investment.'²⁰ This is a primary reason why ICTs generate a bigger return to productivity growth than most other forms of capital investment. It also explains why ICTs have become the global economy's greatest driver of economic growth, in developed and developing countries alike. For instance, Heshmati and Yang find that ICTs accounted for 38% of Chinese total factor productivity growth and as much as 21% of Chinese gross domestic product (GDP) growth from 1980 to 2001.²¹ Updating these data in 2013, Wang and Lin find that the contribution of ICTs to Chinese GDP growth remained steady at approximately 20% from 2003 to 2007.²² Likewise, a World Bank report finds that 'ICT has been the main driver of Kenya's economic growth over the last decade', with ICTs responsible for roughly one-quarter of Kenya's GDP growth during the 2000s.²³ As Manchester University's Richard Heeks concludes, 'ICTs will have contributed something like one-quarter of GDP growth in many developing countries during the first decade of the twenty-first century.'²⁴ ICTs are particularly vital in developing nations that are further from the production possibility frontier and where there is still a vast amount of low-hanging fruit that ICT investment can capture. For example, simple things such as enabling the restructuring of the retail industry so that larger, ICT-driven chains can gain more market share can play a significant role in driving productivity.

There are several ways countries can keep the cost of capital goods low. The easiest and most important

is to limit tariffs and other trade barriers. A number of studies have shown that nations that impose tariffs on ICT goods to create a competitive domestic ICT industry succeed only in limiting adoption of ICTs by users (businesses and consumers) by raising prices. Nations should also be sure to not tax ICT products at a higher rate than other products. Likewise, local content requirements for capital goods and ICT goods, by definition, raise the price of ICT goods for domestic businesses and consumers. In fact, a recent Information Technology and Innovation Foundation (ITIF) report estimates yearly growth reductions to be between 0.7 percentage points and 2.3 percentage points of GDP per capita for countries with the highest tax and tariff rates on ICT products.²⁵

Although many nations impose high taxes and tariffs on ICT products in an attempt to either boost government revenue or to create a competitive domestic ICT industry or both, many nations—including China, Georgia, Malaysia, and Viet Nam—do a reasonably good job of limiting government-imposed costs on ICT products. The World Trade Organization's Information Technology Agreement, chartered in 1996, has played an important role in reducing tariffs on global trade in ICT products—and contributing to increased ICT goods and services exports from the countries participating in the agreement.²⁶ For example, Malaysia saw its exports of ICT goods increase by more than 50% from 1996 to 2011. In contrast, developing nations that did not join the Information Technology Agreement have seen their participation in global value chains for the production of ICT products decline by over 60% since that year.²⁷

More proactively, nations can ensure that their tax policies towards capital investment are favourable. Many nations have put in place or expanded tax incentives designed to spur investment, including investment in manufacturing plants and equipment. In Malaysia, for example, companies can depreciate general plant and equipment over six years, and heavy machinery over four years; they can depreciate computer and information technology (IT) equipment even faster. For corporate income tax purposes, Brazil allows 100% depreciation in the year of acquisition for new machinery, equipment, and instruments exclusively dedicated to R&D as well as 100% amortization for intangibles used in R&D.

Principle 5: Support the creation of key innovation inputs

Firms not only need access to best-in-class, affordable ICT inputs, they also need access to other key innovation inputs, including digital infrastructure, a skilled workforce, and knowledge—both its production and its transfer.

Although physical infrastructures remain important, today digital infrastructure is a crucial enabler of innovation. Digital infrastructure is about much more than the land-line telephone networks of the past. Today it refers to the deployment of advanced wireless telecommunications networks and high-speed broadband networks as well as to spurring deployment of a range of ICT applications, from intelligent transportation systems and mobile payments to health IT, digital signatures, and e-government. But although effective ICT policies can spur the digital transformation of a country's economy, they require that countries coordinate policies

regarding competition and regulation, R&D, universal service, and spectrum allocation, often as part of national informatization plans. For example, the Modi government in India unveiled in 2014 its Digital India programme, which—among other goals—seeks to provide high-speed Internet access to every Indian village while also enabling universal access to mobile phones.²⁸ Africa is the world's fastest-growing mobile market, with the fastest growth occurring in African countries whose governments have implemented proactive policies to spur the digital transformation of their societies. For example, Kenya's National ICT Master Plan 2013/14–2017/18,²⁹ introduced in April 2014, has played a vital role in developing a strategy to comprehensively deploy digital infrastructure, notably wireless and broadband Internet, throughout Kenya and to complement that availability of infrastructure with demand for it generated by popular applications such as mobile money and mobile government services. One result is that 93% of Kenyans are mobile phone users and 73% are mobile money customers.³⁰

Providing access to quality education is fundamental to any country's long-term economic success. Countries increasingly recognize talent as a vital source of competitive advantage and thus have made education and training a core component of their innovation strategies. These countries recognize that talent has become 'the world's most sought after commodity'.³¹ They know that, if a child receives an education, he or she is much more likely to get out of poverty and achieve a more prosperous future. But success in innovation requires more than broad-based, quality education; it means a serious focus on science, technology, engineering, and math (STEM)

education. For example, the Jordan Education Initiative seeks to enable Jordanian students to compete in the global knowledge economy in large part by focusing on STEM education, training teachers and administrators to use technology in the classroom, and guiding students through critical thinking and analysis.³²

Ideally the focus of countries' strategies for educating their citizens should be broader than STEM to encompass STEEM (with the second 'E' standing for entrepreneurship). Policy makers around the world have increasingly come to realize that entrepreneurship, particularly high-growth entrepreneurship, is critical for economic development. Public policy can play a central role in supporting this entrepreneurship. One place to start is with entrepreneurial education (this is a central focus of innovation policy in Uganda, for example), because entrepreneurship is more than just talent and knowledge. Some nations have both in ample supply, but they lag in entrepreneurship, in part because of culture, but also in part because they do not do enough to teach and support entrepreneurship. Governments should support entrepreneurship education at both the high school and college levels. In addition, governments can help provide entrepreneurial 'infrastructure' such as accelerators—organizations that provide space for entrepreneurs and linkages to mentors and potential customers. This is why the United Nations Children's Fund (UNICEF) created a global network of innovation labs that act as accelerators that bring businesses, universities, governments, and civil society together to create sustainable solutions to the most pressing challenges facing children and youth.³³ The lab model creates opportunities for young people, who have a unique insight into the

challenges that affect their communities, and helps them team up with local leaders to develop creative and sustainable solutions to the problems they identify as a priority.

These kinds of support and intermediary organizations also can play a critical role in vetting and giving entrepreneurs a seal of approval, making it easier for a high-growth entrepreneur to make a pitch for their business or product to angel investors and customers. Yet it is very hard for potential investors or customers to know whether they are dealing with someone who has the next big thing or simply a person with an interesting, but not marketable, idea. For this reason, one role of innovation incubators such as the 1776 global incubator located in Washington, DC, is to evaluate entrepreneurs and show a portfolio of similar start-ups to bigger ‘buyers’.³⁴

Because entrepreneurship is so risky and often involves first-time entrepreneurs, initiatives to help entrepreneurs learn from each other can be critical. Hence the proposal for a global entrepreneurship corps—where leaders from other sectors bring capital, ideas, and mentorship and meet in specific cities where there is limited access to such talent and resources—may play an important role. In addition, setting up a web-based global entrepreneurship mentorship programme whereby mentors in developed nations can help budding entrepreneurs in developing nations, perhaps through Internet telephony tools, can also be a valuable tool.

In addition, a country’s science and R&D policies are crucial determinants of its economic vitality. Relevant policies here include robust and growing public funding for R&D, ensuring that businesses have incentives to invest in R&D, and implementing policies that

enable a nation’s organizations to adopt newer and better technologies than are currently in use. Underlying these policies is the fact that, without them, the level of innovation in an economy is almost always suboptimal from a societal perspective. Indeed, the significant spillover benefits from innovation mean that, even under ‘perfect’ market conditions, the private sector will underinvest in the factors that underpin innovation, including R&D.

Because small and medium-sized enterprises (SMEs) account for such a large share of enterprises in many developing countries, it is important that nations implement programmes to help those SMEs boost their productivity and innovation capacity. For example, India’s Ministry of Micro, Small, & Medium Enterprises (MSME) aims to strengthen the science and technology potential of Indian MSMEs in semi-urban and rural areas, offering various awards and incentives to encourage entrepreneurship, cluster networking, and support to target groups—initiatives conceptually on par with efforts to support manufacturing SMEs in Western countries.³⁵ Likewise, a number of Latin American and Caribbean countries have launched programmes or ministries, such as Chile’s SERCOTEC and Mexico’s SPYME (Sub-Secretariat of the Small and Medium Enterprise), that seek to support growth and innovation among their small enterprises and manufacturers.³⁶

Finally, nations need an infrastructure for technology transfer and diffusion to compound the return on their domestic innovation investments. Obtaining the full benefits of public support for research relies on the effective transfer of knowledge from the university and government lab to the private sector so it can be developed into marketable

innovations. A range of policies can help spur the commercialization of research, but one indispensable policy enables vesting the IP rights of government-funded research with the university or research institution, as a wide range of economies—including Brazil, China, Indonesia, Malaysia, the Philippines, the Russian Federation, Singapore, South Africa, the Republic of Korea, and the United States of America—have done.³⁷

An increasing number of nations are using innovation vouchers to spur innovation. These low-cost grants, typically US\$5,000 to US\$10,000, connect start-ups with public research institutes to incentivize R&D among young, innovative firms. The goals of these vouchers include enabling knowledge transfers between start-ups and research institutes/universities, supporting sectoral innovation in manufacturing, supporting innovation management and advisory services, speeding commercialization of start-up ideas, and focusing research institutions on the commercial applications of their research. India and Moldova—two of the eleven outperformer countries identified in the GII 2014—are among the almost two dozen nations (including many larger ones such as Austria, Canada, Croatia, England, Ireland, and the Netherlands) that have found success using innovation vouchers.

Principle 6: Develop a national innovation and productivity strategy and organizations to support it

Although innovation is largely driven by entrepreneurs and the private sector, government action (as described above) can play a strategic supportive role. That role can be optimized if nations develop well-designed national innovation and productivity strategies.

For example, in 2010, India established a National Innovation Council to define a new roadmap for research and innovation along with a Science and Engineering Research Board to act as a funding agency. In 2013, the Government of India published a new Science, Technology, and Innovation (STI) Policy Statement, which recognized that ‘India has hitherto not accorded due importance to innovation as an instrument of policy,’ and resolved to develop ‘a New Paradigm of STI for the people.’³⁸ The plan focuses on the integration of science, technology, and innovation to create social good and economic wealth, recognizing Indian society as a major stakeholder. Although those policies were launched by the previous Singh administration, new Prime Minister Narendra Modi has built on them with a focus on entrepreneurship, notably by launching a new Ministry for Skill Development and Entrepreneurship.³⁹ The STI Policy Statement declared its goal to raise India’s national R&D intensity (R&D as a share of GDP) from the 0.85% level of today to 2% by 2020. In another example of a national strategy addressing innovation, in 2010, the Government of Ghana released its National Science, Technology and Innovation Policy.⁴⁰ Over fifty nations have now developed national innovation strategies.⁴¹

In addition to national strategies, many successful nations have also established national innovation agencies specifically dedicated to spurring domestic innovation. For example, Kenya, India, Malaysia, Thailand, and Viet Nam have each established a National Innovation Agency. Many of these are relatively new institutions. For instance, Kenya launched the Kenya National Innovation Agency in 2013 and Malaysia founded its Agensi Inovasi Malaysia in 2010, although

Thailand’s National Innovation Agency dates back to 2003. Among other tasks, these agencies work to promote absorptive capacity and help firms—especially manufacturers and SMEs—increase productivity by adopting best processes and technologies, training firms and entrepreneurs in innovation skills and competencies, promoting knowledge/technology transfer from universities and labs to the private sector, and helping link domestic firms into global supply chains.

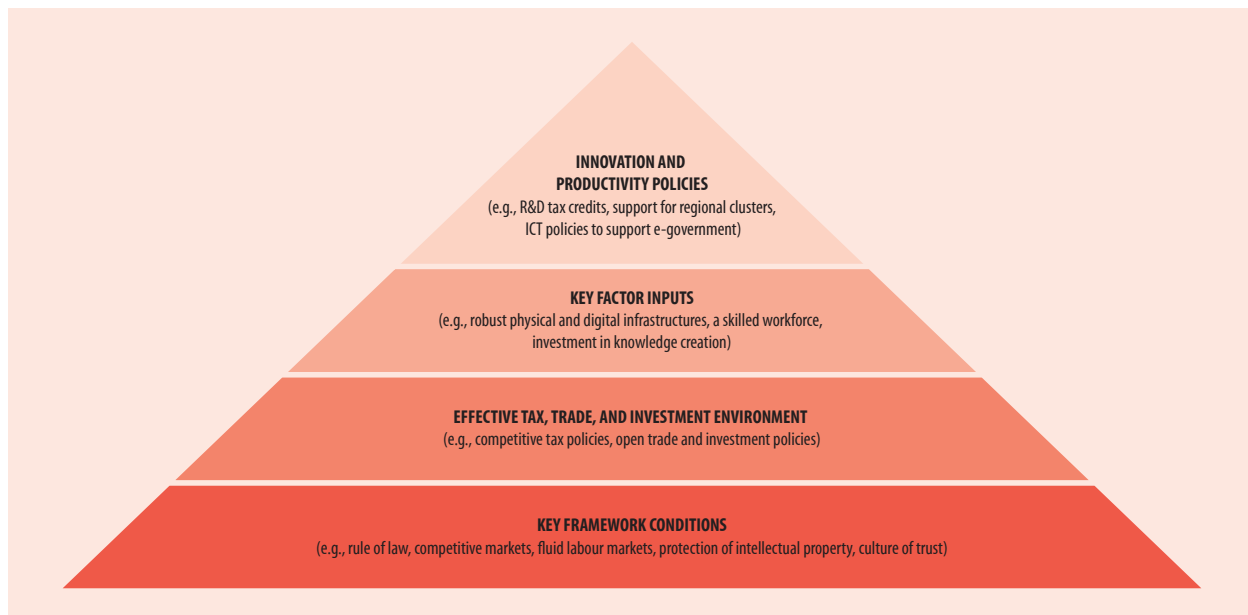
National innovation foundations also create national innovation strategies that constitute a game plan for how their countries can compete and win in a modern, innovation-based global economy. For instance, Kenya’s National Science, Technology and Innovation Policy underscores the importance of mainstreaming science, technology, and innovation across all sectors of the economy. Uganda authored its first National Science, Technology, and Innovation Plan in 2011.⁴² Armenia, China, India, Malaysia, Moldova, Mongolia, Thailand, and Viet Nam also have articulated similar national innovation strategies. Strengthening the intellectual property regimes that underpin innovation economies has been a core focus of the innovation strategies of many such countries, including notably in Jordan and Mongolia. For instance, Mongolia devotes an entire chapter of the *Science & Technology Master Plan of Mongolia 2007–2020* to ‘Improving the system of protecting and utilizing intellectual property rights.’⁴³ India recently released a Draft National IPR policy and set up an IP think tank within its Department of Industrial Policy and Promotion.⁴⁴ And researchers in Jordan have connected the country’s stronger embrace of IP rights in the 1990s with increases in GDP,

inbound FDI, and decreased reliance on foreign aid.⁴⁵

Conclusions

Countries attempting to achieve national innovation success need to envision a four-level pyramid as the path to prosperity (see Figure 1 on the following page). At the base level are key framework conditions such as the rule of law, ease of doing business, competitive markets, flexible labour markets, the effective protection of property (including intellectual property), and a culture of trust—topics addressed in Principles 1 through 3 of this chapter. Without these key framework conditions, even the most sophisticated innovation and industrial policies will not succeed. The next level includes an effective tax, trade, and investment environment. Key considerations here include establishing a globally competitive tax environment and implementing policies that encourage trade and FDI. Countries best succeed at attracting FDI when they use an attraction strategy, not a compulsion strategy, and welcome but not force investment in their nations.

After these factors are in place, nations need to focus on supporting the kinds of external factors firms need to succeed. These include robust physical and digital infrastructures; a skilled workforce with broad-based general capabilities as well as the specialized skills matching needs of key industries; and robust knowledge creation (e.g., investment in science and technology), as discussed in Principles 4 and 5. But even these are not enough. Indeed, with more nations realizing that mastery of these three levels is needed just to be in the game, success requires going to a fourth level that includes effectively crafted innovation and productivity policies specifically

Figure 1: Projected population: Uganda, 2015–25

Source: Based on Ezell et al., 2013, p. 58.

tailored to a country's competitive strengths and weaknesses. As discussed in Principles 4 and 6, policies here include provisions such as R&D tax incentives, support for regional innovation clusters, and support for innovative small businesses.

To be clear, these are not sequential in a temporal sense, but rather reflect the fact that even the most sophisticated innovation policies will not produce the desired results if they are not based on a strong foundation of key framework conditions; an effective tax, trade, and investment environment; and the presence of key factor inputs. Yet nations often focus on the top of the pyramid because these are often the easiest to implement politically (establishing a programme to develop a regional innovation cluster seldom faces opposition), while some of the policies at the base of the pyramid are much more difficult to achieve politically because change challenges entrenched interests in government or the private sector.

In conclusion, innovation policy—the constellation of government policies from tax, to trade, to talent, to technology that support a nation's innovation ecosystem—has become the single most important factor nations need to get right if they are to thrive in the globally competitive economy.⁴⁶ Countries must think holistically about how a wide variety of public policies impact the ability of their enterprises and industries to compete in the increasingly innovation-based global economy. Although this represents no easy task, the benefits to countries that get these policies right can be tremendous. Serious efforts at implementing policies that address the needs of innovation across all sectors and at all levels will certainly pay off over the long term—and probably much sooner.

Notes

- 1 Rosenstein-Rodan, 1943.
- 2 Hirschman, 1988.
- 3 Dasgupta and Singh, 2006, p. 9.

- 4 Ezell and Atkinson, 2010.
- 5 McKinsey Global Institute, 2010.
- 6 Ministry of Finance Planning and Economic Development (Uganda), 2011, p. 23.
- 7 Konza Techno City Kenya, 'Master Plan', available at <http://www.konzacity.go.ke/the-vision/master-plan/>.
- 8 Opare-Atakora et al., 2014.
- 9 McKinsey Global Institute, 2010.
- 10 Kucera and Roncolato, 2012.
- 11 OECD, 2005; for the OECD's definition of 'innovation', see also <http://www.oecd.org/site/innovationstrategy/defininginnovation.htm>.
- 12 Keeley and Waters, 2013.
- 13 Ministry of Employment and the Economy (Finland), 2009, p. 20.
- 14 Schumpeter, 1975, pp. 82-85.
- 15 Lewis, 2005.
- 16 World Bank, 2013, p. 313.
- 17 Atkinson et al., 2012, p. 35-6.
- 18 van Ark, 2002.
- 19 Atkinson and McKay, 2007.
- 20 Hitt and Tambe, 2006, p. 1797.
- 21 Heshmati and Yang, 2006, p. 15.
- 22 Wang and Lin, 2013.
- 23 World Bank, 2010, p. 3.
- 24 Heeks, 2011.

- 25 Miller and Atkinson, 2014.
- 26 Ezell, 2012.
- 27 OECD, 2013.
- 28 For details about the Digital India programme, see http://deity.gov.in/sites/upload_files/dit/files/Digital%20India.pdf.
- 29 For details about Kenya's *National ICT Masterplan 2013/14–2017/18*, see <https://www.kenet.or.ke/sites/default/files/Final%20ICT%20Masterplan%20Apr%202014.pdf>.
- 30 Demombynes and Thegeya, 2012, p. 2.
- 31 Atkinson et al., 2012, p. 117.
- 32 Jordan Education Initiative, available at <http://www.jei.org.jo/>.
- 33 Details about UNICEF's innovation labs can be found at http://www.unicef.org/innovation/innovation_73201.html.
- 34 For details about the 1776 incubator, see <http://www.1776.vc/>.
- 35 For details about India's MSME ministry, see <http://msme.gov.in/mob/home.aspx>.
- 36 Andes et al. 2013.
- 37 Atkinson et al., 2012, p. 46.
- 38 Ministry of Science and Technology (India), 2013, p. 2.
- 39 Borpuzari, 2014.
- 40 Ministry of Environment, Science and Technology (Ghana), 2010.
- 41 Ezell et al., 2015.
- 42 Ministry of Finance Planning and Economic Development (Uganda), 2011.
- 43 UNESCO, 2007.
- 44 Sridevan et al. 2014.
- 45 Cepeda et al., 2010, p. 11.
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Innovation and Policy: A Business Perspective

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MARTIN RUPPERT, IMP³rove – European Innovation Management Academy

To provide a business perspective on innovation policies in the focus countries of this year's Global Innovation Index (GII), a survey of over 400 business leaders across several different countries was conducted by A.T. Kearney and IMP³rove – European Innovation Management Academy to gain a bottom-up perspective on innovation policy and to serve as a complement to the overall GII. This chapter presents the results of that survey.

Study methodology

In order to elicit an understanding of the framework conditions needed for innovation and to determine key aspects of policy that would enhance the innovation environment, the survey was composed of three thematic pillars:

- the identification of current challenges faced by companies in managing innovation;
- the receipt of feedback from business representatives about how they perceive framework conditions for innovation in their countries; and
- the synthesis of a business perspective on the implications for innovation policies.

More than 400 innovation experts and leaders of large companies participated to provide a bottom-up perspective on innovation policies.

The survey analysed the perspective of large corporations in order to receive feedback from those firms with a strong international representation; this international perspective enabled them to compare framework conditions for innovation in different countries. The survey addressed innovation experts or business leaders of these companies to receive direct feedback from those affected by innovation policies.

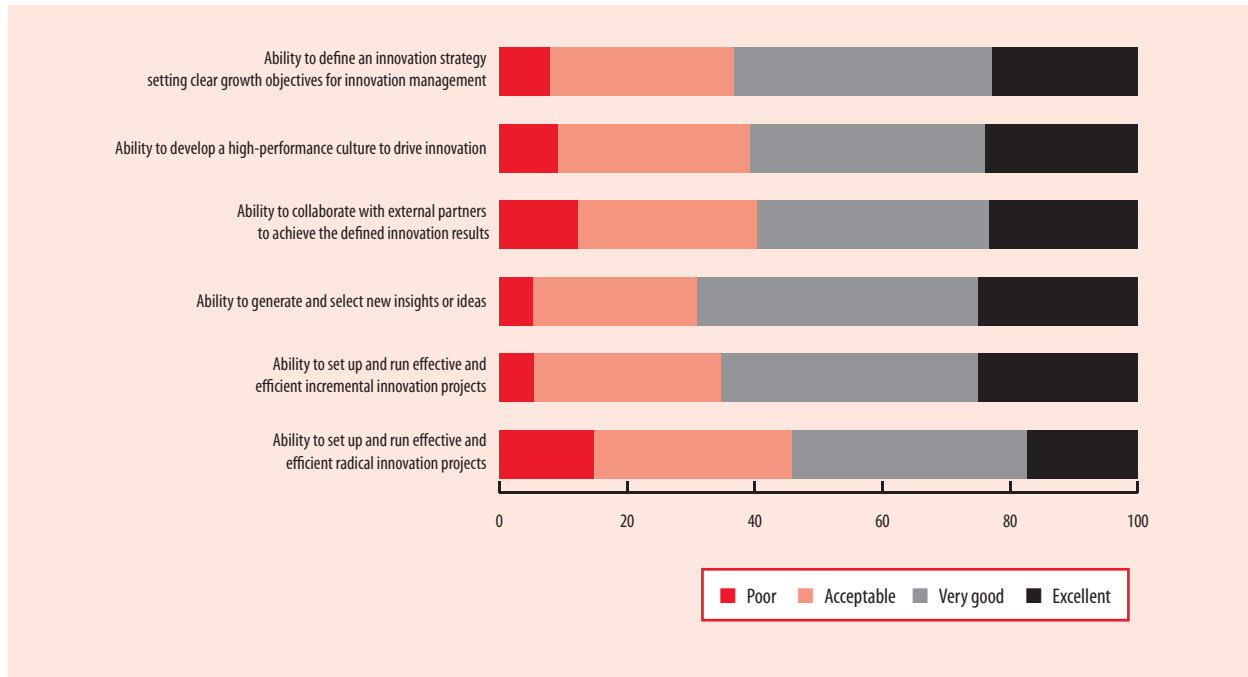
Company representatives were located in four focus countries—Malaysia, India, Singapore, and Turkey—that were selected based on their placement in the GII report. Malaysia and India are representatives of 'innovation outperformer' developing countries that, as a result of their strong performance in the seven pillars of the GII, have been chosen as countries central to this year's analytical chapters. Singapore was selected as a top-20 country of the GII 2014 and is geographic neighbour of Malaysia. Turkey was selected for comparison because it is a newly industrialized country.

In addition, and with particular focus on qualitative feedback, a small sample of evidence from Germany and Poland serves to provide a comparison to the situation in the European Union, and results from the United Arab Emirates provide a perspective from the Middle East. Key findings from all countries are provided in Box 1.

Box 1: Key findings

The survey's findings fall into two general categories: areas where innovation is considered to be well supported and areas of concern. The list below summarizes these findings.

- Surveyed companies were confident about their own innovation capacities; over half of those surveyed rated their performance as 'excellent' or 'very good' across all areas.
- Delivering radical innovation and collaborating with external partners were the two areas where companies saw the greatest need for improvement.
- Eighty percent of survey respondents said that conditions in their countries enable them to pursue strategic objectives for innovation.
- However, respondents highlighted policy concerns in three areas: forward-thinking legislation to support future markets, the predictability of regulation, and the harmonization of international regulation.
- More than 60% of survey respondents consider policy measures to be 'important' or 'highly important' to support innovation.
- Respondents suggested that the innovation environment could be improved by policies aimed at enhancing innovation and entrepreneurship-related skills, providing large R&D infrastructure support (e.g., lab space and equipment), and providing direct financial support.

Figure 1: Self-assessment of innovation capability

Source: A.T. Kearney and IMPProve – European Innovation Management Academy Survey.

Note: The figure depicts responses to the survey question ‘How would you rate your company’s ability to ...’

Key innovation management challenges: Company self-assessments

Managers were generally positive when evaluating their own innovation capabilities. However, they identified the ability to deliver radical innovation and the ability to collaborate with external partners as those areas most in need of improvement.¹

Respondents were asked to rate their companies in several crucial aspects of leading innovation management, including the ability to:

- define an innovation strategy that sets clear growth objectives for innovation management,
- develop a high-performance culture to drive innovation,
- collaborate with external partners to achieve the defined innovation results,
- generate and select new insights or ideas,

- set up and run effective and efficient incremental innovation projects, and
- set up and run effective and efficient radical innovation projects.

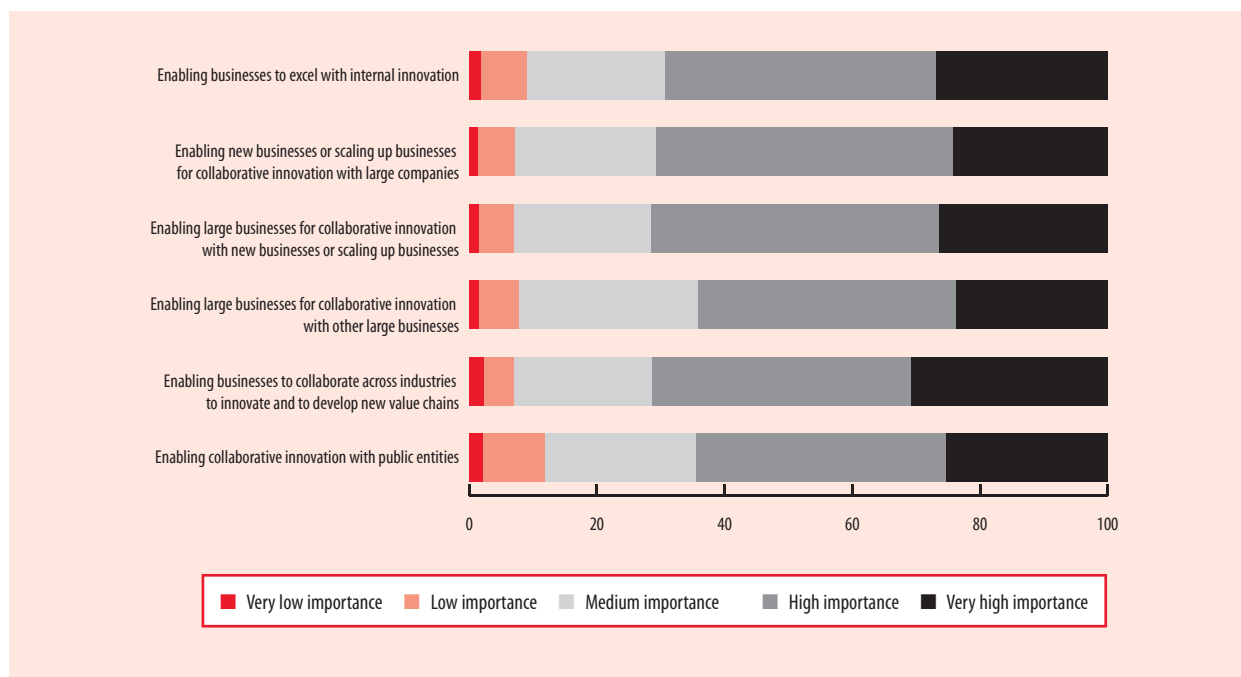
Figure 1 summarizes the results of the self-assessments. On the positive side, more than 50% of large company representatives rated their firms as either ‘very good’ or ‘excellent’ in each of the categories. Companies viewed themselves most critically with regard to their ability to set up and run effective and efficient radical innovation projects. This ability was rated as ‘poor’ by 15% of respondents. The second challenge identified by respondents was the ability to collaborate with external partners to achieve the defined innovation results; 12% of all participants rated this ability as ‘poor’. Participating companies provided comparable self-assessments with regard to the ability to develop a high-performance culture to drive

innovation (9% rated this as ‘poor’) and with regard to the ability to define an innovation strategy (8% said ‘poor’). The least serious problems were seen as the ability to generate and select new insights or ideas (5% rated this issue as ‘poor’) and the ability to set up and run effective and efficient incremental innovation projects (5% rated as ‘poor’).

Feedback from businesses: Framework conditions for innovation

Of the survey respondents, 80% answered that conditions in their countries permit them to pursue strategic objectives for innovation. This outcome suggests that policy environments are currently broadly supportive of innovation.

However, the responses also reflected the need for policy makers to maintain a forward-looking orientation and to create policy frameworks that will support innovation in the future, not only in the

Figure 2: The importance of policy measures

Source: A.T. Kearney and IMPProve – European Innovation Management Academy Survey.
 Note: This figure shows responses to the survey question ‘How important are policy measures to support the following innovation models?’

present. When asked about future policy needs to support innovation, survey participants had a number of suggestions. These included:

- **Adopting forward-thinking legislation.** Developing adequate supporting legislation for emerging technologies prior to their entry into the market (e.g., supporting legal and regulatory infrastructure for autonomous cars) will be an important step in ensuring that the innovation environment is sustainable.
- **Enabling anticipation of regulation.** Providing market participants with the tools to effectively plan on a mid- to long-term basis with regard to regulatory considerations, and to ensure transparency in regulatory processes and changes so that companies can calibrate business innovations appropriately and reduce risk in long-term investments (e.g., in the area of policy supports for

renewable energy) will be vital to ensuring that the business community remains supported and has the confidence to make innovation investments.

- **Improving regulatory harmonization.** Providing consistent classifications, restrictions, terminology, and supports across different geographies and jurisdictions—including cross-border harmonization so that, for example, comparable standards are provided and upheld in the area of heating, ventilation, and air conditioning in various countries—will be essential to ensuring the smooth implementation of the results of innovation into the marketplace. Moreover, regulatory harmonization will reduce the investment requirements needed to address a given market potential with an innovation.

Business perspectives: Implications for innovation policies

More than 60% of survey respondents consider policy measures to be important or highly important to support different models of internal or collaborative innovation (Figure 2).

As Figure 2 illustrates, 69% of survey respondents see policy measures to support internal innovation models as having either ‘high’ or ‘very high’ importance. By generating an increasingly complex innovation environment, current mega trends—such as digitization and connectivity—will make policy supports even more vital. This is particularly true in the area of collaborative innovation—for example, collaboration between large corporations with market access and appropriate resources and entrepreneurs who lack either access or resources but have innovative ideas in need of development.

Overall, 71% of survey respondents saw high or very high importance in policy measures intended to enable new businesses or to scale up current operations to collaborate with large, established businesses in innovation—and vice versa.² Of the survey respondents, 72% consider enabling businesses to collaborate across industries to innovate and develop new value chains to be important or highly important. Both the importance of policies that enable collaborative innovation between large businesses and the importance of enabling collaborative innovation with public entities were highlighted by 64% of survey respondents.

Survey participants were further asked to name up to three specific actions that would develop enhanced conditions for innovation in their country (Table 1).

The highest priorities identified by the group were:

1. to enhance innovation and entrepreneurship-related skills,
2. to provide large R&D infrastructure support (e.g., lab space and equipment), and
3. to provide direct financial R&D support.

These priorities reflect the findings of the GII 2014, which indicated room for improvement in Human capital and Market sophistication-related factors such as access to finance, innovation linkages, and infrastructure (see Table 2 for an overview).

Business representatives see three priorities for policies to foster *collaborative* innovation: to support investment, to enhance education (on the level of both personal skills and firm competency), and to strengthen innovation linkages.

In the specific area of collaborative innovation, over 60% of respondents from Singapore, Malaysia, and

Table 1: Top three priorities for innovation, by focus country

| | 1st priority | Percent of answers | 2nd priority | Percent of answers | 3rd priority | Percent of answers |
|------------------|---|--------------------|--|--------------------|---------------------------------------|--------------------|
| India | Provide large R&D infrastructure support (for example, lab space and equipment) | 25 | Improve ICT infrastructure | 22 | Provide direct financial R&D support | 22 |
| Malaysia | Provide large R&D infrastructure support (for example, lab space and equipment) | 33 | Enhance innovation and entrepreneurship-related skills and education | 28 | Improve ICT infrastructure | 27 |
| Singapore | Provide direct financial R&D support | 34 | Provide innovation support services | 25 | Develop measures to lower factor cost | 21 |
| Turkey | Enhance innovation and entrepreneurship-related skills and education | 41 | Provide direct financial R&D support | 40 | Enhance political stability | 32 |

Source: A.T. Kearney and IMP³rove – European Innovation Management Academy Survey.

Note: These data are the results of the survey question “Which (up to three) specific actions by policy makers or business representatives would be most important for developing enhanced conditions for innovation in your country?”

Table 2: Global Innovation Index 2014 scores: Comparison of focus countries

| GII pillar or sub-pillar | Score | | | |
|----------------------------------|-------|----------|-----------|--------|
| | India | Malaysia | Singapore | Turkey |
| Institutions | 50.8 | 68.2 | 92.8 | 54.9 |
| Human capital & research | 22.7 | 41.6 | 64.9 | 33.3 |
| Infrastructure | 32.1 | 45.7 | 65.6 | 35.6 |
| Market sophistication | 51.2 | 63.9 | 78.2 | 49.1 |
| Business sophistication | 28.0 | 42.9 | 66.7 | 25.4 |
| Knowledge workers | 25.0 | 48.1 | 76.4 | 34.4 |
| Innovation linkages | 38.9 | 33.8 | 51.5 | 25.1 |
| Knowledge absorption | 20.2 | 46.8 | 72.1 | 16.8 |
| Knowledge and technology outputs | 32.2 | 35.5 | 46.7 | 32.3 |
| Creative outputs | 28.6 | 42.0 | 43.1 | 41.2 |

Source: GII, 2014.

Table 3: Priority policy areas for collaborative innovation, percent of answers by focus country

| Country | Policy intention | | | | |
|-----------|--|--------------------------------------|---|---|---|
| | To support investment in research and technologies (%) | To enhance skills for innovation (%) | To enhance innovation competencies of firms (%) | To strengthen linkages within innovation networks (%) | To enhance demand and framework conditions for innovation (%) |
| India | 63 | 51 | 63 | 55 | 28 |
| Malaysia | 67 | 63 | 47 | 52 | 29 |
| Singapore | 68 | 57 | 62 | 51 | 35 |
| Turkey | 44 | 34 | 30 | 20 | 18 |

Source: A.T. Kearney and IMP³rove – European Innovation Management Academy Survey.

Note: The table presents answers to the survey question “Which policy instruments should policy makers focus on to foster collaborative innovation?”

India and over 40% from Turkey highlighted the role of policies needed to support investment in

research and technologies (Table 3). Education and skill needs, however, were rated nearly as high as

financing needs by participants. Policies to enhance skills for innovation (including personal skills developed through education) and the competencies of firms were selected as a priority area. Reflecting the important challenge of identifying and selecting appropriate partners in innovation, the role of policies to strengthen linkages within innovation networks was also noted as being crucial.

Conclusion

A recent study has shown that business representatives not only acknowledge the importance of innovation management, but they expect its significance to increase in the future.³ As the results of this survey with more than 400 business representatives indicate, policy makers play an important role as enablers for innovation management of their businesses. Importantly, enabling innovation not only includes providing funding but also developing framework conditions that can enable businesses to excel in and beyond their home country.

A business perspective clearly demonstrates the essential role that innovation plays for business. But it plays an essential role for the overall economic development of countries as well—and, of course, it is a virtuous circle: A growing economy is good for business. Encouraging policy that supports the development of an environment in which innovation can thrive should be a focus of efforts from the business community.

Notes

- 1 Radical innovations result in totally new products, services, processes, organizations, or business models. Incremental innovations lead to improvements to existing products, services, process, organizations, or business models.
- 2 For a detailed analysis of collaborative innovation between large corporations and entrepreneurs, see the World Economic Forum, 2015, forthcoming.
- 3 IMP³rove – European Innovation Management Academy, 2015.

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The Impact of Science and Technology Policies on Rapid Economic Development in China

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Thirty years of ongoing economic reforms in China has led to an uninterrupted annual economic growth rate of more than 9% on average,¹ an astonishing accomplishment. In 2010 China surpassed Japan in terms of GDP and became the second largest economy in the world. In 2014 China's GDP reached US\$10 trillion dollars: it is now one of only two countries in the world to have attained this scale—the other is the United States of America (USA).² Policy reform and innovation have been important drivers of China's remarkable achievement.³ Since 1978 China has implemented a series of large-scale science and technology (S&T) reforms that have accelerated progress in higher education and research and development (R&D). The 2008 global financial crisis disrupted the high growth rate of China's manufacturing-based economy, which adapts or imitates traditional technologies from developed economies. As a result of this crisis, China was pressed to make structural economic reforms that focused on building up domestic innovation infrastructure and the competitiveness of domestic research institutions. These policies have become key factors in influencing the country's continuing economic development. In 2014 the Global Innovation Index (GII) ranked China at 29th place worldwide, 1st among upper-middle-income nations and 7th in the South East

Asia and Oceania regions. China also leads substantially in innovation among the BRICS nations (Brazil, Russian Federation, India, China, and South Africa). China's most notable achievement in the GII is in the Knowledge and technology outputs pillar, in which it ranked 2nd in 2014; this led to its 2nd place in the Innovation Efficiency Ratio in that year. This chapter provides an overview and analysis of the evolution of China's key S&T policies and their impact over the past three decades. It also outlines a new phase of key policy change taking place today that could have major effects in the coming decade.

Four phases of China's S&T policy evolution

In the late 1970s China implemented a series of S&T policies to boost the country's economy in relation to the rest of the world. Since then, its S&T policies have evolved to become vital drivers of progress for both research and the economy.

The experimental phase (1978–85)

In early 1980s, China's economic foundation was weak and its level of S&T research was far behind that of developed nations. It became clear that the Soviet model for S&T research, which it had adopted in the 1960s, had serious drawbacks and had led to a severe disconnect between research and industry.

Initial policy reform, therefore, focused on spin-offs and partial privatization of selected parts of public research institutions that were commercially viable. This separation initially alleviated some of the financial burden of the holding institutions; later these privatized entities became substantial assets. Although they were few in number, some of the most successful technology companies in China today were formed during this period. They include the computer products and services company Lenovo (formerly Legend computer), a spin-off from the Computing Institute of the Academy of Sciences; and the conglomerate Founder Group, a spin-off from Peking University based on a digital Asian font typesetting technology. The initial phase of reform took a bottom-up approach because at that time national S&T funding was still very limited. At the national level, important initiatives such as the Key National Research Projects (1984), the Key National Laboratories, and others were launched to focus the limited available funding on research groups that exhibited better performance.⁴

The systemic reform phase (1985–95)

Top-down nationwide system reforms did not take place until 1985, when the central government issued the Science and Technology System Reform Act. The primary objective of this Act was to bridge the gap

between research institutions and relevant industries. By emphasizing competitiveness and other connections to the market, the Act aimed to gradually strengthen the economic impact of S&T funding. As a result of this Act, a number of reforms took effect. The most significant included the establishment of the National Natural Science Foundation of China, which is intended to promote and finance basic and applied research,⁵ along with a number of new initiatives supporting applied and translation research such as the 863 Program (1986), the Spark Plan (1986), the Torch Plan (1988), and the Shenzhen Stock Exchange for small and medium-sized enterprises (1990), which all sought to improve the prospects of commercialization.⁶

To improve the country's higher education system and enhance the link between higher education and social development, in 1993 the government instated the 211 Project as part of its long-term strategies for national economic and social development. A special budget was dedicated to a group of leading universities selected from each province and from major cities such as Beijing. This budget was enacted in the country's 9th Five-Year National Budget Plan, and was fully implemented in 1995. An important talent programme—the Hundred Talents Program of the Chinese Academy of Sciences, which offers positions to qualified applicants with an international doctoral degree—was also introduced during this period to encourage overseas Chinese scholars to return to China and take up key teaching and research positions.⁷

The deepening reform phase (1996–2006)

The 9th Five-Year National Budget Plan, the Outline of the 2010 National Target, and a series of resolutions officially kicked off

a period of deepening of system reform in S&T development. A fundamental national strategy was officially established with the aim of 'rejuvenating the nation's economy with science and education.' In 1996 China passed the Act of Promoting Commercialization of S&T Discoveries and Inventions. Together these new policies focused on three areas: shifting the drivers of innovation from public research organizations to industrial sectors; improving the R&D and innovation capacity of industrial sectors; and improving the efficiency of the commercialization of academic outputs.

During this period, changes in the national innovation infrastructure encompassed four key measures. These measures were the launch of the 985 Initiative, intended to expand the 211 Project to include key technology and engineering universities for the national advanced education development fund as a way to foster the development of world-class Chinese universities; the implementation of the Knowledge Innovation initiative in the Chinese Academy of Sciences to raise the research levels of public institutions; the establishment of large-scale R&D funding for basic research with initiatives such as the 973 Program; and the introduction of the Yangzi River Scholars Program, which significantly increases professors' wages to attract talented researchers and professors to Chinese Universities.⁸

Long-term plan and policy optimization (2006–14)

A Medium- and Long-Term National S&T Development Plan for 2006–2020 (the 2006 National Plan) was issued in 2006. The 2006 National Plan outlines guidelines for S&T development: nurturing independent innovation, fostering the

ability to leapfrog in key technology areas, building major infrastructure, and developing future global leadership. The plan emphasizes achieving sustainable economic growth, seeking innovation-driven growth strategies, and enhancing independent innovation capacity. During this period the government's focus was the optimization of the effectiveness of the policy and the management of its implementation. Previously issued policies and regulations that had lacked coordination needed to be consolidated into sets of coherent policies. Policy objectives shifted from promoting R&D to building an innovation ecosystem. Those one-fits-all policies had to be tailored to address more specific goals to be effective.

To further push the mobility of innovative talent, particularly in critical S&T fields, a very effective Thousand Talents Recruitment Program was launched by the central government in 2011. So far this programme has drawn more than 2,000 overseas Chinese scholars and leading industrial innovators back to China.

In 2012 China set the goal of being a 'top innovative nation' by 2020. The 18th Communist Party National Congress held at the end of 2012 established 'innovation-driven growth strategy' as a national development strategy. It called for setting clear targets, improving entrepreneurship, making industry the main driver behind innovation, and establishing market-oriented mechanisms to facilitate collaborative technology transfer from academics to the industrial sectors. Together, these changes should propel China's global competitiveness in innovation and ensure its long-term sustainable development.⁹

Outcomes and analysis of S&T reform

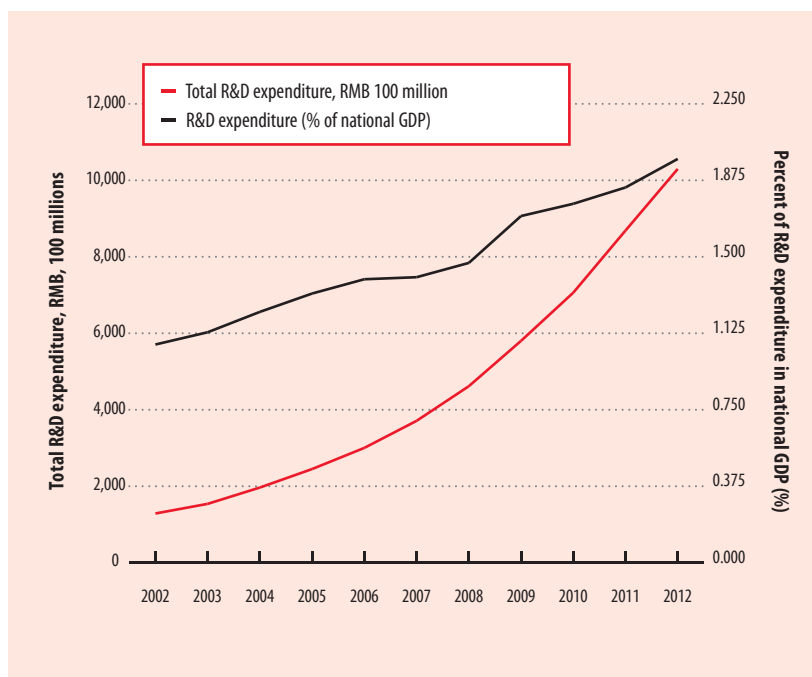
The wide range of S&T policies implemented and adjusted in the past three decades in China has had a direct impact on the outcomes that apply to innovation. From 2002 to 2012, China's GDP more than quadrupled, leaping from US\$2 trillion to US\$8.7 trillion. The data reveal that these policies have effectively advanced the development of an innovation ecosystem; they have also brought about an educated workforce of significant size, laying a solid foundation for the future development of innovation capacity in the country.

The next sections present basic data illustrating China's S&T development in this decade in four areas: R&D investment; the results of innovation—that is, patents, products, and research publications; science education; and the cultivation of R&D talent.

S&T and R&D investment

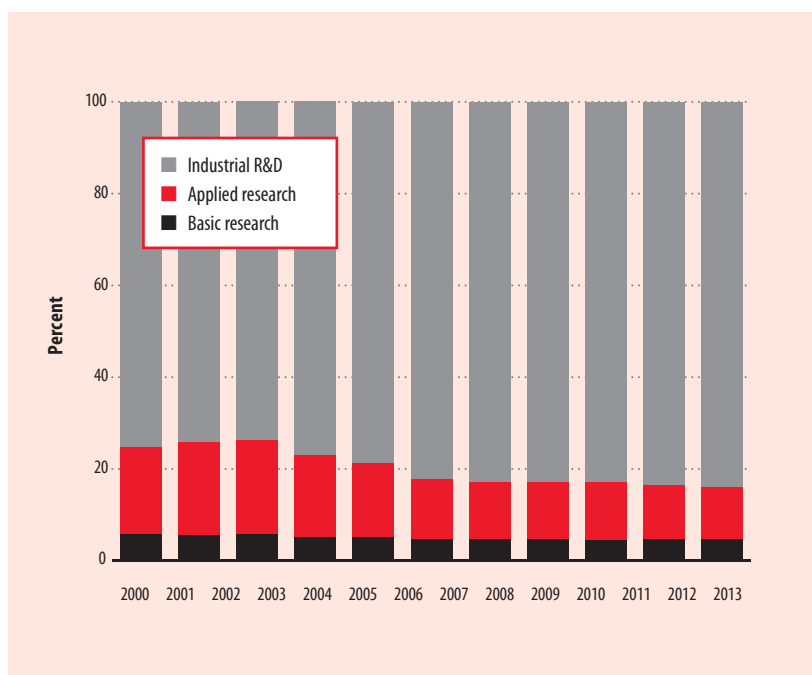
As shown in Figure 1, total R&D investment in China increased from about 1% of GDP in 2002 to 2% of GDP in 2012.¹⁰ The share of local government fiscal expenditure on S&T relative to the central government fiscal expenditure on S&T jumped from approximately 40% of total government fiscal expenditure on S&T before 2007 to approximately 50% since 2007.¹¹ This increase is strongly correlated with the issuance of the 2006 National Plan. Figure 2 shows that the percentage of R&D investment increased from 2002 to 2012, although investment in basic and applied research has not kept pace. R&D investment by the industrial sector increased steadily from 70% of total investment in 2002 to 80% in 2012.

Figure 1: Total R&D investment, 2002–12



Source: National Bureau of Statistics of China, 2013a.

Figure 2: Distribution of S&T investment, 2002–12



Source: National Bureau of Statistics of China, 2013b.

Innovation results: Patents, products, and research publications

Domestic patent applications have grown rapidly, with an average rate of approximately 17.5% in recent years. Since 2012 China has become 1st in the GII indicator for the number of total domestic patent applications; it has also been 1st in the GII indicator for domestic resident utility model applications for all years from 2011 through 2014. However, based on national data, the growth of international patent applications appears to be slowing in comparison to the very rapid growth of domestic patent applications. Within the domestic applications, the issued invention patents grew more slowly than issued utility models patents and designs patents (see Figure 3). Between 2002 and 2012 technology product output (proxied by revenue from new products; see Figure 4), increased rapidly, especially after 2006. This increase demonstrates that the Chinese government's innovation policies were successful in attracting organizations to invest in R&D and helping enterprises to be more successful in terms of innovation.

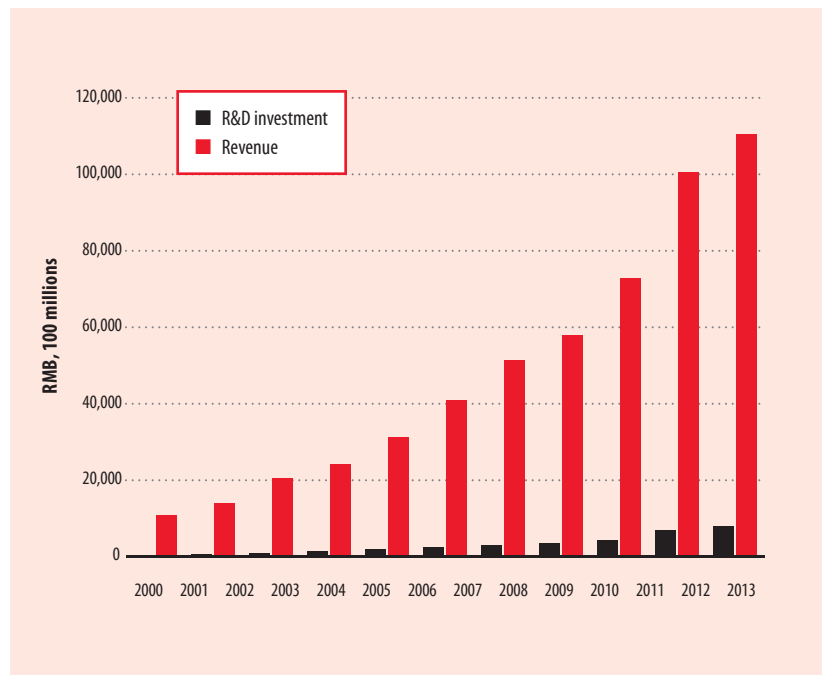
Figure 5 shows that Chinese research publications have made huge increases from 2000 to 2011 according to the three key international indexes—the Science Citation Index (SCI), the Engineering Index (EI), and the Conference Proceedings Citations Index–Science (CPCI–S). The corresponding average annual growth rates are 16.6%, 22.9%, and 21.8%, respectively. In 2000, China ranked only 8th, 3rd, and 8th worldwide in the SCI, the EI, and the CPCI–S, respectively. Since 2007, these worldwide rankings have gone up to 2nd, 1st, and 2nd place, respectively. This demonstrates that both the 211 Project of 1993 and the 985 Initiative of 1998, which aimed to boost higher education

Figure 3: Patents issued, 2002–12



Source: National Bureau of Statistics of China, 2013b.

Figure 4: R&D investment and revenue from new products, 2002–12



Source: National Bureau of Statistics of China, 2013b.

and establish the Chinese Natural Science Foundation and other research establishments, have made a great impact on China's research publications.

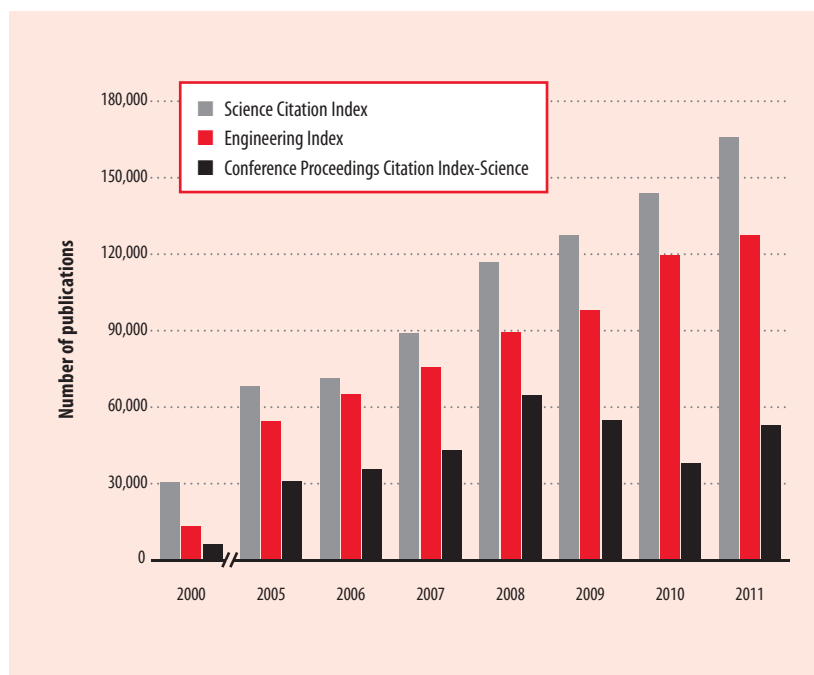
Science education

The successful development of science and technology in China cannot be separated from the development of education and the cultivation of a highly skilled workforce. The reform puts an intense emphasis on education and is making a huge attempt to develop top-quality education and to increase the ratio of high school graduates who are enrolled in colleges and universities. The number of college and university graduates in the sciences increased from 1,337,300 students in 2002 to 6,081,600 in 2012 (Figure 6)—an average annual increase rate of 16.4%. The number of Master and PhD graduates increased from 80,800 in 2002 to 486,500 in 2012, an average annual increase rate of 19.7%. The vast talent cultivated by the strong scientific education system continuously offers a highly skilled, educated workforce for the marketplace to support the rapid build-up of China's innovation system.

Cultivation of an R&D workforce

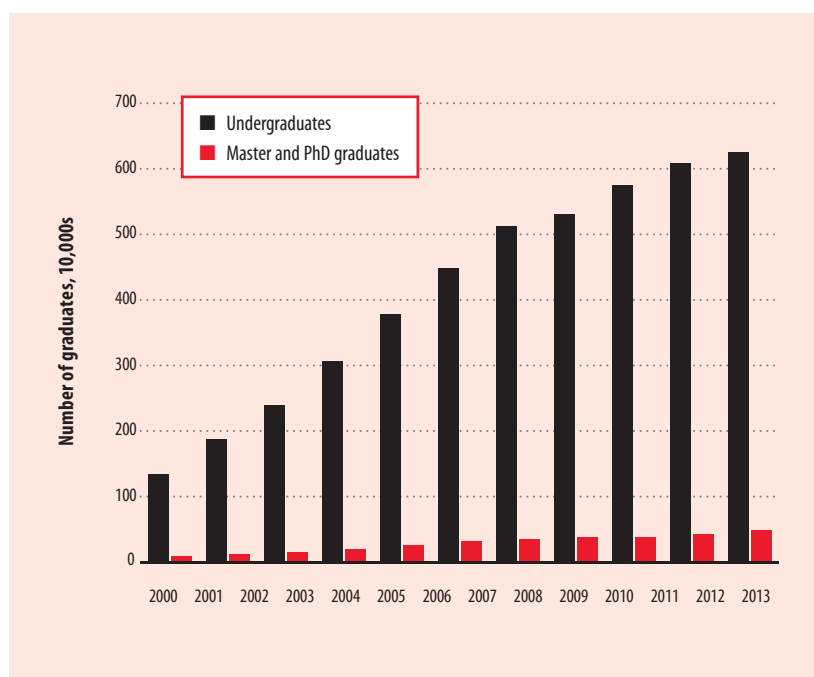
China's S&T policies place great value on S&T talent mobility. The Thousand Talents Program and a series of other talent programmes have greatly added to China's high-end talent pool, especially in the most competitive fields. A number of important breakthroughs can be attributed to those who have returned to China from abroad. China's focus on education has led to a rapid increase in the number of R&D personnel (the GII indicator for researchers in headcounts per million population increased from

Figure 5: Number of Chinese science and technology publications taken by three key international indexes, 2002–12



Source: National Bureau of Statistics of China, 2013b.

Figure 6: Graduates in science, 2002–12



Source: National Bureau of Statistics of China, 2013b.

1.1 million in 2009 to 1.5 million in 2012), as well as their quality and skill. Since 2004 China's R&D full-time equivalent personnel grew at a rate of 10% or higher, and by 2012 it had already reached a total of 3.3 million people.¹²

What other countries can learn from China

Since their beginning in the 1980s, China's evolving S&T policies and its economic reforms have had a profound effect on the outcome of innovation in the country, especially from 2002 to 2012. By considering the quantitative analysis made available by the GII, the following positive observations can be drawn: First, the shift from a bottom-up to a top-down approach has worked well for a developing economy that began with limited national resources.

Second, the increase in R&D investment went hand in hand with a large increase in GDP, as evidenced by China's improvement in the GII indicator on gross expenditure on R&D, which progressed from 25th place in 2012 to 21st in 2013, and finally to 19th in 2014. Most notably, following the launch of the 2006 National Plan, Chinese R&D investment clearly stepped up and the rate of local government investment in R&D surpassed the rate of investment made by the central government. Moreover, the positive market response encouraged the industrial sector to steadily increase R&D investment, as seen by the improvement in GII variable GERD financed by business, which grew from 73.9% in 2011 to 74.6% in 2014. However, investment in basic and applied research has not kept up with this pace, warranting serious concern.

The third observation is that the strategy of 'rejuvenating the nation's economy with science and education'

has accelerated the development of China's top education system (evidenced by the GII variable QS university ranking, which improved from 36th in 2011 to 10th in 2014). The quantity of undergraduates and Master's graduates has clearly increased (seen by the GII variable on tertiary enrolment, which grew from 21.8% of gross enrolment in 2009 to 26.7% in 2012). Both the quality and quantity of researchers has greatly increased, and the rate at which researchers in basic sciences has increased has been comparatively higher than the rate of increase of researchers in other areas.

The fourth observation concerns the outputs of R&D research: the increase of patent applications in China and of utility patents has been rapid. This growth is demonstrated by the GII through its indicators domestic resident patent applications, which rose from 293,000 patents in 2010 to 704,000 patents in 2013; and domestic resident utility model applications, which rose from 407,000 applications in 2010 to 885,000 in 2013. In addition, science and technology publications by Chinese researchers have enjoyed a high intake worldwide by the SCI, the EI, and other international indices, although the percentage of top-quality papers remains low (seen in the GII through scientific and technical articles, ranked 40th in 2011 dropped to 56th in 2014; and citable documents H index, ranked 16th in 2014).

What China can learn from other countries

Although China has made remarkable achievements in R&D investment and S&T outputs, quite a large gap still exists between China and developed nations in terms of investments in basic research, high-value inventions, and high-impact

research, which are all essential for entering the high-income category of nations. Indeed, the 2014 GII placed China 2nd in the Knowledge and technology outputs pillar, close to or even overtaking some high-income nations. However, Creative outputs (ranked 59th in 2014), Market sophistication (concerned with credit system and openness, ranked 54th in 2014), and Institutions (concerned with the regulatory and legal system, ranked 114th in 2014) are three pillars that have dragged down China's overall GII competitiveness when compared with top-ranking countries. China has set a national target of becoming a leading innovative country by 2020. Achieving this target depends on continuing policy reform to further improve a balanced relationship between the government and market forces; to establish a more comprehensive innovation ecosystem; to nurture a legal and regulatory system that encourages investment in innovation and entrepreneurship by all sectors; and to foster open and fair competition among private, state-owned, and foreign enterprises.¹³ To meet this goal, besides boosting investment in research and commercialization activities, China can look towards reforms undertaken by other countries at the same level of development to address issues in legal and regulatory systems, encourage market forces, and foster competition among all stakeholders.

The latest reforms

During the National Innovation Conference held in 2012, the Chinese government clearly acknowledged the need to improve the above-mentioned areas.¹⁴ Since the transition of the present government during the 18th Communist Party Congress, China has begun yet another round

of policy reforms, five of which are noted here. First, an amendment to the National Act for Promoting Technology Transfer has been put forward; this may become China's own Bayh-Dole Act (also known as the US Patent and Trademark Law Amendments Act), giving universities and public institutions the autonomous right to license the patents generated from central government R&D funding. It further ensures that inventors will share in a greater percentage of the proceeds. A pilot programme to test this new law has already begun in 11 universities, and it is predicted that it will not be long before it is enacted by the next session of the Chinese People's Congress. Second, in January 2015 the Chinese government issued the 2014–2020 Action Plan on the Implementation of National Intellectual Property Strategy. The plan aims to ease market processes for transactions pertaining to intellectual properties, including declassifying classified patents for civilian use and providing funding support to seed companies that specialize in intellectual property transaction services. Third, to address efficiency in S&T funding, the Chinese government has overhauled the entire S&T funding process, which will be replaced by a new process with a greater accountability to the stakeholders. Fourth, China has launched a special stock market (the National Equity Exchange and Quotations) to allow technology start-up companies, which are not yet profitable, to have more avenues to raise development capital. Furthermore, rules and regulations are simplified to encourage mergers and acquisitions. And fifth, in March 2015 the Chinese government published *A Guideline for the Development of Public Incubation Space to Promote Grassroots Entrepreneurship*.¹⁵ This guide encourages the participation of

multilevel capital markets, including crowdfunding.

The new set of policies being implemented today should help to address many of the country's challenging issues in the coming decade and have a positive impact on China's ranking in future GIIs.

Notes

- 1 World Bank statistics show that since 1978, China's GDP growth rate is 9.83% on average (see the World Bank's World Development Indicators database, <http://databank.shiang.org/data/reports.aspx?source=2&country=C HN&series=&period=>).
- 2 China's GDP of China reached RMB 63.64 trillion (US\$10.36 trillion) in 2014. The data can be found from the central government's work report of 2015, available at http://www.guancha.cn/politics/2015_03_17_312511.shtml (in Chinese).
- 3 Chinese officials have long been aware of the importance of S&T. Deng Xiaoping stated in 1988, when meeting with President Gustav Husak of Czechoslovakia, 'In my opinion, science and technology is the most important productive force.' Details of the speech can be found at http://news.xilu.com/2009/0903/news_112_13463.html (in Chinese).
- 4 For more information on Chinese State Key Laboratories, see https://en.wikipedia.org/wiki/State_Key_Laboratories.
- 5 Details about the National Natural Science Foundation of China are available at <http://www.nsf.gov.cn/publish/portal1/>.
- 6 Details of the Spark Plan can be found at Cao, 2006, and at <http://in.china-embassy.org/eng/szyss/jm/zhongguonongye/agricultureplanning/t143140.htm>, (at <http://baike.baidu.com/view/57377.htm> in Chinese); details of the 863 Program at https://en.wikipedia.org/wiki/863_Program (<http://baike.baidu.com/view/4785616.htm> in Chinese); of the Torch Plan at <http://www.chinatorch.gov.cn/english/index.shtml>; and of the Shenzhen Stock Exchange for small and medium-sized enterprises at http://baike.baidu.com/link?url=PpsCaaGhLeRfCF0JtxxJy3XwIjqUugdN5Pv9vIQ1mwwJuGHe7Fr1QICF0xel12x2qWi1LKqFsfHTQgEwktKF9_ (in Chinese).
- 7 For information on the Hundred Talents Program, see <http://english.ucas.ac.cn/JoinUs/Pages/TheHundredTalentsProgram.aspx>.
- 8 These plans succeed in helping Chinese colleges and universities attract many overseas talents, promoting the progress of Chinese higher education and levels of scientific research.

- 9 *The Reform and Opening Up of Chinese S&T in the Past 30 Years*, a book by the former minister of the S&T department, Wan Gang, gives a detailed description of these policies and their influence.
- 10 These data are from CNKI (China National Knowledge Infrastructure), the largest Chinese database, which contains abundant data for almost every field in science and social science. CNKI is available at <http://www.cnki.net/> (in Chinese).
- 11 Chinese R&D investment includes two parts: industrial sector funding and government funding. Government funding can be further divided into central government funding and local government funding.
- 12 National Bureau of Statistics of China, 2013b.
- 13 More details are discussed in People's Publishing House, 2012.
- 14 See speeches by General Secretary Hu Jintao, Prime Minister Wen Jiabao, and Deputy Prime Minister Liu Yandong in the 2012 National Innovation Conference. The full content of these is not available online, but a summary can be found at http://www.gov.cn/lhdh/2012-07/07/content_2178574.htm (in Chinese).
- 15 The Chinese government attaches great importance to entrepreneurship now. Prime Minister Li Keqiang has frequently granted interviews to representatives of successful entrepreneurs seeking to improve conditions for entrepreneurship in the country.

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Radical Institutional Change: Enabling the Transformation of Georgia's Innovation System

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Georgia is a post-Soviet country in the south Caucasus region, strategically located on the crossroads of Eastern Europe and Western Asia. Occupying a territory of 69,700 square kilometres and with a population of 4.5 million people, Georgia belongs to the Global Innovation Index (GII) lower-middle-income economies group.

The 2015 GII report recognizes Georgia as an innovation achiever among other countries in the same income-group and region.¹ In the GII 2014 Georgia ranked 74th out of the 143 countries covered in the report. For the last four years, Georgia has been outperforming its lower-middle-income group peers in terms of Institutions (pillar 1), Human capital and research (pillar 2), Market sophistication (pillar 4), and Knowledge and technological outputs (pillar 6); it also has achieved noticeable improvements in the GII Innovation Efficiency Ratio. Overall, Georgia consistently scored better on the input side than on the output side.

This chapter discusses the key innovation policies and private-sector actions that are enabling Georgia to drive a rapid and positive change in its innovation performance. Since the early 2000s, the country has been labelled a top reformer according to the following indices: the World Bank's Ease of Doing Business, the Heritage Foundation's Index of Economic Freedom,

and Transparency International's Corruption Perception Index. Georgia is a very good example of an economy that has successfully transitioned from an emerging innovation system by transforming its institutional framework. This pattern of development has been followed by other countries such as Kenya and Armenia (also highlighted as examples of outperformers in the current GII).

The first section of this chapter looks at the enablers of the radical institutional change in Georgia, stressing the role of the new West-educated elite and the diaspora in driving the processes of change as well as the influence of the accords with the European Union (EU). The following section reveals the existing challenges of the Georgian innovation system. The chapter argues that its future development may require complementing institutional change with efforts in other, less-developed aspects such as human capital and research capabilities, infrastructure, business sophistication, and creative outputs. The chapter concludes with some reflections on the future opportunities and challenges of Georgia.²

The chapter is based on primary and secondary data. Interviews were conducted in February 2015 with Georgian policy makers. Topics included identifying the organizations—both newly created and those inherited from the Soviet past—that

support Georgia's science, technology, and innovation system; regulatory changes introduced since 2003 and societal perception of these reforms; and the impact of post-Soviet heritage and of international cooperation and linkages. Finally, the interviewees asked about the main challenges faced by Georgian policy makers and what lessons could be learned by other post-Soviet countries from Georgia's experience.

Institutional change: Enabling the transformation of Georgia's innovation system

Georgia's improved innovation performance during 2011–14 may be explained by the institutional changes that have taken place since the Rose Revolution—the first peaceful transfer of power in the Caucasus—in 2003. Institutions—in the context of this chapter defined as the 'rules of the game'³—have long been considered a key component of a national innovation system.⁴ Institutions may be 'hard' formal ones such as laws and regulations, or they may be 'soft' informal ones, characterized by rules shaping social behaviour. The latter may exist in a society even when legally binding rules are not in place.

Georgia, as part of the former Soviet Union, experienced the first set of radical changes that came with the dissolution of the Soviet regime

Box 1: Reducing corruption in Georgia: The perspective of policy makers

Reducing corruption has become one of the cornerstones of institutional reform in Georgia, and officials are deeply concerned about controlling all aspects of it.

As one of the interviewees noted:

Points of contact between citizens and government had to be taken to the minimum, in order to get rid of the widely spread corruption in services that the state is obliged to provide to the citizens. That was innovation in itself for us, which had an impact on everybody's life (Interview, 10 February 2015).

As another interviewee pointed out:

... When the government is corrupt, people only care about getting their share of the 'profit'. When corruption and cumbersome bureaucracy are eradicated, people [in power] care only about the future of the country and decisions are made very fast (Interview, 10 February 2015).

in 1991. The shock of this collapse led the country to undertake major internal transformation and to develop new structures in state-building. As a result, older *formal* institutions were replaced by a set of new laws and Acts. However, the *soft* institutions, represented by social practices, needed longer to evolve. For example, the weak political structure, high rates of organized crime, and widespread corruption in the 1990s positioned Georgia as a failed state.

Following massive protests over the disputed nature of the fairness of the parliamentary elections, the 2003 democratic Rose Revolution in Georgia brought a change of

political power and a second wave of changes. Under the new political elite of predominantly younger and West-educated individuals, Georgia adopted what the Organisation for Economic Co-operation and Development (OECD) has characterized as the 'Guillotine approach' to institutional reforms.⁵ Instead of a gradual transformation of different institutions (of regulations and regimes), Georgia adopted a much more drastic approach to institutional change (similar to the approach taken by Kenya and Armenia). The new agenda put forward a rigorous anti-corruption campaign, which improved the economic situation. The new regulations (hard institutions) enabled a fundamental transformation of Georgia's institutional environment with simplified tax codes and improved tax administration, battled corruption, and put into place various mechanisms to make the country attractive to foreign direct investment (FDI).⁶ Box 1 presents the views of some policy makers concerning the country's fight against corruption.

The role that the young West-educated elite and diaspora played in Georgia's institutional reform processes and in establishing transnational innovation networks is evident. But the changes were not limited to hard institutions alone. The role of the country's youth may also be reflected in the change of the social norms, which diffused into the societal practices by virtue of the country's commitment to reforms. Georgian anti-corruption efforts, introduced by the young West-educated elite, have spread widely in Georgian society and remain the most prominent example of successful changes in the country's soft institutions. For example, as some interviewees noted, the road traffic police (who used to be the

most corrupt) were replaced entirely by newly selected and trained officers who are under more stringent control nowadays and do not take bribes. As a consequence, people stopped giving and receiving bribes in order to get any kind of licence or official document as had been customary earlier.

The 2008 military conflict with the Russian Federation, followed by a trade embargo on Georgian export produce, caused strained geopolitical conditions and a complex economic situation in the country. As a consequence, a series of new reforms were implemented with the purpose of diversifying the economy and improving the country's image for attracting foreign investors;⁷ ultimately these provided a way to introduce technology in the country and modernize the industrial sector.

The modernization of the research system inherited from the Soviet Union (see Box 3) also began around this time. In 2010 the Shota Rustaveli National Science Foundation, merging the Georgia National Science Foundation and the Rustaveli Foundation for Georgian Studies, Humanities and Social Sciences, was established. The main mandate of the newly created foundation was to reform the humanities and social sciences in Georgia and introduce mechanisms to fund research through open competition and international research programmes. In 2008 the Ministry of Diaspora was created with the aim of providing incentives for the return of migrated Georgians, including around 500 researchers.

Probably one of the most important forces behind the most recent transformations of the socio-economic system in which the innovation system is embedded is Georgia's cooperation agreement with the EU; negotiations for this

Agreement started in 2010. The cooperation frameworks under the European Neighbourhood Policy Instrument, the Eastern Partnership initiative, and (since 2014) the Association Agreement—which includes integration to the Deep and Comprehensive Free Trade Area with the EU—have served simultaneously as motivators and tools for carving Georgia's domestic institutional reforms. Since the start of the negotiations in 2010, the EU requested the introduction of substantial reforms in technical regulations, sanitary and phytosanitary measures for agricultural products, strict intellectual property rights (IPR) regulations, and rigorous competition rules (Table 1).

The year 2012 brought yet another change of political elite in Georgia: The opposition party came to power. As their predecessors did, the new elite put continuous economic development on the agenda,⁸ along with some clear steps in the direction of boosting innovation. Georgia's Innovation and Technology Agency (GITA) was established under the auspices of the Ministry of Economy and Sustainable Development in April 2014, with the aim of coordinating innovation and technology development at the national level. Additionally, the Research and Innovation Council, chaired by Georgia's prime minister, was established in January 2015. The Council's responsibility is the strategic development of coordination of the science, technology, and innovation policy; GITA acts as a secretariat for it.

This most recent effort in institution building in support of innovation activity may be seen as a positive development, but it is too early to predict its impact on the overall functioning of Georgia's innovation system. The next section discusses

Table 1: Political changes and changes in innovation system of Georgia

| Year | Political change | Change in the innovation system |
|------|--|---|
| 1991 | <ul style="list-style-type: none"> • Dissolution of the Soviet regime | <ul style="list-style-type: none"> • Fragmentation of the innovation system • Brain drain |
| 2003 | <ul style="list-style-type: none"> • Rose revolution: New elite of West-educated individuals comes to power | <ul style="list-style-type: none"> • Guillotine approach to institutional reform • Strong focus on reducing corruption, simplifying tax regulations, and generally improving governance |
| 2008 | <ul style="list-style-type: none"> • Military conflict with the Russian Federation | <ul style="list-style-type: none"> • Diversification of the economy (economic reform) • Focus on attracting foreign direct investment to the country • The Ministry of Diaspora is established |
| 2010 | <ul style="list-style-type: none"> • Start of negotiations with the European Union (EU) for the EU-Georgia Association Agreement | <ul style="list-style-type: none"> • Georgia is required to introduce substantial reforms in: <ul style="list-style-type: none"> » Technical regulations » Sanitary and phytosanitary measures » Intellectual property rights legislation » Competition rules • The Shota Rustaveli National Science Foundation is established |
| 2012 | <ul style="list-style-type: none"> • Opposition party wins the elections – change of political elite; focus on economic development | |
| 2013 | | <ul style="list-style-type: none"> • GITA (Georgia Innovation and Technology Agency) is created |
| 2014 | <ul style="list-style-type: none"> • Association Agreement with the EU is signed | <ul style="list-style-type: none"> • Access to the EU market |
| 2015 | | <ul style="list-style-type: none"> • Research and Innovation Council is created |

some of the challenges ahead in its continuous transformation.

Georgia's innovation system: Strengths and challenges for the future

Georgia's strengths can be traced back to the aforementioned deep institutional transformation of the country, which aimed to increase transparency, eliminate corruption, attract FDI, and facilitate business.⁹ As a consequence of the profound reforms that occurred in its hard institutions (laws, rules, and regulations), Georgia excels in labour market flexibility, captured by its ranking in the following indicators of the GII 2014: the cost of redundancy dismissal (ranked 1st), ease of starting a business (4th) and paying taxes (20th), ease of getting credit (3rd), and ease of protecting investors (16th), among others (Table 2).

On the other side of the coin,

Georgia's major future challenges are mostly related to how the aforementioned laws, rules, and regulations are accepted by society (soft institutions), the immaturity of its business capabilities, and bottlenecks in its national education and research systems. These will be described in detail in the next section.

Transforming soft institutions

Although formal institutions may be established quickly, their effect on the soft institutions—on socially accepted norms and principles—may take a lot longer to diffuse. As pointed out by some Georgian policy makers, both the country's higher education system and its IPR system now substantially approximate the standards of the EU. Nevertheless, the soft institutions inherent in the Georgian environment are yet to come closer to EU values and norms. Two clear

Table 2: Georgia's GII 2014 strengths and weaknesses

| Strength | | | Weakness | | |
|---------------|--|------|---------------|---|-------|
| GII indicator | Indicator or sub-pillar title | Rank | GII indicator | Indicator or sub-pillar title | Rank |
| 1.2.3 | Cost of redundancy dismissal, salary weeks | 1st | 2.1.1 | Current expenditure on education, % GDP | 129th |
| 1.3.1 | Ease of starting a business* | 4th | 2.3.3 | Average score top 3 universities* | 70th |
| 1.3.3 | Ease of paying taxes* | 20th | 3.3.3 | ISO 14001 environmental certificates/bn PPP\$ GDP | 117th |
| 2.1.5 | Pupil-teacher ratio, secondary | 2nd | 4.2.2 | Market capitalization, % GDP | 99th |
| 4.1.1 | Ease of getting credit* | 3rd | 4.2.3 | Total value of stocks traded, % GDP | 105th |
| 1.2.3 | Cost of redundancy dismissal, salary weeks | 1st | 4.3.3 | Intensity of local competition [†] | 116th |
| 1.3.1 | Ease of starting a business* | 4th | 5.1.2 | Firms offering formal training, % firms | 98th |
| 1.3.3 | Ease of paying taxes* | 20th | 5.2.1 | University/industry research collaboration | 126th |
| 2.1.5 | Pupil-teacher ratio, secondary | 2nd | 5.3.1 | Royalty & license fees payments, % total trade | 106th |
| 4.1.1 | Ease of getting credit* | 3rd | 7.1 | Intangible assets | 122nd |
| 4.1.3 | Microfinance gross loans, % GDP | 11th | 7.1.4 | ICTs & organizational model creation [†] | 114th |
| 4.2.1 | Ease of protecting investors* | 16th | | | |
| 4.3.1 | Applied tariff rate, weighted mean, % | 6th | | | |
| 6.2.1 | Growth rate of PPP\$ GDP/worker, % | 3rd | | | |
| 7.2.4 | Printing & publishing manufactures, % | 13th | | | |

Source: GII, 2014.

Note: * indicates an index; † a survey question.

examples of the current challenges with soft institutions influencing research and innovation are the societal perception of the role of education and the importance of IPR (Box 2).

Bottlenecks in education and research systems

In 2014, Georgia outperformed its income group peers in terms of Human capital and research (pillar 2), but this is mainly the result of a very good performance in the pupil-teacher ratio in secondary education indicator, where it ranks 2nd. Georgia still scored low on government expenditure in education (129th) and R&D funds per researcher are 10 times less than the same indicator for the Russian Federation, Ukraine, the Baltic

States, and Belarus,¹⁰ and its score in the excellence of universities is also low (Georgia ranked 70th in the average score of the top 3 universities).

Weaknesses in the current system are deeply rooted in the research system inherited from the former Soviet Union as well as the large-scale brain drain that followed its collapse (Box 3).

Some of these weaknesses have been addressed in recent years. In 2015 the government increased the salaries for researchers up to 250% (which may seem to be a huge amount, but earlier remuneration was minimal). The Diaspora Ministry, established in 2008, has identified approximately 500 Georgian researchers worldwide and aims to provide incentives that will help reverse the brain drain that occurred after the collapse of the Soviet Union. The Ministry of Education and Science is currently undergoing extensive reforms to boost standards to the European level.

A positive sign that the research

system is gaining momentum can be seen in changes to scientific output. Georgia is quickly catching up in terms of scientific publications with co-authors from the Western world, particularly from the United States of America and Germany,¹¹ in a context where international scientific collaboration outside the former Soviet Union was nonexistent.

Immature business capabilities

Georgia ranked low in the 2014 GII's Market sophistication and Business sophistication pillars in the following indicators: firms offering formal training (98th), royalty and license fees payments as a percentage of the total trade (106th), market capitalization (99th), intensity of local competition (116th), and total value of stocks traded (105th). Together these poor showings signal that the business sector still suffers from low capitalization, a lack of training, low levels of patenting activity, and low levels of knowledge-intensive industries, as reflected in the country's low levels of intangible assets and its use of information and communication technologies (ICTs) for new business models.

Related to and probably the consequence of the low level of capabilities in both the public research system and businesses, the linkages between university and industry are also weak (ranked 126th). As a result, the capacity of the public research system and the business sector to generate, absorb, and diffuse knowledge is still low.¹²

Increasing the innovative capabilities of the public and private sectors will take time, as we know from the leapfrogging experience of the Asian tigers (the Republic of Korea and Singapore are two such examples of small economies). Sustained and large investments in education, research, and innovative capabilities

Box 2: Challenges with soft institutions: Perception of education and intellectual property rights

Despite having all legislation in place, the enforcement of intellectual property rights (IPR) remains a challenge in Georgia as in many other countries. According to one policy maker interviewed for this chapter:

Partially this relates to the post-Soviet heritage, where private property did not exist and intellectual property was not given quite the same attention. Apart from that, Georgian society at large is not even aware why illegal content should not be downloaded (Interview, 10 February 2015).

Raising awareness throughout society about the need for robust national IPR

has thus been a priority assignment of Sakpatenti, the National Intellectual Property Centre of Georgia. Another challenge is partially posed by the:

lack of interest from multinational corporations (MNCs) to enforce the IPR on the Georgian market and, generally, developing countries' markets. ... This could have been done by arguing the infringements in courts and lowering the licensing prices for developing markets, rather than following their general foreign market policy. If an MNC reduces the price, I can then persuade my society to purchase the legal content from

them. Paying less would be better than not paying anything at all (Interview, 10 February 2015).

Even though the post-Soviet heritage left Georgia with the cultural understanding of the importance of possessing higher education and corruption in education is no longer present, there is:

not too much quality, either. ... The notion of having a 'piece of paper'—a diploma—rather than knowledge is still essential for many people (Interview, 9 February 2015).

in firms are needed, although this is a major challenge for countries with very limited resources.

Steps ahead

The Association Agreement with the EU signed in 2014 may be a way to address some of the weaknesses of the business sector and the research system outlined above. The agreement is expected to have a positive impact on the competitiveness of the Georgian firms by providing them with access to the large European market. The agreement also mentions explicit support in the effort to align Georgia's legislation to EU norms and assistance in trade-related reforms.¹³ The agreement covers a large array of sectors and policy areas, including education, research, and technological development.¹⁴ A key sector of interest mentioned in the agreement is the development of ICTs, which may have an impact on the performance of Georgia in terms of outputs in the coming years.

For Georgia, as well as for other countries in the lower-middle-income group, some of the challenges

ahead rest on their capacity to *continue strengthening their education and research systems*. Continued incremental steps that increase funding and raise the quality of education and research, as well as steps that build capability, are expected to build up the foundation

upon which a sound innovation system may be constructed.

A cornerstone for the future development of Georgia's innovation system is to *continue utilizing the mechanisms of cooperation with the EU* throughout the next stage

Box 3. The Georgian research system: An inherited past

In the former Soviet Union, the Academy of Sciences was organized centrally. The academies of the republics—including Georgia's—specialized in specific lines of research that were set by the All-Union Academy of Sciences. This resulted in a severe fragmentation of the innovation system after the collapse of the Soviet Union, with dramatic differences between the new independent countries in terms of capacity and specialization.¹ Georgia was left with a strong cybernetic institute and a biotechnology centre that had been devoted to the development of biological weapons for military use as well as a number of other research areas. The nearly 100 R&D organizations (mostly belonging to the Georgian Academy of Sciences) became independent entities with limited basic funding, which implied the need to

compete for grants.² As a consequence, many institutions merged together, integrated with universities, or closed down entirely. The result is that approximately 50 research centres are operating today, with highly heterogeneous performance.³ The severe lack of funds for education and research that occurred during the first years after the collapse of the Soviet Union forced many researchers to leave the country, further weakening Georgia's research system.

Notes

- 1 According to Gzoyan et al., almost 58% of R&D institutions, 66.7% of scientific personnel and over 72% of the total R&D expenditure in the USSR were concentrated in Soviet Russia. Gzoyan et al., 2015, p. 198.
- 2 Gzoyan et al., 2015.
- 3 Interviews with policy makers, 9 February 2015.

of the Deep and Comprehensive Free Trade Area (DCFTA) implementation process. Particularly important will be approximating the functioning of SMEs in Georgia to EU standards, both in terms of regulative measures and in practice. These higher standards may lead to boosting the intensity of local competition, which is one of Georgia's current weaknesses.

The reform of institutions has been a crucial component of Georgia's current achievements in terms of innovation. It is important to *focus on the well-functioning aspects of reformed institutions and use these as a basis from which to tackle current challenges*. Eradication of petty corruption and effectiveness of state bureaucracy have been the highlights of Georgia's reform pursuits. Incorporation of the methods that worked in the past is expected to prove effective for tackling the current shortcomings in areas such as IPR enforcement.

Georgia's agriculture has been one of the country's competitive advantages. Continued attraction of FDI in agriculture, along with the simultaneous development of agricultural sciences and strengthening its absorptive capacity, are expected to facilitate innovation outcomes. Links to multinational corporations (MNCs), when strong, are usually very valuable, but these links need time and the absorptive capacity of indigenous firms to develop. Intermediate organizations such as non-governmental organizations or measuring and testing centres can play a crucial role in translating the knowledge of MNCs to local actors, as the experience in other innovation systems in transition has shown.¹⁵

The diaspora plays a significant role in Georgia's development, and the established Diaspora Ministry has identified more than 500 scholars

with a Georgian background. If successful in bringing them back to the country, these individuals may be able to facilitate the future development of public and private research in Georgia, as well as strengthen the country's ties with scientific collaboration worldwide, as previous diaspora experiences in other economies have done.

Finally, the current unstable situation in Eastern Europe and other external factors may shift the priorities of Georgian policy makers when it comes to decision making on particular issues. However, it is essential for Georgia's continued development that the country stay on course on the innovation policy front. Utilizing the well-functioning aspects of reformed institutions may serve as a solid basis on which Georgia can stand on in these turbulent times when dealing with the contemporary challenges of its innovation system.

Conclusions and lessons to learn

Georgia has demonstrated its commitment to the steps of transition from an emerging innovation system through a deep transformation of its institutional framework. Georgia's experience may serve as a good example to follow for other developing economies that struggle with the quality of their core institutions. Other former post-Soviet countries, by following Georgia's steps in drastic institutional transformations, may also find that the successful outcomes of reforms in one area may easily spill over into other policy areas. For example, a simplified bureaucracy and rigorous tax reforms have improved the existing business climate in Georgia. Moreover, a battle against petty corruption in Georgia's public sector increased the trust of foreign

investors, resulting in a significant increase of FDI inflows.

Appreciation of the role of diaspora and empowerment of West-educated elite as a means for radical institutional transformation is another lesson that might be useful for other countries. Georgia has demonstrated that its younger generation is capable of making bold decisions when it comes to drastic institutional changes. It has also signalled its appreciation of Georgians living abroad by establishing ties and cooperation with the diaspora.

Together, the institutional reforms already implemented have put Georgia solidly on a path towards greater innovation and a more robust economy. Although a lot of work remains to be done, such steps lay a foundation upon which a solid innovation system may gradually be built.

Notes

- 1 An 'innovation achiever' is an economy that has a GII score relative to its GDP that is significantly higher than that of other economies in its category for four or more recent years, including 2013 and 2014.
- 2 This chapter is based on the analysis of secondary information as well as face-to-face in-depth interviews with key informants in Georgia conducted between 9 and 10 February 2015.
- 3 North, 1991.
- 4 Johnson, 1992.
- 5 World Bank, 2010.
- 6 Çelikpala, 2004.
- 7 Moskovko, 2012.
- 8 Government of Georgia, 2014.
- 9 'Strengths' in the GII 2014 are defined as those GII indicators scored with percent ranks greater than the 10th largest percent rank among the 81 indicators of that economy.
- 10 Gogodze and Uridia, 2010.
- 11 Gzoyan et al., 2015.
- 12 Gogodze, 2013.
- 13 European Commission, 2013.

- 14 Fields covered in the Agreement include economic dialogue; management of public finances and financial control; taxation; statistics; transport; energy cooperation; environment; climate action; industrial and enterprise policy and mining; company law, accounting and auditing and corporate governance; financial services; cooperation in the field of information society; tourism; agriculture and rural development; fisheries and maritime governance; cooperation in research, technological development and demonstration; consumer policy; employment, social policy and equal opportunities; public health; education, training and youth; cooperation in the cultural field; cooperation in the audiovisual and media fields; cooperation in the field of sport and physical activity; civil society cooperation; regional development, cross-border and regional level cooperation; civil protection based on gradual approximation with the EU *acquis*, and also—where relevant—with international norms and standards.
- 15 Lall and Pietrobelli, 2005; Lundvall et al., 2009.
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Policies to Drive Innovation in India

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India is a lower-middle-income economy in Central and Southern Asia with more than 1.2 billion people and an economy of \$1.8 trillion GDP in absolute terms for 2014, and according to Global Innovation Index (GII) ranking for last four consecutive years, has been an outperformer in its peer group in terms of its innovation capacity. The other economies in India's peer group include Bhutan, Sri Lanka, Uzbekistan, and Pakistan.

The evolving policy landscape and research and development growth

In terms of the size of the economy and the volume and diversity of its population, India has an advantage over its peers, but its dominance in innovation capacity has not been mere coincidence. It is a result of the gradually increasing focus of its policy regime, a focus that has moved from science to technology and on to innovation and entrepreneurship, and has been supported by years of planning and implementation. After independence, policy makers in India targeted economic growth through industrialization and the development of science. Initially, industrial development was planned around setting up and empowering public-sector undertakings. The scientific policy focused on the acquisition, dissemination, and discovery of scientific knowledge, and stressed exclusively the cultivation of

science and scientific research with a suboptimal focus on technology development.

The Industrial Policy Resolution of 1956 lay down policies that gave a state monopoly to all heavy industries. The Industrial Policy Statement of 1977 emphasized decentralization, and the Industrial Policy Statement of 1980 stressed the need to promote competition in the domestic market coupled with technological upgrading.¹ The Technology Policy Statement of 1983 stressed technology development in the country, shifting from the earlier focus on scientific development. The objective of the 1983 statement was to enable development of indigenous technology and the efficient absorption and adaptation of imported technology that could cater to national priorities. During the early 1980s, the private sector expanded gradually and the performance of Indian public-sector undertakings declined. With these policy measures in place, the GDP growth rate remained sluggish (at around 3.5%),² under an inward-looking and protectionist industrial policy regime.

During the 1990s, policy making in the science and technology sector started aligning with the country's overall economic policy framework, which favoured industrial research and development (R&D), the identification of technology needs, and technology development. Gradually the focus shifted towards

collaboration between public and private institutions, identifying priority sectors and social needs, enhancing international collaborations, and strengthening human capital. In 1991 in a historic moment, with the help of a reformist budget, the Indian economy opened up by loosening its protectionist policies.

With a more open economy and the gradual shift in R&D and industrialization policy goals, scientific departments such as the Department of Science and Technology and the Department of Scientific and Industrial Research became proactive in collaborating with industry in public-private partnerships. This approach incentivized the private industry towards R&D by providing shared costs and rewards, and it provided a buffer against the high-risk basic research component of R&D. This collaboration was advantageous for industry. Research projects initiated at the institutes were now jointly funded by the government and industry; formerly, they would have been funded by industry alone.

According to the latest data (updated through 2009–10 and projected for two subsequent years) released by the Ministry of Science and Technology, gross expenditure on R&D (GERD) in the country has been consistently increasing over the years. From 24,117.24 crore Indian rupees (₹) in 2004–05, it has reached ₹53,041.30 crore in 2009–10, an increase of around 45%. The R&D

and GDP ratio increased significantly from 0.81% in 2004–05 to 0.87% in 2009–10. These data alluded to the strong growth in R&D in India that has occurred over the last decade compared with its closest peers, such as Pakistan (0.68% in 2007) and Sri Lanka (0.11% in 2008).³ GERD as a percentage of GDP from 2011 to 2014 also ranks India consistently below 50, making Pakistan second in the peer group.

With this overview of India's growth in its innovation capacity, driven by its industrial and science and technology policy regime vis-à-vis its peers, the next section reviews India's innovation ranking in the GII. Subsequent sections will highlight what India has done to score higher than its peers in the lower-middle-income countries, the innovation policies that appear to have fostered innovation, and areas in policy that may need improvement. The chapter concludes with lessons to learn from India's experience and that of other countries, and, finally, a proposal for policy mixes that would enable India and similar countries improve in their innovation ranking.

Review of GII findings and pillars and their impact on India's ranking

As noted in the previous section, over the years the policy regime in India has evolved to become favourable in terms of innovation, but since the economic slowdown in 2008—specifically after 2010—the performance of the Indian economy has remained somewhat unstable. Over the last four years India has witnessed a reduction in its overall GII ranking, which dropped from 62th place in 2011 to 76th in 2014. This change in ranking can be primarily attributed to two major factors. The first concerns the changing dynamics of the country's political,

educational, and business environment, and the second concerns the structural change GII has undergone to improve itself as an assessment tool over the years.

According to GII data, the input parameters in which India has consistently performed poorly during the last four years are political stability, ease of starting a business, tertiary inbound mobility, and environmental performance. These findings also resonate with the general public's perception that the government has been relatively inactive during this period in terms of making policy decisions. Among the reasons for this inactivity is the slowdown experienced in the overall economy, the country's high inflation, and clamour over severe corruption charges against the incumbent government. Weaknesses that are underscored in the GII occur in the area of ease of starting a business—a persistent matter of contention in India, which presents regulatory hurdles to entrepreneurs through a highly complex compliance regime and heavy bureaucratic interference. Such government interference discourages entrepreneurs from effectively starting and running businesses. The tertiary inbound mobility indicator concerns the number of foreign students studying in Indian institutions. Although India's higher education sector ranks better than many other developed economies in terms of the quality of its students, because of a lack of adequate infrastructure and student support system it loses out on the opportunity to attract foreign students. Finally, as a developing nation, India still holds a debate between the procurement of expensive, eco-friendly technology and the use of traditional, low-cost technologies that have a high carbon footprint. India's dismal ranking (155th out of 176) in the

2014 Environmental Performance Index is evidence of the fact that the country has lacked efficient policy measures to tackle this issue.⁴

Also influencing the decline in India's GII ranking are the structural changes of the index. The GII model is continually updated to reflect the improved availability of statistics and a better understanding of the meaning and implications of innovation. *Updates to indicators* have prompted India's drop in ranking in six of the indicators that have changed. Over the years the GII has used *new indicators* to better capture the different elements of the model. For example, adding indicators on global entertainment and media output and using patent applications instead of patent registrations were a feature of the 2014 GII. *Changes in absolute data values* have been another factor. These include the decrease in variables such as total value of stocks traded, market capitalization, and market access for *non-agricultural exports* over the 2011–14 period. Also affecting India's ranking is *low data availability* in instances where some indicators for India were not available for a more recent year, revised at the source, or simply not reported. Finally, a *variation in relative performance* (i.e., better performance by other economies in specific indicators) has also been responsible for India's overall change in ranking.

Because India's rank in the GII has gradually declined over years, it may be misconstrued by many that India has performed poorly in terms of its innovation capacity building, but this would probably be a wrong analysis. The GII states that there are certain areas where data could not be captured because of the non-availability of standard international indicators, and even if some of these areas have produced good innovation advantage for a country like India, it

does not translate into ranking. The following section illustrates some of the key areas driven by its evolving policy landscape that have worked well for India, and other areas that need further improvement.

Areas that have worked well and areas that need further improvement

The GII for the last seven years has been consistently publishing the ranking of countries on their innovation capacity and analysing the innovation input and output parameters that affect the relative strengths and weaknesses of nations. In this process, the GII has identified several key factors that have been responsible for better performance for some nations compared with their peers in a specific economic and geographical category. India has been identified as one such innovation achiever in its peer group of lower-middle-income economies in the Central and Southern Asia region. Following are some of the key areas identified by the GII as responsible for relative strengths and weaknesses of India's innovation prowess vis-à-vis its peers.

Areas of strength

This section presents some key areas where India has outperformed its peers in terms of building its innovation capacity guided by an effective policy regime. Some of these—such as information technology and mobile penetration—have been a great success; in these areas, India has performed on par with the best in the world.

Top Indian universities

Over the years, India has developed a stable foundation for scientific, technological, and business education by setting up centres of excellence such as the Indian Institutes of

Science (IISc), the Indian Institutes of Technology (IITs), and the Indian Institutes of Management (IIMs). These premier institutions have prospered over time and produced some of the most brilliant minds on the world stage. Admission to these premier Indian institutions has, consistently, been competitive with a '1 out of 50' student admission ratio for IITs,⁵ and a '1 out of 150' student success ratio for IIMs; this trend has grown over years. This competition for admission is even fiercer than the competition for admission in the top US schools such as the Massachusetts Institute of Technology (MIT), where the ratio stands at around 1 out of 10 who apply.⁶ This competitive landscape and the influx of meritorious students have provided a natural advantage for India, which positions its top institutions as some of the best in the world. Despite many challenges, average scores at top universities in India has been a strong point for its superior innovation ranking, not only among its peers but also among all nations.

Citation of publications

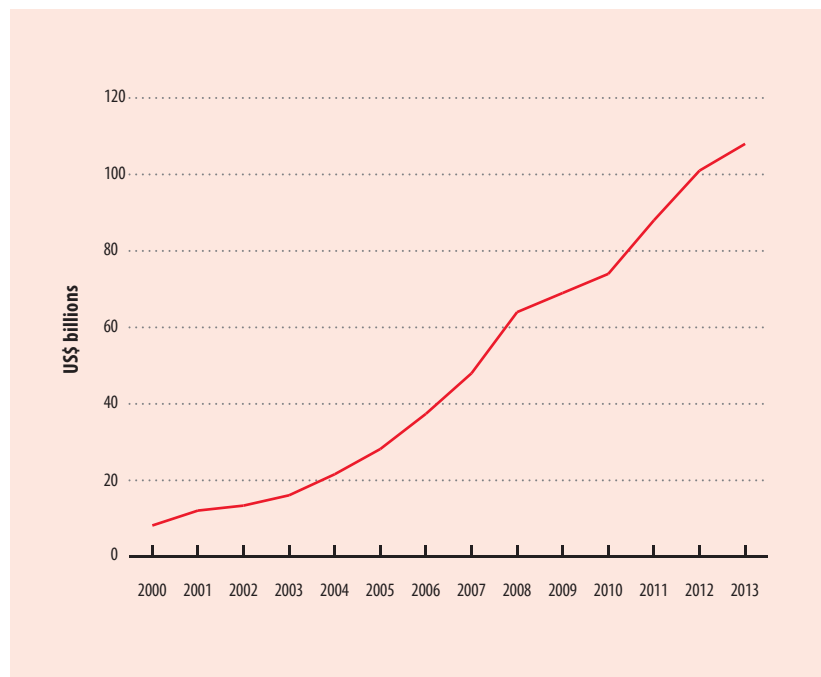
Allied to higher education, the strength of scholarly publications from India has been a key proponent for driving innovation capacity. The higher education sector in India has contributed to the 66% average growth rate in the output of scientific publications as assessed over a five-year period (2006–10). Among all disciplines, engineering research has made the most significant progress, and Indian scientific papers have nearly quadrupled their presence in the top-ranked 1% of journals worldwide. In addition, the improvement of the citation rate (and therefore their impact) in engineering disciplines has been significant, and this level of impact has grown steadily since the 1993–97 period. A

government study also indicates that the citation impact of Indian publications has increased from 0.35 in 1981–85 to about 0.68 in 2006–10,⁷ which helped India to lead the citation index among its peers.

Mobile networks, information technology, and broadband

The other important segment in which India has leapfrogged, leaving others in its category behind, is its mobile networks, information technology, and broadband. When the first National Telecom Policy was launched in 1994, the telephone density in India was about 0.8 per hundred persons; the world average was 10.0 per hundred persons. This density was even lower than that of other developing countries such as China (1.7 per hundred persons), Pakistan (2.0), and Malaysia (13.0).⁸ By 1999 India had achieved some of the targets laid down in the 1994 policy, such as the penetration of one public call office per 522 urban population against the target of one public call office per 500,⁹ and establishing 8.7 million telephone lines—even more than the planned target of 7.5 million. In addition, targets were set to achieve a teledensity of 7% and 15% by 2005 and 2010, respectively, and to increase rural teledensity from 0.4% to 4% by 2010. Online electronic commerce was encouraged to pass on information seamlessly with the addition of 10 gigabytes of bandwidth on national routes (expandable up to terabytes in some special cases).¹⁰

With a penetration of broadband and Internet in the country standing at around 0.02% and 0.40%, respectively, in 2004, the government announced an exclusive policy on broadband.¹¹ With all these policies in place, the growth of telecommunications connectivity through mobile telephones rapidly expanded

Figure 1: Yearly revenue growth in IT, US\$ billions (2000–13)

Sources: Authors' calculations, based on IBEF, 2014; NASSCOM, 2008; and OECD, 2010.

in the next decade. The number of telephone connections surged from 41 million in December 2001 to a staggering 943 million by February 2012, out of which 911 million alone were added via the cellular segment (mobile phones). The increasing teledensity and sharply declining tariffs in a competitive market made India the fastest-growing telecommunications market in the world and placed it far ahead of its peers in the Central and Southern Asian regions. The sector was responsible for almost 3% of country's GDP. The National Telecom Policy 2012 was conceived in this context, with the aim of transforming India into an empowered and inclusive knowledge-based society.¹²

Information technology (IT) in India was a fledgling industry during the 1970s, and few players were active in the market. Over the years the pace of growth in this sector remained faster than in other

segments because it did not require much capital to set up a business, and it also provided relatively short lead times to generate revenue. The development of new Indian organizations in this space has grown exponentially in the last two decades, with revenue growth from US\$5 billion in 1997 to around US\$64 billion in 2007,¹³ and to US\$108 billion in 2013.¹⁴ The yearly growth in IT revenue from 2000 to 2013 is illustrated in Figure 1.

Recognizing the growing potential of the IT sector in the 1980s, the government opened the sector up to external competition. In the 1990s policies were directed towards developing required infrastructure in telecommunications to support IT growth. As a result, during the period 2000–13, the IT-business process management sector expanded at a compound annual growth rate (CAGR) of 25%, which is three to four times higher than the global

average. The IT policy of 2012, by looking at this trend, has put forth the ambitious target of increasing revenue to US\$300 billion by 2020. It is also envisaged that this policy will help to scale up innovation and R&D in cutting-edge technologies, provide benefits to small- and medium-sized enterprises (SMEs) and start-ups, create a pool of 10 million skilled workers, and make at least one individual in every household e-literate.¹⁵ With the growth of IT, coupled with the advancement of broadband technologies, access to the Internet grew multifold from 2000 to 2013, at a CAGR of around 32.5%. Annual Internet penetration in India is illustrated in Figure 2.

This revolution in communications has affected a pace of knowledge creation and dissemination in the economy that is unprecedented in Indian history. It has helped to transform innovation-driven entrepreneurship from the point of aspiration to the point of reality for the people of India.

Gross capital formation and market capitalization

India, as one of the fastest-growing economies in the world, has demonstrated strengths in factors such as gross capital formation, market capitalization, and total value of stocks traded. India's high GDP growth rate has complemented a strong gross capital formation that consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. After the country's economic liberalization in 1991, Indian industry also posted a high growth trajectory with more and more firms getting listed in the Bombay Stock Exchange (BSE) and National Stock Exchange (NSE),¹⁶ which in turn increased the country's market capitalization over the years. As the volume of the stock

market grew, so did the total value of traded stock. The BSE Sensex, also known as 'BSE 30', is the most commonly used term for referring to the trading volume in India. When compared with the NSE, the BSE has statistics that are similar in terms of total market capitalization, but in terms of share volume, the NSE is almost twice as large as the BSE.¹⁷ The equity market capitalization for BSE from 2011–12 to 2014–15 has risen from US\$1,235.05 billion to US\$1,626.68 billion, respectively.¹⁸ The other factor that has played a major role in this success is the clear policy guidelines laid down by the Securities and Exchange Board of India for regulating the financial market.

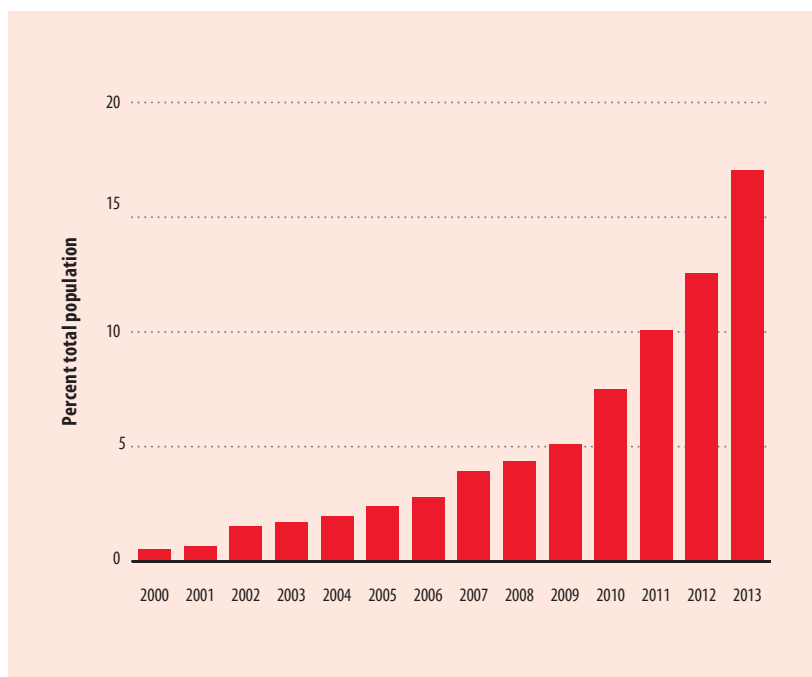
Areas of weakness

Although India exhibits areas in which it has performed very well and areas that have allowed it to be a successful outperformer in its peer group per the GII classification, the country also has many areas of weaknesses. In this section we will consider three of these weak areas: SMEs, intellectual property rights, and higher education. In all of these areas a much better innovation policy will be indispensable.

Small- and medium-sized enterprises

In India, the SME sector is responsible for 45% of total manufacturing output and employs around 70 million people. The potential of this sector makes it important for realizing the policy target of achieving manufacturing output equal to a 25% share of GDP, an increase from its current level of 16%. Although the SME sector has a high growth potential, its sub-optimal development could be attributed to a lack of adequate cash flow caused by low credit availability in the form of equity as well as debt.¹⁹ This concern is amplified

Figure 2: Annual penetration: Percent of population with access to the Internet



Source: Authors' calculations, based on data available in <http://www.internetlivestats.com>, accessed 30 April 2015.

because SMEs have a large number of unregistered units under their purview for which credit is much harder to come.²⁰ Cluster development in India has traditionally been spearheaded by the Ministry of Micro, Small & Medium Enterprises. The ministry runs an initiative—the Micro & Small Enterprises Cluster Development Programme (MSE-CDP)—that looks at the development of industrial clusters encompassing marketing, exports, skill development, and the setting up of common facility centres; the initiative includes upgrading the technology of enterprises.²¹ According to a study released by UNIDO in 2003, around 388 SME clusters across India have been affected by this initiative.²² Although this has provided a good platform from which Indian SME clusters could grow, it has not been enough to bring a rapid improvement in the sector in terms of fostering R&D-driven

innovation. Recognizing this lack of competitiveness in the SME sector as a major impediment, in 2005–06 the government announced the formulation of a National Manufacturing Competitiveness Programme (NMCP) to address firm-level competitiveness. Since this development, the yearly growth of the SMEs has improved marginally. Also in 2011 the National Innovation Council of the Government of India launched a flagship initiative on innovation clusters, at a pilot stage. The innovation cluster programme has thus far successfully piloted only five clusters across India.²³ The overall situation of SME cluster growth in India has remained sub-optimal.

Intellectual property rights

Intellectual property is one of the key indicators of the innovation output of an economy. In India, a persistent contradiction exists between protecting intellectual rights for

commercialization and profitmaking and catering to the social needs and obligations to the poor. Owing to this contradiction, policy and patent laws have been crafted to strike a balance between these two considerations. This has resulted in a relatively weaker intellectual property rights (IPR) regime than those of other developed nations. Figure 3a compares patents filed against patents granted (for Indian, foreign, and total) over a 10-year period. Figure 3b concerns the percentage of patents granted by the Indian patent office and indicates that this percentage has significantly declined over the years, particularly since 2008–09. Figure 3c compares the rate of foreign and Indian patent grants and indicates that, over years, the foreign patent grant percentage is significantly higher than the patent grant percentage in India. Figure 3d contrasts international and domestic patent filings by Indians and shows that the share of international patents filed by Indians is minuscule compared with patents filed in India. This is a worrying situation for an economy like India's, which is striving to grow multifold in the near future and aspiring to become a knowledge-driven economy.

Higher education

Although India's top educational institutions have done relatively well over the years, India is still grappling with some pressing issues in higher education that need immediate attention. With a population of more than 1.2 billion, and with 50% of that population under the age of 25, there is a huge demand for higher education in India. This has resulted in an enormous supply-demand gap, with an enrolment rate of only an 18% in higher education institutions, leaving a large section of the population deprived of educational

opportunities after high school. The government is aiming to increase the enrolment rate to 30% by 2020. Other issues that the higher education sector is currently confronted by are poor teacher quality, constraints in research capacity and innovation (owing to low enrolment in PhD programmes, few opportunities for interdisciplinary working, a weak innovation ecosystem in academia, and low industry-university collaboration), and a large socioeconomic disparity.

Conclusions and the way forward

The preceding sections have outlined how India's economic growth has been influenced by its policy regime over a period of time. This section reiterates some of the stronger as well as weaker areas in the economy where India and other nations can learn and benefit from each other. The section also lists key areas that need immediate and sustained policy interventions, and notes some of the recent initiatives undertaken by the government and other stakeholders to improve the country's innovation capacity.

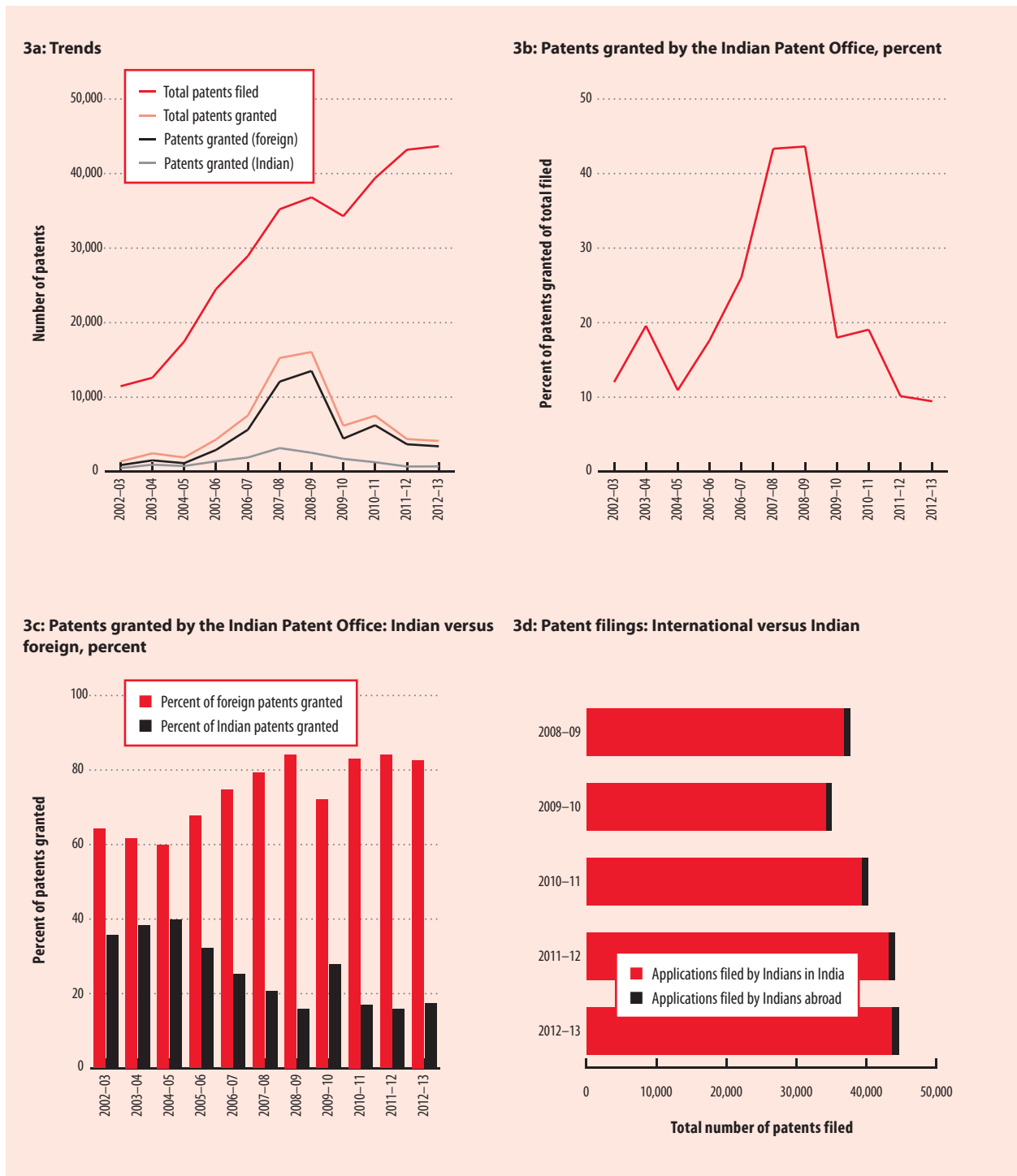
The main areas where India provides an example for rest of the world are in the growth of its ICT regime (mostly mobile penetration) and in its IT and IT-enabled services (ITeS) sector. Previous sections have discussed how, with the implementation of progressive policy measures, these two sectors have emerged to be trendsetters in a span of just two decades. For countries with similar economic and demographic conditions, the India story could be a very useful case study to consider. Many of the lessons India has learned can be adopted to emulate a similar growth experience in a short span of time.

Although ICTs and IT have together comprised a vital differentiating component that increases the pace of the innovation and knowledge development in the economy, their benefit can truly be realized when areas such as higher education, IPR, the regulatory and business environment (which affect the ease of doing business), physical infrastructure (such as railways, roadways, freight transport, etc.), and institutional reforms get appropriate attention and sufficient support from the government. In these key areas India can learn from developed economies about how policy can play a major role for improvement and provide a long-term dividend. The other most important step would be to create entrepreneurship policy at the national and state levels to leverage existing resources effectively.

In light of the above observations, the following are suggested as the primary areas in which government needs to carefully and deliberately formulate robust policy measures to achieve economic growth driven by innovation:

- **Higher education.** As noted earlier, India lacks an adequate number of higher education institutions to cater to its growing number of aspiring students. The level of university-industry collaboration in India is also minuscule compared with that of other developed nations, and there is dearth of high-quality teachers in the education system. The government needs to look into all these aspects carefully while devising a suitable policy for the higher education sector.
- **Industrial innovation.** SMEs are the future growth engines of any economy; an economy is as innovative as its SMEs. In order

Figure 3: Trends in Indian patents



Sources: Authors' calculations based on the Ministry of Commerce & Industry (India), 2013; Statistical Country Profile: India, WIPO database, http://www.wipo.int/ipstats/en/statistics/country_profile/profile.jsp?code=IN.

to infuse a culture of innovation and R&D into Indian SMEs, proper fiscal and tax guidelines must be set by the government so that more and more SMEs see benefit in R&D and adopt this as their future business strategy.

- **Entrepreneurship.** As the world economy becomes more volatile and India faces the adverse effects of this economic instability, it is essential for the government to stimulate job creation in the economy far more than usual by devising new methods. This goal can be achieved through building a strong entrepreneurial ecosystem and incentivizing innovation-driven start-ups. Policy concerning entrepreneurship at the national and provincial level needs to be formulated to stimulate this process, which is currently nonexistent.
- **Easing the business environment.** India ranks poorly in terms of its ease of doing business parameters. This will remain a major obstacle that India must address if it is to hasten its economic growth (in terms of its GDP) from its current level of 5–7% to 10% and above. Providing simple regulatory guidelines, moving all processes online, and ensuring less paperwork and less bureaucratic interference will be the key. This can be achieved only through policy-level amendments.
- **Infrastructure development.** Although IT infrastructure in the country has improved by leaps and bounds over the years, the scenario in the physical infrastructure development remains grim. Unless India gears up its infrastructure development—that is, unless it builds good

roads and efficient railways (passenger and freight corridors) and modernizes its ports—it will be hard to develop industrial corridors and attract foreign investments. Clear policy guidelines and investment in these sectors will boost the economy and trigger new innovative solutions for existing bottlenecks.

- **Intellectual property rights.** The existing IPR regime in India has traditionally been weak when compared with that of developed economies in terms of protecting new technologies and innovations. The merit of strong, enforced IPR in certain sectors, such as pharmaceutical and biotechnology, may be largely debatable when weighing the needs of the business community to protect intellectual property for commercialization and to make a profit with the obligations and needs of the country's large poor population. But India (including its poor) cannot afford to allow a weak IPR regime to remain a long-term barrier for its new entrepreneurs if it intends to fulfil its aspirations of becoming an innovation-driven economy. The government must find ways to study and address this important driver of innovation while restructuring its existing laws and its enforcements.

In 2014 the newly elected Indian government, as one of its first moves, established an aligned Ministry for Skill Development and Entrepreneurship. This is a step forward. With the intervention of the government and the private sector, the level of innovation in Indian industry is also growing and more and more Indian SMEs are coming forward to invest in collaborative R&D. For example, public-private

partnership platforms such as the Global Innovation and Technology Alliance, a not-for-profit organization, are opening up opportunities for Indian companies to join with their foreign counterparts and develop products and technology through joint R&D programmes.

To enhance PhD education in the country, in 2013 the prime minister's office launched the Prime Minister's Fellowship Scheme for Doctoral Research, which is unique in its promotion of industrial research. According to this scheme, the government provides 50% of the total cost of a fellowship to students for performing research in a real-time industry environment. Industry provides the rest, and any IPR once created is owned jointly by the student and the industry concerned.²⁴

In India's most recent Union (central) budget presented in February 2015,²⁵ the government placed considerable emphasis on rapid development in the SME sector by addressing the funding issue. It has created a fund of ₹20,000 crore with a credit guarantee of ₹3,000 crore for entrepreneurs in this sector.²⁶ In addition, it set aside ₹1,000 crore for a Techno-Financial, Incubation and Facilitation Programme to support all aspects of start-up businesses, and other self-employment activities, particularly in technology-driven areas.²⁷ The Ministry of Micro, Small & Medium Enterprises has launched Intellectual Property Facilitation Centres in different parts of the country with the aim of creating an intellectual property culture within SMEs by looking at protection, capacity building, information services, and counselling and advisory services regarding IPR.

The government is also looking to boost the development of sectors such as infrastructure, transport, smart cities, manufacturing, and

IT to supplement growth. Recently launched schemes such as Make in India and Digital India are steps in this direction. Furthermore, reforms in India's credit delivery mechanism to its poor have been addressed by credit transfer schemes such as Pradhan Mantri Jan-Dhan Yojana, which aims to increase disposable income for India's poor.

Given the unique challenges that India faces, achieving even 40 to 50% of their targets by some of these initiatives will amount to an economic revolution. The momentum is building positively and the time is favourable for India to change gears and get its innovation journey onto the fast track.

Notes

- 1 The Press Information Bureau, Government of India, released a series of press notes concerning Industrial Policy Highlights. These can be found online at <http://eaindustry.nic.in/handbk/chap001.pdf>; subsequent versions can be found by adjusting the chapter number in the link.
- 2 Mohan, 2008.
- 3 For growth in Pakistan, see Kahn and Khattak, 2014; for growth in Sri Lanka, see Weerasinghe, 2013.
- 4 EPI, 2014.
- 5 Basu, 2014.
- 6 PwC, 2012.
- 7 Department of Science and Technology, Government of India, 2012.
- 8 Ministry of Communications & Information Technology, Department of Telecommunications (India), 1994.
- 9 A public call office (PCO) is a telephone facility located in a public place in India.
- 10 Ministry of Communications & Information Technology, Department of Telecommunications (India), 1999.
- 11 Ministry of Communications & Information Technology, Department of Telecommunications (India), 2004.
- 12 Ministry of Communications & IT, Department of Telecommunications (India), 2012.
- 13 Gupta, 2010.
- 14 IBEF, 2014.
- 15 Ministry of Communications & IT, Department of Electronics & Information Technology (Deity), 2012.
- 16 The Bombay Stock Exchange is available at <http://www.bseindia.com/>; the National Stock Exchange is available at <http://www.nse-india.com/>.
- 17 See S&P BSE Equity Market Capitalisation, available at http://www.bseindia.com/markets/keystatics/Keystat_maktcap.aspx?expandable=0.
- 18 See http://www.bseindia.com/markets/keystatics/Keystat_maktcap.aspx?expandable=0, accessed 30 April 2015.
- 19 In India the availability and access to equity and debt for micro business is relatively low compared with that of other developed nations. The entrepreneurial sector is slowly building and gradually policies are being framed that allow creation and access to more such funds by micro businesses and start-ups. See 'Private sector investment for MSME' under 'Financial Resources' Working Group for the Twelfth Five Year Plan (2012–2017) of India's Planning Commission, available at <http://planningcommission.gov.in/aboutus/committee/index.php?about=12strindx.htm>.
- 20 For the purpose of collecting data relating to manufacturing activities through a sample survey, all manufacturing units in the country are classified into two broad sectors: registered and unregistered sectors or organized and unorganized sectors (the terms are often used interchangeably). Although the registered manufacturing sector covers the manufacturing units registered under sections 2m (i) and 2m (ii) of the Factories Act of 1948 or under the Bidi & Cigar Workers (Condition of Employment) Act of 1966—that is, the units employing 10 or more workers and using power or 20 or more workers but not using power—the unregistered manufacturing sector covers all +residual manufacturing units. See Section 5, 'Industrial Statistics', from the Ministry of Statistics, available at <http://mospi.nic.in/nscr/is.htm>.
- 21 Ittyerah, 2009.
- 22 UNIDO, 2003; data are taken from <http://www.dcmsme.gov.in/clusters/clus/smelist.htm#clus>.
- 23 National Innovation Council, 2013, pp. 19–20.
- 24 CII, 2014 and 2015.
- 25 Jaitley, 2015.
- 26 For details about MUDRA, see <http://www.mudra.org.in/faq.php>.
- 27 Ministry of Finance (India), Press Information Bureau, 2015.

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Effective Innovation Policies for Development: The Case of Kenya

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Over the past 10 years Kenya has made a stunning innovation journey in which the country's youths have played an important role. The government has responded to the clear desire of Kenya's youth to engage in innovation with new policies and increased funding for research and development (R&D) as a strategy for creating jobs and supporting innovation.

Pressure from a rapidly growing population, scarce resources, and soaring unemployment are driving the government to seek new avenues of job creation. Kenya's Vision 2030,¹ a long-term blueprint for development, estimated that the economy would need to grow at a rate of 10 percent for 20 years in order to effectively mitigate social, economic, and political problems. The country's economic growth rate has, however, been slowed by political instability and a host of international factors such as high oil prices and declining tourism.

This chapter focuses on recent innovation policies and systems in Kenya intended to address these issues, paying special attention to what has worked and what has not in relation to the Global Innovation Index (GII). The chapter begins by explaining Kenya's focus on innovation, followed by a review of innovation policies in the country. It reviews Kenya's position in the GII rankings and examines which policies have been effective, and

which have not. Challenges at both the policy and operational levels are evaluated and used to inform a review of educational reforms in the country. To reinforce the conclusions presented, lessons are drawn from the United States of America (USA) and the Republic of Korea, and Kenya's own strengths in innovation are highlighted.

Kenya's path to recovery

In spite of Kenya's many challenges, there are some indications that the economy may be on a recovery path towards its 10 percent target growth rate. The 2015 World Bank's *Global Economic Prospects* report raised Kenya's economic growth forecast to 6 percent in 2015 and 6.6 percent in 2016, up from previous projections of 4.6 percent and 5 percent, respectively.² These projections are higher than Sub-Saharan Africa's average projected growth rate of 5.1 percent. The World Bank report indicates that higher spending on infrastructure, recovery of the agricultural sector, and falling oil prices are key to Kenya's economic expansion. The economy will remain strong in the near term as a result of the country's strong private sector and market-friendly policies.

On the socio-political front, a constitutional dispensation implemented in 2010 has brought several important reforms.³ The new constitution provides Kenyans with a bill

of rights guaranteeing fundamental freedoms and equal opportunity for all—including women, who had previously experienced diminished legal status. The country is improving access to social services—such as education and healthcare—for both urban and rural populations, as a way of combating inequality. With devolved governance and a fairly stable political environment compared with many other African countries, Kenya is in a better position to leverage innovation.

Unemployment is perhaps the country's greatest threat to stability, especially with the recruitment of idle youth into terror groups such as Al Shabaab. But, ironically, the need for jobs is precipitating innovation. *The Guardian* reports on an innovative project called 'LivelyHoods' that began in Nairobi's Kawangware slum. The project creates employment opportunities by training youths to sell products tailored to the needs of their communities. The scheme's iSmart brands include fuel-efficient cookstoves (more than 3,233 of which had been sold by 2014), as well as solar lamps and reusable sanitary products for women. All the products are vetted for their suitability by LivelyHoods representatives and potential customers.⁴

Similar innovative products are being developed in other sectors, including the quickly expanding information and communication technology (ICT) field. Kenya is

becoming a leader in ICT innovations in Africa.⁵ For example, the successful commercialization of mobile money in Kenya such as M-PESA has led to increased understanding of the potential for innovation to deal with local problems. Many youths have sought to duplicate the success of mobile money products and platforms. This large, educated, tech-savvy but unemployed youth population has attracted global multinational corporations to Kenya. A number of these multinational firms have set up research facilities in the country, which will continue to drive innovation.

Innovations, especially in the agricultural sector, have also led to greater productivity and contributed to the country's growth. For example, applications such as iCow (an agricultural information service) and M-Farm (a market information service) have greatly improved productivity in the livestock and agricultural sectors, respectively.⁶ A recent rebasing of the economy established that the size of Kenya's economy was 25 percent larger than previously believed, making it the 5th largest economy in Sub-Saharan Africa—behind only Nigeria, South Africa, Angola, and Sudan. Some studies attribute Kenya's growing economy largely to ICTs.⁷

Innovation policies in Kenya

Kenya's first innovation policy was launched in 2006 with the implementation of the Vision 2030 initiative. The policy declared that Kenya would break from the past and start doing things differently. The Vision 2030 discourse centred on institutional reforms, human resource development, and enhanced R&D as well as improved science and technology infrastructure. An emphasis was also placed on pursuing more

and better collaborations and partnerships. The Ministry of Education, Science and Technology was created to spearhead capacity building and innovation.

The creation of this ministry led to the development of several institutions that support innovation, including the National Commission for Science, Technology and Innovation; the Kenya National Innovation Agency; and the National Research Fund. Another key institution within the innovation ecosystem is the Kenya Education Network, which facilitates the sharing of educational and research resources through a government-subsidized national broadband network; it also serves as the National Research and Education Network.

In 2009, a comprehensive policy on Science, Technology, Innovation Policy and Strategy (STIPS) was developed. STIPS sought to mainstream the application of science, technology, and innovation in all sectors and processes of the economy to ensure that Kenyans benefit from all available capacities and capabilities in order to achieve the objectives of Vision 2030. STIPS prioritized several areas for intervention, including agriculture and rural development; health and life sciences; trade and industry; human resource development; physical infrastructure; energy, environment, and natural resource management; and ICTs.

The 2010 constitution also recognizes the role of indigenous innovations in development. Article 11, Section 2b and c of the constitution reads: '... recognise the role of science and indigenous technologies in the development of the nation; and promote the intellectual property rights of the people of Kenya.'⁸ To operationalize the constitutional requirement for the recognition of indigenous knowledge, a sessional

paper on science and technology was published and, in 2012, the Science, Technology and Innovation Act was enacted.⁹

Since the progress that has been made in both policy and institutions, research and innovation have begun to advance in Kenya. Universities are competing to set up software and hardware incubation centres that would link them to industry. The University of Nairobi and Strathmore University have track records of successful incubation programmes that have led to the commercialization of their research outputs. And, for the first time, corporate Kenya has begun investing in some of these incubation programmes.

After success with Ushahidi, an open source software developed in Kenya for information collection, visualization, and interactive mapping,¹⁰ the premier innovation hub I-Hub has branched off from software to hardware and is coming up with their first product, a connectivity device called 'BRCK'. BRCK was designed and prototyped in Nairobi. It was meant to solve local problems of erratic electricity and Internet in both rural and urban areas, but it has also found its way to new markets in much the same way that the mobile money transfer innovation M-PESA has found its way into markets beyond its original target. The success of BRCK has led to the establishment of a prototyping technology shop in Nairobi, the first of its kind in Kenya. This will help small and medium-sized enterprises (SMEs) create new products and introduce them to the market.

The most innovative products in different sectors are being facilitated by ICTs, with examples in agriculture, manufacturing, health, and financial services. Most of these products seek to improve productivity. For example, the service iCow,

which provides livestock farmers with information, aimed to—and succeeded in—greatly improving dairy production in Kenya. Whereas in the past it was difficult to even explain terms such as ‘productivity’ to farmers, these new applications have made it possible to do so.

Perhaps the most important development in research and innovation is the fact that all universities now have a senior staff member, at the level of deputy vice-chancellor, who is in charge of research. This has resulted in the development of supporting infrastructure. For example, Jomo Kenyatta University of Agriculture and Technology has put up an Industrial Technology Park for research output. Kenyatta University has its Manu Chandaria Incubation Centre; the University of Nairobi started C4DLab (a software incubation centre) and will soon start its own science park, which will focus more on its fab lab, in conjunction with the Massachusetts Institute of Technology (MIT). Konza City Technology Park is also underway and will harmonize university research activity with industry and government.¹¹ Most universities are collaborating with international partners to enhance knowledge transfer while, at the same time, providing new solutions.

Multinational corporations are also setting up research labs in Kenya to expand their own research reach, while getting closer to the source of unique problems. For example, IBM is collaborating with the Kenyan government to create innovations around big data and the next generation of government.

Kenya in the Global Innovation Index

Kenya climbed up the rankings in the GII, rising from 99th position in 2013 to 85th in 2014. The

Table 1: Gross domestic expenditure on research and development (GERD), 2010

| Country | Survey year | GERD (PPP\$ millions) | GERD (% of GDP) | GERD per capita (PPP\$) |
|-----------------------|-------------|-----------------------|-----------------|-------------------------|
| Burkina Faso* | 2009 | 38.10 | 0.20 | 2.38 |
| Egypt* [†] | 2011 | 2,223.35 | 0.43 | 26.94 |
| Ethiopia [†] | 2010 | 208.74 | 0.24 | 2.51 |
| Ghana | 2010 | 150.20 | 0.38 | 6.16 |
| Kenya | 2010 | 652.00 | 0.98 | 16.09 |
| Senegal | 2010 | 130.50 | 0.54 | 10.50 |
| South Africa | 2010 | 4,021.3 | 0.76 | 80.21 |
| Uganda | 2010 | 237.80 | 0.50 | 7.11 |

Source: Adapted from NPCA, 2014; data from ASTII R&D surveys 2010 or latest year available; GDP, PPP, and population data sourced from the African Development Bank.

* Data not disaggregated by sector; [†] GERD does not include private non-profit R&D expenditure.

country’s efficiency levels also greatly improved, leaping from 71st position in 2013 to 26th in 2014. These improvements can be attributed to innovative applications of ICTs in various sectors. The financial sector is about to experience a tremendous transformation as a result of the 2015 partnership between Kenya Commercial Bank (KCB), the largest bank in the country, and Safaricom, the largest mobile network operator and the owner M-PESA. These partnerships will enable mobile customers to access credit of up to 1,000,000 Kenyan shillings (US\$11,000) without actually having to go to the bank or provide security. Equity Bank, another large bank, has also acquired a mobile virtual network operator license to compete with the Safaricom/KCB partnership. Such initiatives contribute to Kenya’s stellar performance within its region in the GII, especially in market and business sophistication, which is measured in credit availability, investments, trade, and competition.

The GII 2014 ranks Kenya 1st among the 17 low-income Sub-Saharan economies at different levels of development included in the sample. Table 1 shows that what

Kenya spends on R&D (as a percentage of GDP) is higher than all other Sub-Saharan Africa countries. In terms of absolute expenditure, it ranks 3rd after South Africa and Egypt.

The last few editions of the GII have shown the great progress that Kenya has made in using innovation to boost its potential. To take advantage of the progress it has already made, Kenya—as well as other African countries—need to improve institutions, build human capital, invest more in innovation infrastructure, create an enabling environment for knowledge and technical and creative output, and continue to embrace a free market economy to encourage greater market and business sophistication.

What has worked and what has not?

The innovation witnessed in Kenya has largely taken place outside official innovation policy, which was crafted after some sectors had already begun considerable innovation efforts. In many ways, the policy framework is catching up to what is already a work in progress.

The agricultural and health sectors in Kenya have a long history

of R&D as well as of creating new products. The ICT sector came late to innovation, but it has had a greater impact than other sectors. Innovation in Kenya is driven by pockets of institutions that either have a history of R&D or are led by individual risk takers. Institutions such as the Kenya Agricultural Research Institute, the Kenya Industrial Research and Development Institute, and the Kenya Medical Research Institute, as well as research into tea and coffee development, all have great traditions of research and innovation.

The emerging ICT innovation hubs, however, are driven by a few individual risk takers, both in government and industry. The success of the crisis-mapping software Ushahidi and the mobile money platform M-PESA, for example, has attracted other innovators. A group of young developers going by the name 'skunkworks' began to organize BarCamps around Nairobi to share their innovations; this eventually led to the creation of development hubs. Later, corporations joined in by financing the development of some applications for the mobile platform. Aid agencies also began to fund Hackathons, which attracted large numbers of youths keen on showcasing their innovations. But these rapid innovations, encouraged by greater capacity for technology diffusion, occurred before the country had a relevant policy framework in place, and in fact, the emerging innovation community did not pay attention to these developments when they did finally happen. Although it was a policy framework intended for all sectors, awareness of it has largely remained within the Ministry of Science and Technology and a few research institutions.

The ICT sector did benefit from the government's launch of the Kenya

OpenData initiative and the willingness of the Ministry of Information and Communication (MOIC) to work closely with the developer community. These relationships have produced various innovation hubs—including I-Hub, I-Lab, and A-Lab—from which flowed innovations beneficial to a cross-section of economic sectors. Through their mentoring programmes, events, and training, and by providing Internet access and office equipment, the hubs are supporting innovative local developments not only in the ICT and creative industries, but also in other sectors such as renewable energy (for example, with Negawatt Challenge, a competition aimed at finding new energy solutions) and agriculture (with market information applications such as M-Farm, noted earlier).¹²

The MOIC also adopted public-private partnerships as a strategy to ensure knowledge transfer and modernize Kenya's industrial sector. Consequently, multinational companies such as IBM have set up research labs in Kenya to exploit big data and develop new applications that would run the next generation of government. Through the Vision 2030 objectives, the MOIC started to encourage start-ups and accelerator programmes through incubation at various institutions of higher learning. This approach has already borne fruit: it was through this incubation programme that the idea of the Konza City Technology Park, discussed earlier, was conceived.

Through its Ministry of Industrialization and Enterprise Development (MOIED), the government has set up a Micro and Small Enterprise Authority (MSEA) aimed at restructuring the sector by mainstreaming small businesses and encouraging entrepreneurship. The MSEA began operating in 2013, but

has yet to have its desired impact. The MOIED is critical, as it is responsible for facilitating tax incentives at technology parks. Volunteer academics encourage entrepreneurship in the innovation hubs, helping start-ups to move their ideas to the market.

In 2013 the Government of Kenya, through the Ministry of Labour, Social Security and Services came up with a policy document (Sessional Paper No. 3) to operationalize productivity improvement programmes initiated by the government in order to achieve Vision 2030.¹³ This policy document contains specific and targeted interventions. Key proposals include the establishment of a National Productivity Council to facilitate inter-sectoral coordination of policy and programmes, initiatives of the public and private sectors, and enactment and implementation of a Productivity Management Act to guide productivity management efforts in the country.

Challenges

Key challenges to the Kenyan innovation system appear on two levels: policy and operational. This section evaluates these challenges and then uses this evaluation to inform a review of Kenya's educational reforms.

Policy level

Despite the existence of a policy framework, challenges hindering adoption of innovation as a key driver for economic growth still exist. In the period 2007–12, resource allocation to R&D was prioritized as a basis for achieving Vision 2030. However, that momentum has since dissipated as a result of the lack of a national commitment to leverage innovation for greater economic expansion. Resource allocation to

R&D is often not guaranteed, and the little that is allocated to research institutions is spent on recurrent expenditures.

Serious coordination gaps continue to undermine innovation. These include a lack both of central coordination of R&D and of advocacy for multidisciplinary research. Even within the government, research is undertaken largely in silos, leading to capacity underutilization. This lack of coordination means that SMEs do not have the R&D support necessary to bring new products to market. The situation is further complicated by the fact that technical, industrial, and vocational education training institutions (TIVETs) are declining, as some have been converted into universities. There is now, however, a policy initiative to create a TIVET Authority and build new institutions.¹⁴

A report on the Kenya National Systems of Innovations (KNSI) by the United Nations Industrial Development Organization (UNIDO) confirmed these challenges and arrived at the following conclusions:

- connectivity between the core actors of the KNSI is fragile;
- the KNSI has an asymmetric distribution of actor links;
- certain imbalances are present in the directionality of actor relationships;
- significant latent barriers to innovation are uncertainty avoidance, risk, unsophisticated markets, and skills capacity; and
- extant policy instruments face limitations in overcoming the constraints of the barriers to innovation.¹⁵

UNIDO's conclusions are not new, but Kenya is beginning to have the capacity to address them, as can be seen in the country's rise in the GII rankings.

Operational level

At the operational level, the disconnect between industry and research institutions undermines innovation. While industry complains that graduates from local universities are not ready for industry, universities complain that they are not getting enough feedback from industry. Some leading firms, especially in the ICT sector, are filling the ICT skills gap of workers by providing bridging courses and offering internships. Some universities have also begun incubation centres to nurture emerging entrepreneurs.

Often the main challenge for incubation hubs is determining ways to make potential beneficiaries aware of the opportunity and how to take advantage of it.¹⁶ This requires specialized skills and experience in order to understand the demand patterns, business models, and market intelligence. Unfortunately, those in Kenya with this skill set are older-generation Kenyans who tend to dislike the tech-savvy youths. But for these hubs to succeed, both groups must find a way to work together. Having been in the midst of the creation of incubation centres, I have observed this first-hand.

Educational reforms

Over the past 20 years, tertiary education in Kenya has been reduced to almost nothing. Most TIVET colleges were converted to universities without building new institutions. The education system needs to place more emphasis on science, technology, engineering, and mathematics (STEM) disciplines and to build a network for manufacturing

innovations similar to the USA's Educate to Innovate programme.

In Kenya the policy framework of 2009 has created a Technical Education and Vocational Training Authority to coordinate tertiary education in the country. A National Observatory for science, technology, and innovation is to be created to enhance sharing of knowledge, policy formulation and policy implementation. Unfortunately, this multiplicity of new institutions may, in the end, be Kenya's greatest barrier to innovation: other countries have tried this model and failed.

Lessons from Kenya and beyond

This section draws lessons from the USA and the Republic of Korea, and concludes by highlighting Kenya's own strengths in innovation. The USA provides great lessons because partnerships already exist between US universities such as MIT and local universities for developing new products using the fab lab technologies. The Republic of Korea too has had a very close technical relationship with Kenya; many Kenyans have gone through the Korean Institute of Science and Technology, which has played a key role in the country's development.

The United States of America

Kenya can learn a lot from the USA's TechShop concept. This new approach to building a community of innovators is increasingly becoming the playground for innovation in the USA. TechShop centres, sometimes referred to as 'hackerspace' or 'learning centres', provide tools and space for fabrication and prototyping, as well as classes. They are equipped with comprehensive tools and software and participants can make virtually anything.

Dickel et al., in their 2014 study of TechShops, concluded that:

... by applying the concept of real-life laboratories to the analysis of shared machine shops and the developments that emerge in this context, this article considers the subject of this special issue as a promising example that embodies significant properties of a reflexive innovation society. It provides evidence for novel modes of innovative and creative action that is based on hybrid forms of collaboration, the bottom-up coordination of collective action and a strong notion of accessibility and openness.¹⁷

I-Hub has begun to test the TechShop concept to enhance innovation capabilities in the realm of hardware, which has not yet been exploited in Kenya. The University of Nairobi's collaboration with MIT and other similar arrangements provides the best chance for Kenya to successfully transfer knowledge from the USA. Kenya is poised to apply this new and innovative concept.

The Republic of Korea

The Organisation for Economic Co-operation and Development (OECD), in its 2014 evaluation of industry and technology policies in the Republic of Korea, noted that the country has one of the best and more comprehensive R&D programmes in the world. The programme itself enables the government to accept greater risk in publicly supported R&D, and the country's higher tolerance for risk continues to pay off.

As in Kenya, Korean SMEs and research institutions tend to shy away from intense collaborations with academic institutions. To overcome this problem and enhance the commercialization of research, the Republic of Korea is establishing a more business-friendly education system that addresses cultural and other barriers to start-ups. The education system also aims to address issues of collaboration between businesses and research institutions,

giving systematic support for public-private innovation partnerships and inspiring the development of highly trained students to support industrial innovation and to encourage students to join innovation-oriented companies, SMEs in particular. Furthermore, the Republic of Korea is encouraging more start-up creation and SME growth through tax credits to enhance radical innovation.

As Kenya considers reforms to its education system, it might look at the example of the changes made to the Korean education system coupled with their military service perhaps fosters a culture of risk taking and innovation. There is need for Kenya to emulate Korea and more importantly R&D and encourage innovation.

Kenya

Although the country is just beginning its innovation journey, other emerging economies can still learn something from Kenya, including the benefits of using deliberate policy interventions; of leadership in government with an appetite for risk taking; of the construction of collaborations and partnerships with the private sector including multinational corporations; of increasing funding research; and of the development of incubation centres across universities to foster innovation. Relative to other African countries, some of Kenya's strengths lie in its current expenditure on education, relatively easy access to credit for individuals, increasing R&D spending, and intensity of local competition (Kenya is a free market economy where competition is encouraged). These variables positively influence innovative capacity.

Research by Koria et al. shows a comparative analysis of determinants of the effectiveness and efficiency

of the Ghana National System of Innovation (GNSI) and the Kenya National System of Innovation (KNSI).¹⁸ Two regression analyses were performed of the innovativeness of business enterprises and of the strength of linkages between research institutes and the production system with respect to an array of independent variables of the countries' national systems of innovation. The research established that actor linkages and ICT affect the GNSI positively, while they affect the KNSI negatively. Ghana presents a good case study of the impact of these linkages.

Conclusions

Relative to other countries in Africa, Kenya is making solid progress in innovation—but a great deal more needs to be done. It has developed a comprehensive innovation policy framework, but the relationships between research institutions and industry remain disjointed. The government has played an important role in creating an effective triple helix that will eventually harmonize innovation programmes for greater economic growth, but the communication of policy to innovation actors must be enhanced. Kenya should also learn from countries such as the USA, where the concept of the TechShop is helping to develop communities of innovation, and the Republic of Korea, where R&D activities are supported by the government to enhance greater risk taking, producing great benefits.

Furthermore, extending tax credits to research activities by the private sector would facilitate greater innovative capabilities. There is also a need to review the education system, to encourage the establishment of more TIVETs and business-friendly educational programmes, and to

foster greater collaboration between industry (specifically SMEs) and research institutions.

Notes

- 1 Government of Kenya, 2007. For details about Kenya's Vision 2030, see <http://www.vision2030.go.ke/>.
- 2 World Bank, 2015.
- 3 Sihanya, 2012.
- 4 Roopnarne, 2014.
- 5 Saine innovation network, 2013; World Bank, 2010.
- 6 For details about iCow, see <http://icow.co.ke/>; for information about M-Farm, see <http://www.mfarm.co.ke/>.
- 7 For example, see World Bank, 2010.
- 8 Government of Kenya, 2010.
- 9 Government of Kenya, 2013a.
- 10 For more information about Ushahidi, see <http://www.ushahidi.com/product/ushahidi/>.
- 11 Information about these industrial and incubation centers can be found at the following websites: <http://www.c4dlab.ac.ke/>; <http://www.ku.ac.ke/chandaria-biic/>; <https://www.fablabs.io/universityofnairobi/>; http://media01.24hrstech.com/PDFs/10A-Review_of_UoN_Science_and_Tech_Park.pdf; <http://www.jkuat.ac.ke/industrial-park-to-foster-industrialization/>; and <http://www.konzacity.go.ke/>.
- 12 Information about Negawatt is available at <http://www.negawattchallenge.com/about/>; information about M-Farm is available at <http://www.mfarm.co.ke/>.
- 13 Government of Kenya, 2013c.
- 14 Government of Kenya, 2013b.
- 15 UNIDO, 2014.
- 16 Having been in the midst of the creation of incubation centres, I have observed this firsthand.
- 17 Dickel et al., 2014, p. 16.
- 18 Koria et al., 2014.

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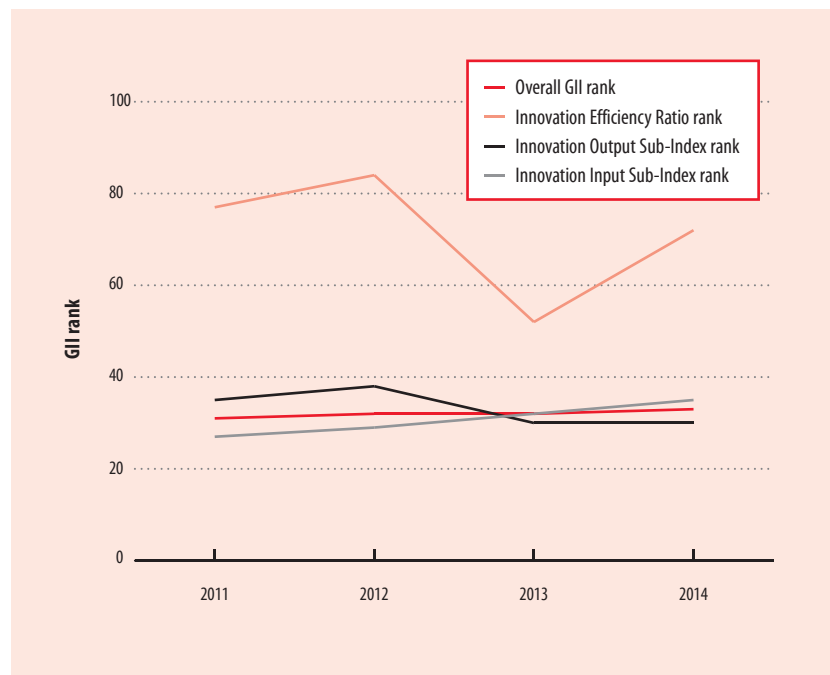
Innovation Performance of the Malaysian Economy

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On the back of political stability, inflows of foreign direct investment, and export-oriented industrialization, Malaysia has successfully transformed itself into an upper-middle-income country. It had a population of 29.2 million and purchasing power parity-based GDP per capita of US\$17,748 in 2014. Malaysia has been an innovation achiever over the period 2011–2014, as seen in improvements to its Global Innovation Index (GII) score relative to its GDP. Furthermore, Malaysia's remarkable innovation performance led it to record the highest GII rank among the middle-income countries in 2014.

Malaysia has remained an upper-middle-income country since the 1980s. Because the government is seeking to advance the country to the high-income group by 2020, it is attempting to determine the causes of this long stagnation so that it can intervene effectively. The slow pace of GDP growth since 1997 is largely a consequence of poor performance on the efficiency ratio of innovation inputs and outputs. Despite achieving an innovation efficiency score of 0.8, Malaysia ranked 72nd in the world in 2014. Indeed, this is a major concern of the government, which has attempted to raise the performance of innovation expenditure in the country by emphasizing commercialization and training programmes.

Figure 1: Global Innovation Index: GII and sub-index rankings: Malaysia, 2011–14



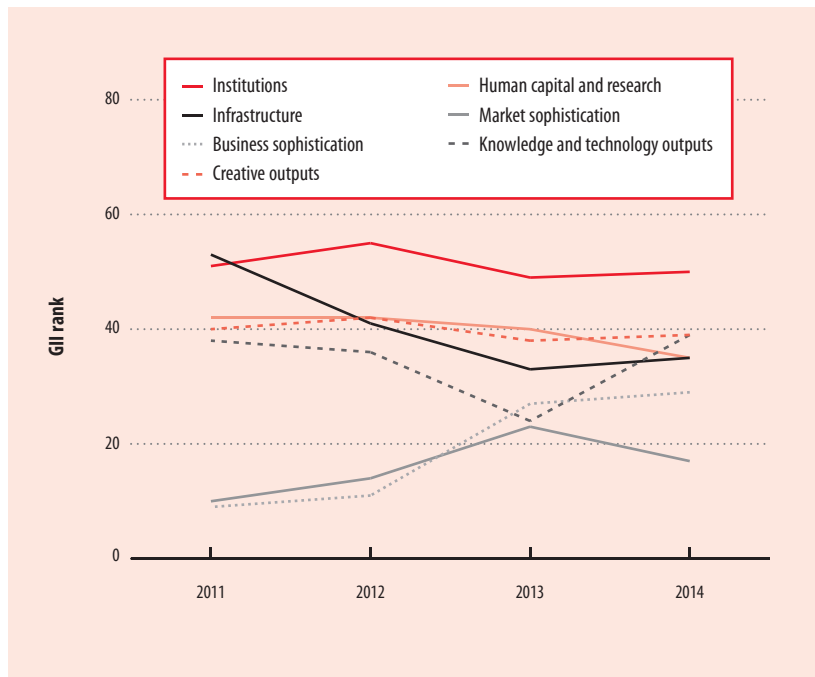
Source: GII, 2011–2014.

As an innovation outperformer, Malaysia offers an excellent example of an upper-middle-income country that has done well in areas such as business financing of innovation and commercialization, as well as Market and Business sophistication. At the same time, however, considerable improvement in areas such as knowledge-based activities and technological dependence are still needed. This chapter seeks to analyze the reasons behind Malaysia's achievements and shortcomings, and to offer policy-relevant

recommendations for advancing innovation in the country.

Malaysia's performance in the GII

Malaysia placed 33rd among all countries in the GII in 2014, slightly below the 31st rank it achieved in 2011 (Figure 1). Its rankings on innovation inputs and innovation outputs were 30th and 35th, respectively. However, it did not perform well on the efficiency of innovation last year, placing only 72nd. Although Malaysia's overall

Figure 2: GII pillar rankings: Malaysia, 2011–14

Source: GII, 2011–2014.

GII rank did not change much over the period 2011–14, its actual score improved from 44.1 in 2011 to 46.9 in 2013–14. Malaysia’s innovation efficiency rank fell from 52nd in 2013 to 77th in 2014, but its actual score improved significantly—from 0.7 in 2011 to 0.8 in 2013–14. The relative fall in rank is a consequence of other countries improving their scores much more than Malaysia.

Among the seven main pillars of the GII, Malaysia ranked 17th in Market sophistication with an aggregate score of 63.9 (see Figure 2). Malaysia’s worst performance was in the Institutions pillar, at 50th (with a score of 68.2). It came in 39th in both Knowledge and technology inputs (35.5) and Creative outputs (40.0) with a score of 42.0, and 35th in Human capital and research (41.6) and Infrastructure (45.7). It did better in Business sophistication, ranking 29th with a score of 42.9.

Overall, Malaysia has done well in all the direct variables relevant to innovation, such as innovation inputs and outputs. However, despite strong commercialization in business research and development (R&D), including in business financing, the country’s relatively poor performance in innovation efficiency indicates a need to review government policies concerning the implementation of government-sponsored R&D funds in the country.

Government policies that promote innovation

Government support of innovation in Malaysia occurs primarily through its science, technology, and innovation policies that began to be implemented in the 1980s. The types of programmes, focal areas, and target groups are shown in Figure 3; these are administered by the government

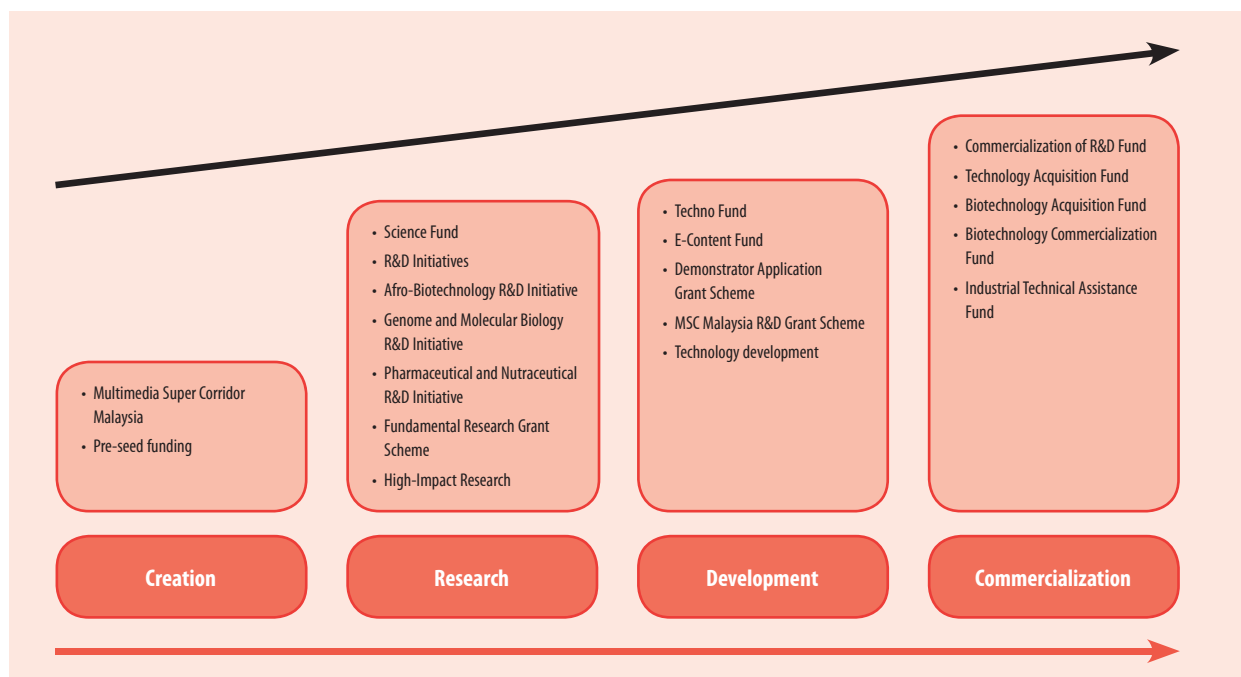
directly and through the coordination of other public bodies. The Ministry of Science, Technology and Innovation (MOSTI) supports the creation, research, development, and commercialization of innovative activities in Malaysia. The number of projects approved by MOSTI and the amounts involved have increased since the government’s first efforts, in 1991, to provide R&D grants following the introduction of the Action Plan for Industrial Technology Development to stimulate R&D in the country.¹

Direct funding to stimulate research began in 1988 when the Intensification of Research in Priority Areas grant was launched under MOSTI. This grant was targeted towards public organizations such as universities and public research institutes. At the same time, the government introduced the double deduction tax incentive—a scheme offering tax exemption—for firms undertaking approved R&D. The Industrial R&D Grant Scheme to support R&D in the private sector was introduced in 1997 by MOSTI.

What has worked

Malaysia outperformed its middle-income peers in all seven pillars of the GII over the period 2011–14. Its general institutions for stimulating innovation are good, as can be seen from the improvements in its ranking in the ease of starting a business indicator, from 90th in 2012 to 15th in 2014. Malaysia’s ranking in sub-pillar 1.3, Business environment, has also improved, seen in its rise from 53rd place in 2011 to 25th in 2014. At the same time, the government’s increasing focus on research funding has helped stimulate expansion in innovation inputs and outputs, evidenced by the rise in R&D expenditure as a share of GDP, R&D researchers and scientists per

Figure 3: Public funding of innovation, Malaysia



Source: Adapted from Ministry of Science, Technology and Innovation, 2013.

million persons, and number of doctoral graduates and scientific publications. Both the leadership at MOSTI and the National Science Research Council (NSRC) have systematically tried to address the need to target expenditure to the priority areas that can best generate innovation.

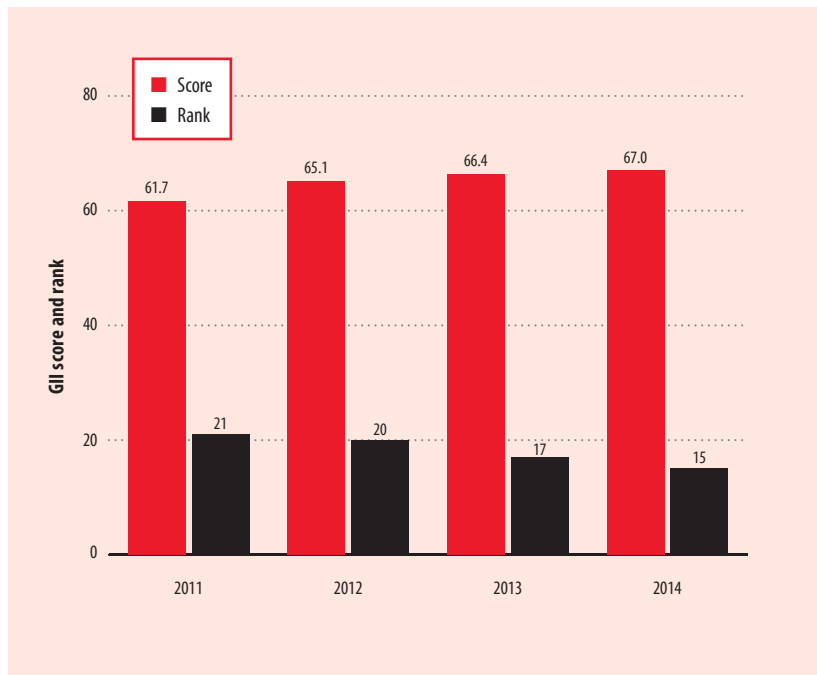
Since the promotion of export-oriented industrialization from 1971, high-tech production has become a major pillar of manufacturing in Malaysia.² Strong basic infrastructure and consistent promotion incentives that are well coordinated by the Malaysian Industrial Development Authority have ensured that foreign capital in Malaysia continues to assemble and test electronics products for the export market. Although the relative share of exports of high-tech products, such as integrated circuits, has fallen since the 1990s, high-tech exports have remained important. Malaysia not

only ranked 2nd among all countries on high-tech exports in 2014, but the government's success in providing R&D grants to deserving firms since 2005 has successfully turned typically negative trade balances in the electronics components industry into a positive balance in 2013.³ Although most electronics firms are still entrenched in assembly and test activities, the positive trade surplus was made possible largely through horizontal technological upgrading in assembly and testing, and vertical upgrading to wafer fabrication and chip design activities in Malaysia.⁴

Recognizing that private R&D cannot be a substitute for government funding—especially in cases where the benefits of R&D exhibit strong public goods characteristics—in 2010 the government boosted its R&D expenditure with a focus on increasing R&D scientists and engineers, commercialization, filing of intellectual property, scientific

publications, and postgraduates, and began to emphasize innovation through substantially improved products and processes. Hence both R&D scientists and engineers per 10,000 workers and gross R&D expenditure in GDP rose from 15.6 and 0.5% in 2000 to 58.2 and 1.1%, respectively, in 2012.⁵

Through the coordination of MOSTI; the meso-organizations that address collective action problems, which include the Malaysia Industry-Government Group for High Technology (MIGHT), the Multimedia Development Corporation, the Malaysian Technology Development Corporation (MTDC), and the NSRC; and the country's five research universities: Universiti Malaya, Universiti Kebangsaan Malaysia, Universiti Sains Malaysia, Universiti Putra Malaysia, and Universiti Teknologi Malaysia, the government has managed to

Figure 4: University-industry collaboration in R&D: Score and rank, Malaysia, 2011–14

Source: GII, 2011–2014.

expand scientific input and output. Consequently, R&D scientists and engineers per 10,000 workers and gross expenditure in R&D (GERD) in GDP as a percentage have risen strongly; the share of R&D scientists and engineers per 10,000 workers also rose from 17.9 in 2006 to 58.2 in 2011, while GERD rose from 0.64 in 2006 to 1.13 in 2012.⁶

Since the 1990s, the government has strongly encouraged the starting of science and technology parks; it also launched MSC Malaysia (then known as the ‘Multimedia Super Corridor’) in 1996. Several grants, including the highly lucrative Techno-Fund, were launched to support this initiative. Since 2006, after a growing emphasis on performance (measured by the numbers of scientific publications and patents), these grants helped to raise the quantity of university–industry collaboration links and scientific publications. The provision of research

grants to universities—which include some, such as the E-science fund, that encourage participation by industry—has helped raise university–industry collaboration in R&D activities in Malaysia. As shown in Figure 4, the university–industry collaboration in R&D score improved from 61.7 in 2011 to 67.0 in 2014. As a consequence, Malaysia’s ranking in this indicator went up from 21st in 2011 to 15th in 2014.

Among the positive impacts of government support for funding research in universities through the Long Run Research Grant Scheme, the Fundamental Research Grant Scheme, the High Impact Research, and E-science grants is the sharp rise in scientific publications, though the numbers are still not comparable to those produced in the Republic of Korea or Taiwan, Province of China. Publications listed in the Thomson Reuters Web of Science index and

the scopus databases of Malaysia’s five public research universities rose sharply, from 1,391 and 2,228 in 2006 to 8,736 and 12,122, respectively, in 2014.⁷ The total number of publications is not yet fully recorded in both databases, suggesting that the number of publications in the two databases may actually show a significant rise in 2014.

Business R&D has also performed well in Malaysia, both in terms of the commercialization of output and in the financing of it. An example of a successful business R&D programme is the R&D undertaken by members of the Malaysian Palm Oil Board (MPOB), which is financed from cess (taxes) collected from firms. Despite the saturation of land available for physical expansion, palm oil exports and the supply of palm oil products rose over the period 2000–14.⁸ A major contributor to the sustainability of oil-based products is the new technologies and services emerging from R&D financed through MPOB’s cess fund. The number of successful transfers of new technologies and services from such R&D varied between 21 and 59 over the period 2000–14.

What has not worked

Despite being an innovation outperformer, some weaknesses still need to be addressed. Malaysia’s performance in the efficiency of innovation has not kept pace with the significant improvements made in several pillars. Although Malaysia’s Innovation Efficiency Ratio placed it 72nd in the 2014 GII (score 0.74), dropping from 52nd in 2013 (score 0.81), it was ranked 84th in 2012 (score 0.69) and 77th in 2011 (0.66). This relatively low performance can be attributed to its weak institutions, trade balance in royalties and licensing fees, and knowledge output.

Knowledge and technology outputs (pillar 6)

Innovation is strongly influenced by knowledge-based activities. Malaysia has not done well in this area: its ranking on knowledge-based workers, innovation linkages, and knowledge and technology outputs has fallen from 2011 to 2014. Indeed, the GII scores for Knowledge workers, Innovation linkages, and Knowledge technology and outputs for Malaysia fell from 69.0, 44.9, and 65.0, respectively, in 2011 to 48.1, 33.8, and 35.5, respectively, in 2014 (see Figure 5).

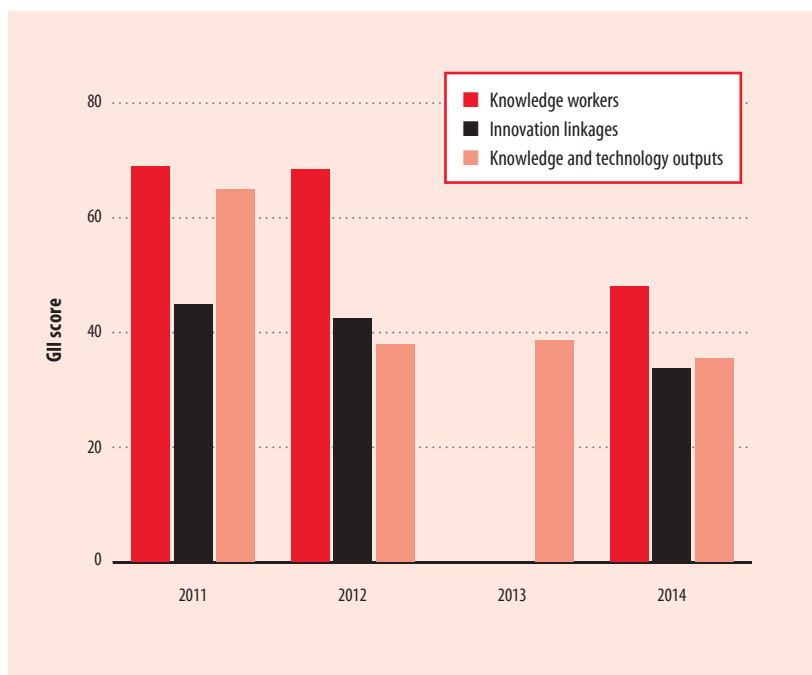
The government created the institutional setting for solving collective action problems by launching several initiatives: the Malaysian Technology Development Corporation, the Human Resource Development Council, MIGHT, the Multimedia Development Corporation, and the Multimedia Super Corridor. It also corporatized the Malaysian Institute of Microelectronics Systems in the 1990s to stimulate knowledge-based activities in the country, and increased grants to support R&D.⁹ But much remains to be done to establish and strengthen links between these organizations and private firms, which may explain why Malaysia's strength in innovation linkages fell between 2011 and 2014.

Business sophistication (pillar 5)

Trade balance in royalties and licensing fees is one indicator of innovation performance. Malaysia's score and ranking in this indicator has fallen over the period 2011–14 (its score fell from 57.5 to 19.6, and its rank fell from 11th to 47th).¹⁰

An intense assessment of receipts and payments shows that Malaysia has faced chronic deficits on trade in technology and service. Receipts enjoyed by Malaysia initially grew

Figure 5: Knowledge workers, Innovation linkages, and Knowledge and technology outputs scores: Malaysia, 2011–14



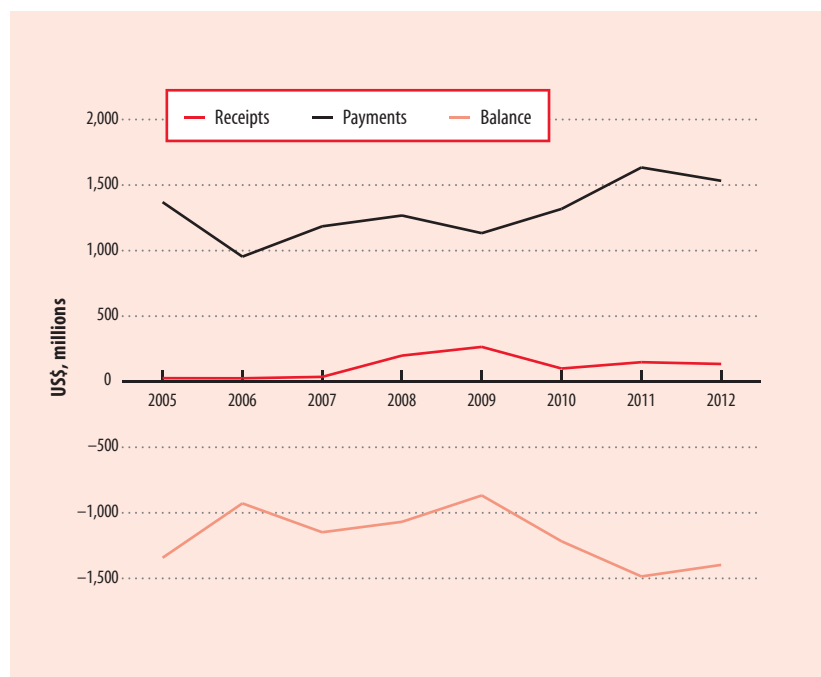
Source: GII, 2011–2014.

sharply from US\$26.2 million in 2006 to US\$265.7 million in 2009, but has since fallen in trend terms to US\$135.4 million in 2012 (Figure 6). Payments made fell initially from US\$1370 million in 2005 to US\$954 million in 2006 before rising to US\$1,634 million in 2011 and falling again slightly in 2012 to US\$1,532. The much larger payments made against receipts received has continued to produce net deficit in receipts on the royalties and licensing account of trade. The net receipts improved in trend terms from negative US\$1,343 million in 2005 to negative US\$867 in 2009. However, net receipts increased in 2010, to negative US\$1,485.

The chronic deficit in royalty and licensing fee receipts and payments demonstrates that Malaysia still relies strongly on foreign technology and services. Policies are needed to transform Malaysia from a technology-importing country

to a technology-exporting one. In addition to aggressive marketing of national technologies, it will be important for strategies to stimulate the gradual substitution of imported technologies.

Although strong government funding has been accompanied by strong innovation output, such as in scientific publications and patents, it has not produced the same effect on the commercialization of these results. While the weak results are largely a consequence of weak university-industry linkages, it cannot be due to a lack of businesses capable of undertaking such activities, because businesses in Malaysia show strong internal funding and commercialization capabilities. Strong university-industry linkages exist in industrial training of undergraduates, but those linkages are not so obvious in R&D and in the placement of academics in firms. Hence, although the government

Figure 6: Royalty and licensing fees: Malaysia, 2005–12

Source: GII, 2011–2014.

has emphasized university–industry linkages in a number of grants distributed to universities, such as the E-science fund, much of the university research in the country is undertaken without much input from firms.

What Malaysia can learn from others

There is a need to enforce the university–industry matching grant framework that some economies—such as Taiwan, Province of China—successfully launched to ensure strong commercialization of GERD.¹¹ The Inno-fund in Malaysia partially deals with that framework but should be expanded to cover all grants advanced by the government.¹²

The case of Taiwan, Province of China, is a good example. The economy’s Industrial Technology Research Institute (ITRI) has served as a key incubator that commercializes R&D and spins off indigenous

technology-intensive firms, ever since the government identified catching up in the integrated circuit industry as a goal in the 1970s. Since then, the incubator continues to spin off firms in other important technology-related industries, aligning with the technology roadmaps of the government. Although still primarily specialized as original equipment manufacturers and original designing manufacturers, integrated circuit firms in this economy have caught up with world’s frontier technologies by constantly absorbing and assimilating new external knowledge while developing their own.¹³ In sub-industries, such as integrated circuits and machinery and equipment, firms in Taiwan, Province of China, are shaping the globe’s technology frontier.¹⁴

Malaysia can also learn from the brain gain and brain circulation strategies of Taiwan, Province of China, because large numbers of

Malaysia professionals are still living in Singapore, the United States of America, Australia, and the United Kingdom.¹⁵ The economy’s existing brain gain policies should be complemented by giving leadership positions in the key meso-organizations, such as MOSTI, the MTDC, and MIGHT, to Malaysians who are endowed with tacit and experiential knowledge. Such an effort will also allow Malaysian firms to leap across stages in the technology trajectory of products.

Future work

Although Malaysia has performed well as an innovating nation, much has to be done for it to move up the GII rankings in a number of innovation pillars. The most pressing are the Knowledge workers and Innovation linkages subpillars and the Knowledge and technology outputs pillar, as well as the net royalty and license fee receipts, as Malaysia’s rank in these areas fell over the period 2011–14.

Knowledge and technology outputs (pillar 6)

The government can introduce a number of strategies to check the fall in ranking in knowledge-associated activities in Malaysia. The problem is not so much a consequence of falling enrolment in science and technology-based courses in schools and universities—Malaysia has done well using such measures. Instead the issue appears to be a relative decline in quality. A first step will be to investigate why the average performance of students in science and mathematics in the PISA assessment placed Malaysia 51st in 2014. The low performance is an indicator of the lack of quality that is essential for workers participation in knowledge-based activities.

Although university–industry linkages are relatively strong, Malaysia’s progress towards a developed country will require greater numbers of information technology graduates, R&D scientists, and engineers; increased R&D expenditure; and improvements in university–industry linkages. Only then can Malaysia compete with the Republic of Korea and Taiwan, Province of China, in the commercialization of university research. Malaysia should use its excellent business environment, especially for starting new businesses, to strengthen innovation linkages between universities, science parks, and firms. Recently established in 2012, the Collaborative Research in Engineering, Science & Technology (CREST) is a key public–private initiative in Malaysia that has begun driving growth in the electrical–electronics industry. CREST focuses on bringing together the three key stakeholders (i.e., the industry, academia, and the government) in collaborative R&D, talent development, and commercialization. Because each research project granted by CREST conditions the participation of both universities and industrial firms, it is directly targeted at building university–industry linkages in the country (see Box 1).

Synergies between pillars: Linkages among Pillars 2, 5, and 6

Effort must be made to reduce the heavy reliance on technology and service imports in order to mitigate the chronic imbalance between royalties and licensing fees. Although it is typical to be a net importer of technology and services in the initial phase of economic growth, successful economies gradually overcome their dependence on these imports by developing domestic capabilities to overcome the deficits, thus

Box 1: CREST as the bridge of university–industry linkages

The Collaborative Research in Engineering, Science & Technology (CREST) is the first research grant provider that targets only those R&D projects that drive university–industry linkages in Malaysia’s electrical–electronics industry. By providing R&D grants, CREST promotes and facilitates academia and companies in collaborating in market–driven research. CREST does not operate research labs but focuses on funding research located either in universities or industry, as nominated by each research team.

CREST has received a good response from the industry players by focusing on projects that are relevant to and of values to market growth. Through close interactions with the industry players, CREST identifies the weak links in strategic segments and sets the direction of the types of R&D to be conducted. In addition, CREST promotes certain cluster programmes with

the ultimate objective of driving local firms to gain higher–value–chain governance at the regional and international levels.

Since 2012, CREST has approved 74 projects through matching grants. Both universities and firms participate in every project. The projects involve a total fund of approximately US\$16.5 million as of 2014, 65% of these funds were provided by companies. Eight projects were completed in 2014 and another 18 are expected to be completed in 2015. The remaining 48 projects are scheduled to be completed in 2016–18. CREST is aiming to gain 61 commercializable intellectual properties as of 2018, accompanied by 299 research publications, 89 Master’s, and 32 Doctoral degree graduates.

Source
Author interview of the Chief Executive Officer of Crest, 2015.

eventually generating a positive trade balance in royalty receipts and licensing fees.

The Republic of Korea and Taiwan, Province of China, have both managed to achieve this transition over the period 1970–2000. Like these economies, Malaysia has relied heavily on foreign technology and services since 1970, but it has yet to evolve sufficient domestic capabilities to overcome the deficit, though national firms have managed to expand construction services abroad (e.g., highway construction).¹⁶ Although considerable capabilities have evolved in resource–based industries—as in the oil palm industry, through the R&D and commercialization activities of the MPOB—similar efforts should be directed towards the high–tech industries

of electric–electronics, automotive products, and biotechnology.

To ameliorate the above problems it will be imperative to maximize linkages between the networks linking firms to the universities, training centres, research institutes, and standards organizations. While connectivity is important, expanding the supply of knowledge workers is also critical because they are important participants in building innovation linkages. The expansion of innovation linkages will help increase knowledge and technology output.

Conclusions

Although export–oriented high–tech production has steered Malaysian’s industrial expansion since the 1970s, its first few decades were dominated by low–value–added assembly and

test activities. Following the realization in the 1990s that science, technology, and innovation are crucial to sustaining rapid growth and structural change in the country, the government began directly and heavily financing R&D activities in universities, public laboratories, and industry. Important initiatives, funded through the pooling of cess, have been instrumental in stimulating the commercialization of R&D in businesses. The MPOB is a good example of such an initiative. Other successful schemes include the provision of grants to research universities, which has significantly stimulated expansion in scientific publications since 2006 and expanded innovation inputs and outputs.

The steering provided by the NSRC has been important, because this council has attempted to systematically address the different innovation pillars. It has called on the government to raise R&D funding and has periodically evaluated the performance of the meso-organizations, such as MIGHT, MTDC, and the Multimedia Development Corporation, which were launched to solve collection action problems, including those in public universities, associated with the production and delivery of knowledge output.

The main shortcomings preventing Malaysia from lifting its GII ranking above 33rd place relate to the efficiency of the innovation inputs and outputs. Both its scores and rankings in Knowledge workers, Innovation linkages, and Knowledge and technology output rankings have fallen between 2011 and 2014. As a consequence, Malaysia has remained a net technology and services importer, with net receipts and licensing fees remaining negative for many years. Greater efforts should be made to improve institutional support and knowledge-based

activities to turn Malaysia into a net exporter of technology and services. Taiwan, Province of China, is a good model for Malaysia to consider in its efforts to strengthen innovation efficiency.

Malaysia's boosting of university-industry linkages, as reflected in the efforts of CREST, is a good example for other countries that want to improve their innovation capacity. By making it a requisite for universities to engage industry when seeking public R&D grants, scientific research at universities is increasingly targeted at commercialization.

Notes

- 1 Malaysia, 1995.
- 2 Rasiah, 2011.
- 3 WTO, 2014.
- 4 Rasiah et al., 2015b.
- 5 MASTIC, 2012; Ministry of Science, Technology and Innovation, 2013.
- 6 MASTIC, 2012; Ministry of Science, Technology and Innovation, 2013.
- 7 Information about the Web of Science index can be found at <http://wokinfo.com/>; information about the University Malaya database (2015) was accessed on 15 May 2015 from <http://portal.um.edu.my/mt.php?f=perpustakaan&fn=Comparison-5RU-WOS-SCO-2006-2015-30Apr15-chart-asean.pdf>.
- 8 MPOB, 2015.
- 9 Malaysia, 1995.
- 10 Indicator 5.3.1, royalties and license fees payments over total trade, changed in 2014 from being divided by total services imports to being divided by total trade.
- 11 Rasiah et al., 2010.
- 12 Ministry of Science, Technology and Innovation, 2013.
- 13 Rasiah et al., 2015b.
- 14 Tsai and Cheng, 2006.
- 15 Rasiah et al., 2015a.
- 16 Ministry of Science, Technology and Innovation, 2013.

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Effective Innovation Policies for Development: Uganda

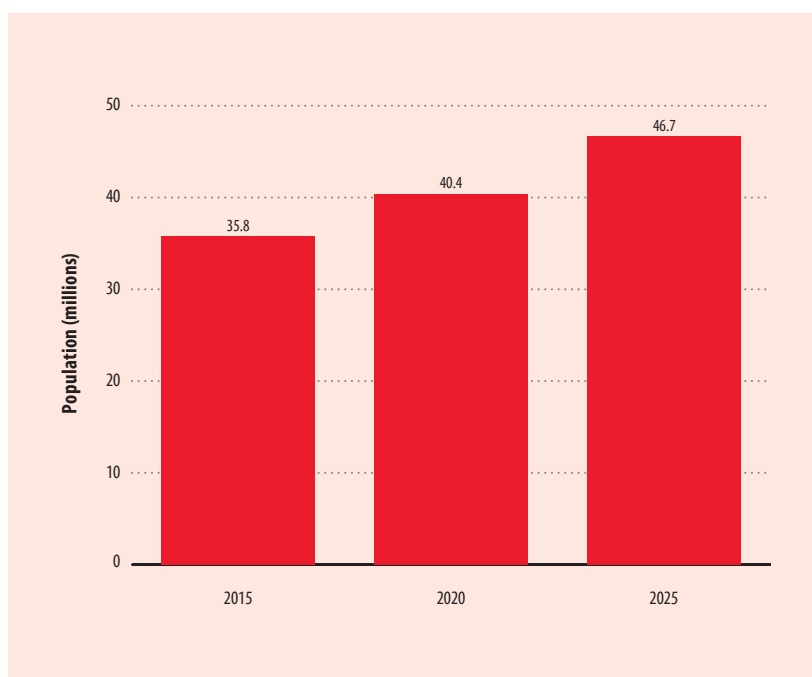
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As a landlocked country, Uganda's economy is largely dependent on neighbouring countries for access to and participation in global economic activities. Until recently, following two decades of armed conflict that lasted from 1966 to 1986, Uganda relied on Kenya for the majority of its consumer goods. Since 1986 the country has focused its efforts on recovery, with socio-economic activities and public policies geared towards development in key sectors such as roads, energy, agriculture, health, education, and security. Uganda's recent progress in the Global Innovation Index (GII) is the result of nearly 30 years of consistent and relatively predictable socioeconomic policies aimed at transforming the country from a peasant society to a middle-income economy by the year 2040.¹

The country has changed dramatically in both economic terms and other areas as a result of its relative political and economic stability. Demographic changes are the most notable. Between 1969 and 2014, Uganda's annual population growth rate was 2.88%—one of the highest in the world.² As shown in Figure 1, the 2014 census projects that the population will reach 46.7 million by the year 2025.³ The population growth rate between 2015 and 2025 is expected to be 3.03%—again, one of the highest globally.⁴ Although a healthy growing population is commendable, such demographic

Figure 1: Projected population: Uganda, 2015–25



Source: Uganda Bureau of Statistics, 2014a.

trends—where the population is becoming predominantly one of youths—place significant pressure on limited resources. Such a rapidly growing population requires simultaneously expanding the economy to accommodate the people's needs and adopting more sustainable practices in natural resource management. It is, therefore, absolutely critical for Uganda to turn to innovation and the creative use of resources across all sectors of the economy. So far Uganda's development strategies and policies have emphasized innovation

through science and technology capacity development for various core sectors, including manufacturing and agro-processing, which are growing.⁵ That growth partly explains Uganda's recent improvement in GII rankings.

This chapter presents a plausible explanation for Uganda's consistent improvement in the GII. The next section reviews Uganda's innovation ranking in the GII. Subsequent sections highlight what Uganda has done to score higher than other low-income countries, the innovation

policies that appear to have fostered innovation, and areas in policy that may need improvement. The chapter concludes with lessons to learn from Uganda's experience and that of other countries, and, finally, a proposal for policy mixes that would enable Uganda and similar countries improve in their innovation ranking.

Uganda's innovation ranking

In 2014, Uganda was classified as an 'innovation achiever' for the second time by the GII.⁶ This means that Uganda's GII score relative to its GDP is significantly higher than that of other economies in its low-income bracket. Uganda was ranked 106th in 2011, 117th in 2012, 89th in 2013, and 91st in 2014, consistently outperforming a number of low-income countries. Although its GII performance might appear to be an outlier, long-term observers of the country's stable economic policies and performance will not find its GII scores surprising. For the period 1986–2010, the government's emphasis was on economic recovery; now it is on transforming Uganda into a middle-income society.⁷ The government is currently focusing on deepening private-sector investment by improving its business environment and competitiveness through innovation. Uganda's GII strength in areas such as strong foreign direct investment net inflows is a direct result of the relative stability of the economy. Reform processes currently underway are aimed at addressing structural and institutional weaknesses that directly relate to Uganda's weak areas in the GII indicators, such as the ease of starting and the cost of doing business. However, as discussed below, the existing legal and policy framework is responsible for Uganda's positive innovation attributes.

Uganda's growth prospects

Uganda's economy is largely agro-based. The country's major exports are coffee, tea, cotton, and tobacco. Fish, assorted fruits, essential oils, vegetable, cereals, pulses, animal products, and minerals make up the pool of its non-traditional exports. Thus innovations in agro-processing and value addition may be essential for creating new sources of growth and agribusiness. Already Uganda is among a few African countries that are prioritizing investments in modern biosciences, especially in disease diagnostics, vaccine development, crop productivity improvement, and value-added agro-produce. Arguably, this type of investment puts Uganda on the path towards sustainable agricultural transformation. It also presents an opportunity to transition the majority of Ugandans from subsistence to commercial farming. Such effort could be an impetus for minimizing exports of raw materials and obtaining more revenue from trade in finished or semi-processed products.

Uganda's growth prospects look bright in both the medium and the long term. Uganda's recent positive innovation ranking is attributable to government efforts to increase and sustain higher rates of economic growth. Development experts project that economic growth rates of at least 7% per annum are needed if Uganda is to achieve middle-income status within the next two or three decades.⁸ Its real GDP growth rate has so far averaged 5.3% per annum between 2001 and 2011. This growth in GDP has made positive gains in reducing poverty rates—these have fallen from 56% in 1992 to 31% in 2006, and they fell again, to 19.7%, in 2013.⁹ These and other indicators are expected to improve even more as the country takes advantage of the crude oil discovered in 2006 in the

Albertine Rift in western Uganda; production is expected to begin by end of this decade.¹⁰

Uganda's innovation policy reforms

Uganda's innovation policies can be traced through different sector policies, strategies, and pieces of legislation. Among these are the National Industrialization Policy 2008; the National Science, Technology and Innovation (STI) Policy 2009; the National Development Plan 2010; the Agricultural Sector Development Strategy and Plan; and several others. Although Uganda appears to have numerous policies relating to research and innovation, its challenge is to get a policy mix that is synergistic and creates an environment conducive to learning and interaction among actors in the public sector, private businesses, and civil society. Nonetheless, the emphasis on science and technology in today's government policies and strategies calls for more action from national organizations such as the Uganda National Council for Science and Technology as well as from local and regional innovation networks such as the Innovation Systems and Clusters Programme at Makerere University, Bio-Innovate, AfricaLics, and the Pan African Competitiveness Forum.

Policy discussions over the last decade have centred on institution building. These efforts have identified a need for a standalone ministry for science and technology, and have developed incentives such as a national innovation and industrialization fund to support the commercialization of new technologies.¹¹ Consequently, science and technology have been added to the Ministry of Education and Sports, creating a new Ministry of Education, Science, Technology, and

and Sports. This ministry augments government's capacity development efforts in the science, technology, engineering, and mathematics (STEM) fields.¹² These institutional, structural, and human capacity elements of the innovation ecosystem have been emphasized in Uganda's Vision 2040. The challenge going forward will be to match the policy commitments to STEM promotion with financial resource allocations and to encourage the various actors to interact and learn from each other to spur innovation. Uganda's GII ranking may improve if the government sustains the momentum it has created—for example, through initiatives such as the National Innovation Fund (US\$0.2 million) in the period 2003–04, the Presidential Support to Scientists (US\$4 million) in the period 2006–14, and the Millennium Science Initiative Project (US\$33.35 million) in the period 2007–13.

There is also a need to improve the management of intellectual property (IP). A number of IP laws have been updated in the last decade; updates include the Patents (Amendment) Act (2002), the Copyright and Neighbouring Rights Act (2006), the Trademarks Act (2010), the Plant Variety Protection Bill (2014), and the Industrial Property Law (2014). However, many scientists and innovators in Uganda are not aware of the existing IP laws. As a result, many simply do not take advantage of IP protection to leverage their competitive advantage. Furthermore, universities and other research organizations—with the exception of Makerere University, Uganda's largest public university—do not have internal policies that address and encourage research and IP management. Where such policies do exist, they are not used or implemented.¹³ Probably more problematic is the inadequacy of the institutional

framework for administering IP protections, especially in areas such as patents, which require highly trained and experienced experts in law and examination. Although the recent restructuring of the Uganda Registration Services Bureau (URSB) into a semi-autonomous agency will go a long way towards building administrative capacity, much remains to be done in terms of human capacity in the legal fraternity to support IP and knowledge-based businesses.

Innovation policy initiatives that appear to have worked

Successful initiatives fall into two general categories: those that enhance the competitiveness of firms and those that boost learning and competence. Both these areas are addressed below.

Enhancing the competitiveness of firms

Uganda promotes the private sector as the engine for economic growth and development, but the private sector must be competitive domestically and internationally. Efforts have been made to develop the private sector since Uganda's independence in 1962, but these have become more vigorous since the 1980s. The founding of the Private Sector Foundation for capacity and policy advocacy (1995), the Enterprise Uganda Foundation Limited for promoting entrepreneurship and business growth, the Uganda Investment Authority (1991) to create a favourable investment climate, and the Uganda Export Promotion Board to facilitate exports of Ugandan goods and services are probably some of the best known. Collectively, these entities have established a solid institutional foundation for developing Uganda's private sector. To this end, the policy focus has shifted to enhancing firm competitiveness.¹⁴

Furthermore, since 2004, the annual Presidential Investors Round Table (PIRT)—which is chaired by the country's president—has become an influential forum in which industry can advocate for reforms in policy and service delivery that promote their business interests. As a result of the president's personal involvement, resolutions made at PIRT are often given priority in their implementation.

Innovation and competitiveness in service delivery within the public sector is also emphasized. The Civil Service College recognizes innovative public-service organizations. Bodies such as the Uganda Revenue Authority have deployed information and communication technologies in tax administration, making it increasingly easier for tax payers to comply with their tax obligations. Similarly, the Ministry of Finance has rolled out the Integrated Financial Management System, making it easier for public agencies to manage their financial resources. As previously noted, reforms taking place within the URSB have improved IP administration and management as well as business registration services. Implementing the URSB's Strategic Investment Plan for 2012–17 may remove institutional bottlenecks involved in business registration, which in turn would improve Uganda's current low score on the ease of starting and cost of running businesses.

Learning and competence building

Higher education in Uganda has dramatically grown in the last decade. Uganda has 189 tertiary institutions, of which 72% (115) are privately owned.¹⁵ As shown in Table 1, enrolment is primarily in universities, leaving little room for other institutes such as technical colleges, which traditionally play

Table 1: Enrolment in Ugandan institutions 2011–12

| Institution type | Number of Institutions | Enrolment, male | Enrolment, female | Total | Percentage of total institutions |
|---|------------------------|-----------------|-------------------|----------------|----------------------------------|
| Universities | 32 | 78,817 | 61,270 | 140,087 | 71.3 |
| Business institutes | 58 | 12,260 | 12,724 | 24,984 | 12.7 |
| National teachers colleges | 7 | 4,989 | 2,853 | 7,842 | 4.0 |
| Health care institutes | 21 | 3,924 | 3,564 | 7,488 | 3.8 |
| Management institutes | 12 | 2,293 | 3,179 | 5,472 | 2.8 |
| Technical colleges | 5 | 2,914 | 336 | 3,250 | 1.7 |
| Agriculture, fisheries, and forestry institutes | 3 | 1,169 | 456 | 1,625 | 0.8 |
| Media institutes | 4 | 967 | 653 | 1,620 | 0.8 |
| Theology colleges | 11 | 1,326 | 271 | 1,597 | 0.8 |
| Law institutes | 1 | 500 | 300 | 800 | 0.4 |
| Cooperative colleges | 2 | 204 | 144 | 348 | 0.2 |
| Tourism institutes | 3 | 137 | 89 | 226 | 0.1 |
| Art institutes | 1 | 134 | 61 | 195 | 0.1 |
| Aviation institutes | 1 | 127 | 20 | 147 | 0.1 |
| Meteorological institutes | 1 | 15 | 24 | 39 | 0.0 |
| Survey institutes | 1 | 27 | 3 | 30 | 0.0 |
| Others | 2 | 452 | 188 | 640 | 0.3 |
| Total | 165 | 110,255 | 86,135 | 196,390 | 100.0 |

Source: National Council for Higher Education, cited in Uganda Bureau of Statistics, 2014b, p. 18.

critical roles in STI training. Public universities, which constitute 28% of tertiary institutions, are mainly science and technology-oriented. However, enrolment in STEM programmes is still under 25% for all universities, a rate that is captured by the GII as a weakness. Teaching is the main focus of most universities in Uganda, although research capacity is growing in a number of public universities, especially Makerere University. Furthermore, the co-location of public universities in the various regions of the country, and an emphasis on STEM education, may in the long term have a positive influence on the local innovative activities of surrounding firms and communities.

At the same time, entrepreneurial activities are gaining prominence within university systems, especially Makerere University. These show an increasing recognition of the value of university–industry–government

links. At Makerere University, for example, the Innovation Systems and Clusters Programme, which started in 2003–04 with initial support from the Swedish International Development Cooperation Agency (Sida), has established and is working with more than 50 innovative clusters in different sectors of trade. Cluster formation is encouraged by the industrial policy of Uganda of 2008. Another example is Makerere University's efforts to build competence in innovation and development through a Master of Science Programme in Technology Innovation and Industrial Development (TIID) at its College of Engineering, Design, Art and Technology. Although the programme is still quite new (it was established in 2012), it builds on many years of collaboration between Makerere University and the Norwegian University of Science and Technology. TIID will be

instrumental in locally training the next generation of STI experts. TIID draws from and is deeply rooted in activities of key partners such as the Uganda Institution of Professional Engineers, the Uganda Association of Architects, the Uganda National Association of Building and Civil Engineering Contractors, the Uganda Manufacturers Association, and the Uganda Small Scale Industries Association.¹⁶ These initiatives, among others, may go some way towards explaining Uganda's GII strength with respect to innovation linkages and research and development financing from abroad.

One important dimension of innovation in Uganda is its learning by doing aspect, especially in the informal sector, which constitutes about two-thirds of the country's businesses.¹⁷ Because the majority of agricultural activities are informal in nature and 72% of the labour force is engaged in agriculture, the informal

Box 1: Formal and informal sector collaboration: The Kiira EV

One of the major breakthroughs that resulted from the Presidential Support to Scientists is East and Central Africa's first electric vehicle, called the 'Kiira EV'.¹ The Kiira EV is a prototype electric car designed and produced in Uganda by engineering students and faculty researchers at Makerere University's College of Engineering, Design, Art and Technology through the Centre for Research in Transportation Technologies (CRTT). Although the Kiira EV is an important technological breakthrough for Ugandan researchers, the involvement and integration

of the informal-sector artisans in its production is an even more important aspect of the innovation process. The Kiira EV project was designed by CRTT researchers and students, and informal-sector artisans were heavily involved in the fabrication of its components and in translating theoretical designs into practical solutions. Informal-sector artisans who worked on the project were required to sign non-disclosure agreements, which would help to protect Makerere University's trade secrets. The Kiira EV is expected to go into production in 2018 with a unique

labour model that integrates informal-sector workers into the manufacturing of the cars. This distinctive model of vertical integration between formal and informal sectors exemplified in the Kiira EV project is critical to transforming African labour markets and economic activities that are predominantly informal in nature.

Note

1 Kawooya, 2014.

economy contributes significantly to the country's GDP.¹⁸ To foster productivity in the informal sector, efforts have been made—particularly by non-governmental organizations such as the Gatsby Trust, SNV, the Belgian Development Agency (BTC), Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), and Swisscontact, among others—to improve the skills of youth and women so they can either start or improve their businesses. Although these efforts have so far focused on poverty alleviation, job creation, or income enhancement, attention should be paid to the competitiveness of the informal sector. Complementary initiatives by the Uganda government and development partners have concentrated on improving business, technical, and vocational skills through the Skilling Uganda Project. This programme was launched in 2012 with the goal of meeting the skills needs of small and medium-sized enterprises.

Innovation promotion

Innovation promotion by the government, especially by inspiring

young people to be creative and demonstrating this support at the highest political office, the presidency, builds a culture of innovation that pays off in the long term. The president's support has been evident through funding creative programmes at Makerere University, such as the electric Kiira EV motor vehicle (Box 1), and through developing value-added products by the Colleges of Agriculture and Environment and of Veterinary Medicine. Prototypes have been developed, some patented, through the president's initiative, part of which is also implemented through the Uganda National Council for Science and Technology. Scaling up these prototypes into commercial products remains a challenge, however. Although access to credit has improved dramatically, as shown in Uganda's GII data, the ease of starting businesses based on new home-grown technologies remains challenging. On the other hand, anecdotal evidence shows that the president's emphasis on wealth creation within communities is inspiring creativity and innovative

thinking among youth, especially in agro-processing and agribusiness. Such creativity has often drawn the attention of the media, which have featured successful entrepreneurs and products. Examples of such media attention include 'Seeds of Gold', a feature article published every Wednesday in the *Daily Monitor* newspaper,¹⁹ and 'Pakasa', a feature story published in every Friday edition of *New Vision Newspaper*.²⁰

What Uganda's innovation policy should emphasize

Uganda is making progress with respect to building innovation capabilities in both the public and private sector. However, a policy mix that promotes innovation and creativity in universities and firms is needed. The rapid growth of universities is an opportunity to harness young talent by supporting creative work, research, and innovation. Streamlining the financing policy for research and innovation is a vital next step. Public universities and research organizations receive direct funding from government, but less than 2% of funds received is

allocated to research and innovation activities. This direct funding, albeit small, should be supplemented with competitive grants that are made available annually. Competitive grants for research and innovation attracts good talent and encourages creativity in research organizations and universities. This model of financing research and innovation ensures accountability for results and resources, and it is usually the bedrock upon which international research funding and collaborations are built. Creating new businesses through active business incubation should also be pursued. Some work in this regard is being done at Makerere University and the Uganda Industrial Research Institute, but it is centred more on technology development and incubation than on business incubation. Capacity development for business incubation is desirable and can be matched with support offered to innovative cluster initiatives, where universities play enhanced roles in knowledge brokerage for business.

Regionally, collaboration among universities and research organizations within the East Africa Community appears to be growing. Regional networks such as Bio-Innovate, which support bioscience innovations across the region, have made remarkable progress in capacity building for bio-based innovations. This, along with other regional initiatives such as the Biosciences eastern and central Africa Hub – International Livestock Research Institute,²¹ catalyse and support innovation processes at national and regional level. Another example is the newly established East Africa Commission for Science and Technology in Kigali Rwanda, which also emerges as a regional platform for collaboration in science and technology.²²

Lessons to be learned

The key lesson for countries low in the GII rankings, especially those in the low-income bracket, is that policy formulation and institutional capacity development around STI must be addressed concurrently.

Innovation-driven economies owe their success in part to strong political leadership in STI policy and implementation. The recent creation of a Ministry of Education, Science, Technology and Sports (in March 2015), with respect to science and technology governance, puts Uganda on par with Kenya, Tanzania, Ethiopia, South Africa, and the Republic of Korea, to mention a few countries. Having a standalone ministry for science and technology is good but not necessarily sufficient as a driver for innovation, however. The new institutional arrangement, which creates a new docket for science and technology, should interact and work synergistically with the other actors—particularly the Finance Ministry and the Trade and Industry Ministry. Such co-working would mimic scenarios in innovation-driven economies, which have their trade and industry ministries tightly connected within their national systems of innovation, and which play enhanced roles in bridging the gap between research and innovation centres and industry. This also requires support for active business incubation programmes closely linked to higher education institutes.

Conclusions

Uganda can maintain its lead and do progressively better in its innovation ranking. The GII rankings for the period 2011–14 consistently show Uganda outperforming other low-income countries at the same level of development. As shown in

this chapter, Uganda's innovation performance is closely linked to the wider mix of socioeconomic policies, which over the years have remained stable and predictable. The policy mix has enabled both the attraction of foreign direct investment and the advance of other conditions favourable to learning and innovation. That notwithstanding, much remains to be done. The cost and ease of doing business remain unacceptably high compared with that of other low-income countries. Also needed are sustained support and government commitment to research and innovation activities in universities, research institutes, and other centres through direct as well as annual competitive grants.

Uganda has made great strides towards improved innovation capacity. Its promise is that the country is positioned to make even more progress in the near and medium term.

Notes

- 1 Government of Uganda, 2013.
- 2 UBOS, 2014a.
- 3 UBOS, 2014a.
- 4 UBOS, 2014a.
- 5 UBOS, 2014b.
- 6 Countries in this classification were previously termed 'innovation learners'.
- 7 MFPED, 2010.
- 8 MFPED, 2010.
- 9 MFPED, 2014.
- 10 Silvia, 2014.
- 11 Ecuru et al., 2012.
- 12 MoES, 2013.
- 13 Kabi et al., 2013.
- 14 MFPED, 2012.
- 15 MoES, 2013.
- 16 For details about the Master of Science in Technology Innovation and Industrial Development Programme, see <http://cedat.mak.ac.ug/graduate-programmes/master-of-science-in-technology-innovation-and-industrial-development>.
- 17 Kawooya, 2014.

- 18 UBOS, 2014b.
- 19 For example, on 25 March 2015 the 'Seeds of Gold' featured a journalist who ventured into passion fruit farming (Afedraru, 2015); The *Daily Monitor* newspaper is available at www.monitor.co.ug.
- 20 For example, on 20 March 2015 the 'Pakasa' story featured a businesswoman who ventured into trade in South Sudan (Kanaabi, 2015); the *New Vision Newspaper* is available at www.newvision.co.ug.
- 21 For details about this hub, see <http://hub.africabiosciences.org/>.
- 22 Bahati, 2014.

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Appendices

Appendix I

Country/Economy Profiles

Country/Economy Profiles

The following tables provide detailed profiles for each of the 141 economies in the Global Innovation Index (GII) 2015. They are constructed around four sections.

1 Five key indicators at the beginning of each profile are intended to put the economy into context. They present the population in millions,¹ GDP in US\$ billions, and GDP per capita in PPP current international dollars.² The fourth indicator categorizes the economy into income group and the fifth indicates its geographical region.³

2 The next section provides the economy's scores and rankings on the GII, the Innovation Output Sub-Index, the Innovation Input Sub-Index, and the Innovation Efficiency Ratio.

The GII ranking for the 2014 edition comes next. Because two economies dropped out in 2015, and because of adjustments made to the GII framework every year and other technical factors not directly related to actual performance (missing data, updates of data, etc.), the GII rankings are not directly comparable from one year to the next. Please refer to Annex 2 of Chapter 1 for details.

Scores are normalized in the 0–100 range except for the Innovation Efficiency Ratio, for which scores revolve around the

number 1 (this index is calculated as the ratio between the Output and Input Sub-Indices).

The Innovation Input Sub-Index score is calculated as the simple average of the scores in the first five pillars, while the Innovation Output

The 2015 GII includes 79 indicators and three types of data. Composite indicators are identified with an asterisk (*), survey questions from the World Economic Forum's Executive Opinion Survey are identified with a dagger (†), and the remaining indicators are all hard data series.

For hard data, the original value is provided (except for indicators 7.3.1, 7.3.2, and 7.3.4, for which the raw data were provided under the condition that only the normalized scores be published). Normalized scores in the 0–100 range are provided for everything else (index and survey data, sub-pillars, pillars, and indices).

When data are either not available or out of date (the cut-off year is 2004), 'n/a' is used. To the right of the indicator title, a clock symbol indicates that the country's data for that indicator are older than the base year. More details, including the year of the data in question, are available in Appendix II.

For further details, see Appendix III, Sources and Definitions, and Appendix IV, Technical Notes.

4 To the far right of each column, a solid circle indicates that an indicator is one of the strengths of the country/economy in question, and a hollow circle indicates that it is a weakness.

| Albania | |
|---|---------------------|
| 1 Key indicators | |
| Population (millions) | 3.2 |
| GDP (US\$ billion) | 13.3 |
| GDP per capita (PPP) | 4,082 |
| Income group | Upper middle income |
| Region | South & West Europe |
| 2 Global Innovation Index (out of 141) | 87 |
| Innovation Input Sub-Index | 85 |
| Innovation Output Sub-Index | 89 |
| Global Innovation Index 2014 (out of 141) | 85 |
| 3 Pillars | |
| 1. Institutions | 60.1 70 |
| 1.1 Political stability* | 70.2 72 |
| 1.2 Government effectiveness* | 65.6 67 |
| 1.3 Regulatory quality* | 55.2 55 |
| 1.4 Rule of law* | 52.8 55 |
| 1.5 Ease of starting a business* | 20.8 50 |
| 2. Human capital & research | 21.8 101 |
| 2.1 Education | 39.1 91 |
| 2.1.1 Expenditure on education, % GDP† | 3.8 100 |
| 2.1.2 Gov't expenditure on education, secondary, % GDP (cap.) | 0.9 99 |
| 2.1.3 School enrollment, primary | 100 99 |
| 2.1.4 PISA scores on reading, math, & science | 592 57 |
| 2.1.5 High school rates, secondary | 118 81 |
| 2.2 Science indicators | 27 85 |
| 2.2.1 Research & development, % GDP | 0.5 87 |
| 2.2.2 Graduate in science & engineering, %† | 1.8 88 |
| 2.2.3 Science & technology, % GDP | 1.2 79 |
| 2.2.4 R&D intensity, % GDP | 0.2 99 |
| 2.2.5 Gov't expenditure on R&D, % GDP† | 0.2 99 |
| 2.2.6 Sci. pub. citations, average score top 1%† | 0.1 71 |
| 3. Infrastructure | 39.0 71 |
| 3.1 Information & communication technologies (ICT) | 44.2 74 |
| 3.1.1 ICT use† | 48.2 84 |
| 3.1.2 Electricity supply, kWh/cap. | 32.6 63 |
| 3.1.3 Government online services† | 48.9 77 |
| 3.1.4 E-governance† | 53.9 59 |
| 3.2 Land and infrastructure | 28 68 |
| 3.2.1 Electricity supply, kWh/cap. | 1,493 86 |
| 3.2.2 Logistics performance† | 49 69 |
| 3.2.3 Green capital formation, % GDP | 24 45 |
| 3.3 Ecological sustainability | 40.3 40 |
| 3.3.1 GDP (net of energy use), 2005 (PPP) \$/cap. eq. | 17.8 11.8 |
| 3.3.2 Environmental performance† | 54 61 |
| 3.3.3 ISO 14001 environmental certification, PPP GDP | 1.1 81 |
| 4. Market sophistication | 59.1 24 |
| 4.1 Ease of getting credit† | 10.0 34 |
| 4.1.1 Credit to private sector, % GDP | 17.6 38 |
| 4.1.2 Microfinance gross loans, % GDP | 0.1 22 |
| 4.2 Intellectual property | 72.5 1 |
| 4.2.1 Ease of patenting innovation* | 72.5 1 |
| 4.2.2 Market capitalization, % GDP | 0.9 99 |
| 4.2.3 Venture capital deals, PPP GDP | 0.9 99 |
| 4.2.4 Applied R&D exp., weighted mean, % | 1.1 91 |
| 4.2.5 Intensity of R&D expenditure* | 41.3 111 |
| 5. Business sophistication | 26.2 118 |
| 5.1 Knowledge workers | 22.1 115 |
| 5.1.1 Knowledge-intensive employment, %† | 16.1 89 |
| 5.1.2 Firms offering formal training, % firms | 23.8 80 |
| 5.1.3 GDP (weighted by business), % of GDP | 0.9 99 |
| 5.1.4 GDP (weighted by business)*† | 5.5 79 |
| 5.1.5 Personal confidence in business, % total trade | 102 10 |
| 5.2 Innovation strategy | 19.7 120 |
| 5.2.1 University-business research collaboration† | 22.8 10 |
| 5.2.2 State of cluster development† | 35.4 100 |
| 5.2.3 GDP (weighted by strategy)*† | 7.4 74 |
| 5.2.4 AI-strategy alliance deals, PPP GDP | 0.9 99 |
| 5.2.5 Patent filings, % of business PPP GDP | 1.1 90 |
| 5.3 Knowledge absorption | 30.2 58 |
| 5.3.1 Royalty & license fees payments, % total trade | 0.4 81 |
| 5.3.2 High-tech imports less re-exports, % total trade | 10 116 |
| 5.3.3 Content, computer & info. services exp., % total trade | 1.6 9 |
| 5.3.4 FDI net inflows, % GDP | 11.5 10 |
| 6. Knowledge & technology outputs | 18.5 110 |
| 6.1 Domestic modern patents app. for PPP GDP† | 0.1 99 |
| 6.1.2 PCT trademark patent app. for PPP GDP | 0.0 99 |
| 6.1.3 Domestic int. utility model app. for PPP GDP | 0.9 99 |
| 6.1.4 Scientific & technical publications, PPP GDP | 0.3 99 |
| 6.1.5 Creative documents, 10 index | 460 127 |
| 6.2 Knowledge impact | 26.3 112 |
| 6.2.1 Growth rate of PPP GDP (constant, % total trade) | 0.7 82 |
| 6.2.2 New trademark patent app. for PPP GDP | 0.9 74 |
| 6.2.3 Computer software spending, % GDP | 0.9 99 |
| 6.2.4 GDP (R&D) quality contribution, PPP GDP | 0.5 58 |
| 6.2.5 High- & medium-high-tech manufacturers, % | 10 99 |
| 6.3 Royalty & license fees receipts, % total trade | 0.0 86 |
| 6.3.1 Content, computer & info. services exp., % total trade | 1.6 9 |
| 6.3.2 Content, computer & info. services exp., % total trade | 3.4 16 |
| 6.3.4 FDI net inflows, % GDP | 11.5 10 |
| 6.3.5 ICT & organizational model creation† | 32 120 |
| 7. Creative outputs | 22.0 114 |
| 7.1 Creative goods | 19 101 |
| 7.1.1 Intellectual property | 26.9 129 |
| 7.1.1.1 Domestic int. trademark app. for PPP GDP | 0.9 99 |
| 7.1.2 Market trademark app. holders for PPP GDP | 0.2 59 |
| 7.1.3 Domestic int. trademark app. for PPP GDP | 0.2 59 |
| 7.1.4 ICT & organizational model creation† | 32 120 |
| 7.2 Cultural & creative services exports, % total trade | 0.8 18 |
| 7.2.1 Cultural & creative services exports, % total trade | 0.8 18 |
| 7.2.2 Global int. & media output, % pop. 15-64 | 0.9 99 |
| 7.2.3 Global int. & media output, % pop. 15-64 | 0.9 99 |
| 7.2.4 Domestic & international model creation† | 0.9 99 |
| 7.2.5 Creative goods exports, % total trade | 0.1 94 |
| 7.2.6 Creative goods exports, % total trade | 0.1 94 |
| 7.3 Creative top-level domains (TLDs), 10 pop. 15-64 | 0.8 51 |
| 7.3.1 Generic top-level domains (TLDs), 10 pop. 15-64 | 0.8 51 |
| 7.3.2 Creative top-level domains (TLDs), 10 pop. 15-64 | 0.8 51 |
| 7.3.3 Wikipedia articles, 10 pop. 15-64 | 2,057 47 |
| 7.3.4 Video uploads on YouTube, 10 pop. 15-64 | 0.9 99 |

NOTE: * indicates a strength; † indicates a weakness; ‡ indicates a survey question.

• indicates that the country's data are older than the base year; see Appendix I for details, including the year of the data.

Sub-Index is calculated as the simple average of the scores in the last two pillars.

3 Pillars are identified by single-digit numbers, sub-pillars by two-digit numbers, and indicators by three-digit numbers. For example, *indicator 1.3.1, ease of starting a business*, appears under *sub-pillar 1.3, Business environment*, which in turn appears under *pillar 1, Institutions*.

All top ranks (of 1) are highlighted as strengths; for the remaining indicators, strengths and weaknesses of a particular economy are based on the percentage of economies with scores that fall below its score (i.e., percent ranks).

- For a given economy, strengths (●) are those scores with percent ranks greater than the 10th largest percent rank among the 79 indicators in that economy.
- Similarly, for that economy, weaknesses (○) are those scores with percent ranks lower than the 10th smallest percent rank among the 79 indicators in that economy.

Percent ranks embed more information than ranks and allow for comparisons of ranks of series with missing data and ties in ranks. Examples from Ireland illustrate this point:

1. Strengths for Ireland are all indicators with percent ranks above 0.96 (10th largest percent rank for Ireland); weaknesses are all indicators with percent ranks below 0.60 (Ireland's 10th smallest percent rank).
2. Ireland ranks 6th out of 141 economies in 4.2.1, *ease of protecting investors*, with a percent rank of 0.96; this indicator is a strength for Ireland.
3. Ireland also ranks 6th in 5.2.4, *JV-strategic alliance deals/tr PPP\$ GDP*, but with a percent rank of 0.94 (because only 94 countries are covered by that indicator), this indicator is not a strength for Ireland.
4. The rank of 58 (percent rank of 0.57) in 4.3.2, *intensity of local competition*, is a weakness for Ireland. By contrast, the rank of 96 for Myanmar for that same indicator is a strength for Myanmar (with

a percent rank of 0.28, this is above the cutoff for strengths for Myanmar, which is 0.24).

Percent ranks are not reported in the Country/Economy Profiles but they are presented in the Data Tables (Appendix II).

Notes

- 1 Data are from the United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2012 Revision*.
- 2 Data for GDP and GDP per capita are from the International Monetary Fund *World Economic Outlook 2014* database.
- 3 Income group is according to the World Bank Income Group Classification (July 2013): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Geographical regions are based on the United Nations Classification: EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

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| Belgium..... | 174 | Guatemala..... | 210 | Morocco..... | 246 | Switzerland..... | 282 |
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| Croatia..... | 192 | Korea, Rep..... | 228 | Portugal..... | 264 | Yemen..... | 300 |
| Cyprus..... | 193 | Kuwait..... | 229 | Qatar..... | 265 | Zambia..... | 301 |
| Czech Republic..... | 194 | Kyrgyzstan..... | 230 | Romania..... | 266 | Zimbabwe..... | 302 |
| Denmark..... | 195 | Latvia..... | 231 | Russian Federation..... | 267 | | |
| Dominican Republic..... | 196 | Lebanon..... | 232 | Rwanda..... | 268 | | |
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Key indicators

| | |
|----------------------------|---------------------|
| Population (millions)..... | 3.2 |
| GDP (US\$ billions)..... | 13.3 |
| GDP per capita, PPP\$..... | 9,903.5 |
| Income group..... | Upper-middle income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 30.7 | 87 |
| Innovation Output Sub-Index..... | 20.3 | 112 |
| Innovation Input Sub-Index..... | 41.2 | 73 |
| Innovation Efficiency Ratio..... | 0.5 | 129 ○ |
| Global Innovation Index 2014 (out of 143)..... | 30.5 | 94 |

| | | |
|--|-------------|-------------|
| 1 Institutions..... | 60.1 | 70 |
| 1.1 Political environment..... | 49.0 | 72 |
| 1.1.1 Political stability*..... | 65.6 | 62 |
| 1.1.2 Government effectiveness*..... | 32.4 | 87 |
| 1.2 Regulatory environment..... | 58.5 | 91 |
| 1.2.1 Regulatory quality*..... | 52.5 | 65 |
| 1.2.2 Rule of law*..... | 32.4 | 95 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 20.8 | 96 |
| 1.3 Business environment..... | 72.7 | 56 |
| 1.3.1 Ease of starting a business*..... | 91.9 | 36 ● |
| 1.3.2 Ease of resolving insolvency*..... | 61.4 | 42 ● |
| 1.3.3 Ease of paying taxes*..... | 64.8 | 102 |
| 2 Human capital & research..... | 21.8 | 101 |
| 2.1 Education..... | 38.0 | 91 |
| 2.1.1 Expenditure on education, % GDP [Ⓞ] | 3.3 | 105 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years..... | n/a | n/a |
| 2.1.4 PISA scales in reading, maths, & science..... | 395.2 | 57 ○ |
| 2.1.5 Pupil-teacher ratio, secondary..... | 14.8 | 63 |
| 2.2 Tertiary education..... | 25.7 | 85 |
| 2.2.1 Tertiary enrolment, % gross..... | 55.5 | 47 |
| 2.2.2 Graduates in science & engineering, % [Ⓞ] | 13.8 | 88 |
| 2.2.3 Tertiary inbound mobility, %..... | 1.3 | 78 |
| 2.3 Research & development (R&D)..... | 1.7 | 108 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓞ] | 147.9 | 79 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓞ] | 0.2 | 99 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 39.0 | 71 |
| 3.1 Information & communication technologies (ICTs)..... | 44.2 | 74 |
| 3.1.1 ICT access*..... | 46.2 | 84 |
| 3.1.2 ICT use*..... | 32.6 | 63 |
| 3.1.3 Government's online service*..... | 44.9 | 72 |
| 3.1.4 E-participation*..... | 52.9 | 59 |
| 3.2 General infrastructure..... | 26.8 | 88 |
| 3.2.1 Electricity output, kWh/cap..... | 1,495.3 | 86 |
| 3.2.2 Logistics performance*..... | n/a | n/a |
| 3.2.3 Gross capital formation, % GDP..... | 24.9 | 45 |
| 3.3 Ecological sustainability..... | 46.0 | 40 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 12.3 | 10 ● |
| 3.3.2 Environmental performance*..... | 54.7 | 61 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 1.1 | 63 |
| 4 Market sophistication..... | 59.1 | 24 ● |
| 4.1 Credit..... | 35.8 | 53 |
| 4.1.1 Ease of getting credit*..... | 65.0 | 34 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 37.6 | 88 |
| 4.1.3 Microfinance gross loans, % GDP..... | 2.6 | 22 ● |

| | | |
|---|------|-------|
| 4.2 Investment..... | 72.5 | 3 |
| 4.2.1 Ease of protecting investors*..... | 72.5 | 7 ● |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 68.9 | 99 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.1 | 36 ● |
| 4.3.2 Intensity of local competition [†] | 41.5 | 131 ○ |

| | | |
|---|-------------|------------|
| 5 Business sophistication..... | 26.2 | 118 |
| 5.1 Knowledge workers..... | 22.9 | 113 |
| 5.1.1 Knowledge-intensive employment, % [Ⓞ] | 16.1 | 89 |
| 5.1.2 Firms offering formal training, % firms..... | 23.8 | 80 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, % [Ⓞ] | 3.3 | 79 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 9.0 | 66 |
| 5.2 Innovation linkages..... | 19.7 | 126 ○ |
| 5.2.1 University/industry research collaboration [†] | 22.3 | 128 ○ |
| 5.2.2 State of cluster development [†] | 33.4 | 120 ○ |
| 5.2.3 GERD financed by abroad, % [Ⓞ] | 7.4 | 54 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓞ] | 0.1 | 50 |
| 5.3 Knowledge absorption..... | 36.0 | 58 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.4 | 63 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 3.6 | 116 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.6 | 36 ● |
| 5.3.4 FDI net inflows, % GDP..... | 11.5 | 10 ● |

| | | |
|--|-------------|------------|
| 6 Knowledge & technology outputs..... | 18.5 | 110 |
| 6.1 Knowledge creation..... | 2.9 | 126 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP [Ⓞ] | 0.1 | 99 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.0 | 86 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 5.3 | 96 |
| 6.1.5 Citable documents H index..... | 40.0 | 127 ○ |
| 6.2 Knowledge impact..... | 26.0 | 117 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.7 | 82 |
| 6.2.2 New businesses/th pop. 15–64..... | 0.9 | 74 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 5.5 | 58 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 1.0 | 99 ○ |
| 6.3 Knowledge diffusion..... | 26.7 | 74 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.0 | 86 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.2 | 94 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 3.4 | 16 ● |
| 6.3.4 FDI net outflows, % GDP..... | 0.2 | 81 |

| | | |
|--|-------------|------------|
| 7 Creative outputs..... | 22.0 | 114 |
| 7.1 Intangible assets..... | 29.6 | 129 ○ |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 49.9 | 52 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.2 | 50 |
| 7.1.3 ICTs & business model creation [†] | 40.1 | 119 ○ |
| 7.1.4 ICTs & organizational model creation [†] | 34.2 | 126 ○ |
| 7.2 Creative goods & services..... | 19.5 | 69 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.8 | 18 ● |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 0.1 | 84 |
| 7.3 Online creativity..... | 9.2 | 81 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 6.8 | 53 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 1.7 | 76 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 2,576.7 | 47 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓞ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|----------------------------------|
| Population (millions) | 39.9 |
| GDP (US\$ billions) | 214.1 |
| GDP per capita, PPP\$ | 7,815.9 |
| Income group | Upper-middle income |
| Region | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|------------|
| Global Innovation Index (out of 141) | 24.4 | 126 |
| Innovation Output Sub-Index | 16.7 | 129 |
| Innovation Input Sub-Index | 32.1 | 119 |
| Innovation Efficiency Ratio | 0.5 | 125 |
| Global Innovation Index 2014 (out of 143) | 24.2 | 133 |

1 Institutions 45.1 120

| | | |
|--|------|------|
| 1.1 Political environment | 30.2 | 120 |
| 1.1.1 Political stability* | 35.2 | 123 |
| 1.1.2 Government effectiveness* | 25.1 | 106 |
| 1.2 Regulatory environment | 52.2 | 108 |
| 1.2.1 Regulatory quality* | 16.2 | 135 |
| 1.2.2 Rule of law* | 29.5 | 105 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 17.3 | 78 ● |
| 1.3 Business environment | 52.8 | 127 |
| 1.3.1 Ease of starting a business* | 74.1 | 114 |
| 1.3.2 Ease of resolving insolvency* | 42.7 | 91 |
| 1.3.3 Ease of paying taxes* | 41.6 | 133 |

2 Human capital & research 26.2 82 ●

| | | |
|--|-------|------|
| 2.1 Education | 45.4 | 67 |
| 2.1.1 Expenditure on education, % GDP [Ⓐ] | 4.3 | 77 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | n/a | n/a |
| 2.1.3 School life expectancy, years [Ⓐ] | 14.0 | 58 ● |
| 2.1.4 PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary | n/a | n/a |
| 2.2 Tertiary education | 32.2 | 69 ● |
| 2.2.1 Tertiary enrolment, % gross | 31.5 | 75 ● |
| 2.2.2 Graduates in science & engineering, % [Ⓐ] | 25.0 | 26 ● |
| 2.2.3 Tertiary inbound mobility, % [Ⓐ] | 0.5 | 91 |
| 2.3 Research & development (R&D) | 1.1 | 115 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓐ] | 164.7 | 71 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓐ] | 0.1 | 112 |
| 2.3.3 QS university ranking, average score top 3* | 0.0 | 73 ○ |

3 Infrastructure 31.4 95

| | | |
|---|---------|-------|
| 3.1 Information & communication technologies (ICTs) | 16.9 | 128 |
| 3.1.1 ICT access* | 44.6 | 93 |
| 3.1.2 ICT use* | 7.3 | 115 |
| 3.1.3 Government's online service* | 7.9 | 136 ○ |
| 3.1.4 E-participation* | 7.8 | 137 ○ |
| 3.2 General infrastructure | 40.1 | 38 ● |
| 3.2.1 Electricity output, kWh/cap | 1,491.6 | 87 |
| 3.2.2 Logistics performance* | 24.9 | 91 |
| 3.2.3 Gross capital formation, % GDP | 37.7 | 9 ● |
| 3.3 Ecological sustainability | 37.3 | 72 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 9.4 | 33 ● |
| 3.3.2 Environmental performance* | 50.1 | 82 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 0.2 | 115 |

4 Market sophistication 36.8 124

| | | |
|--|------|-------|
| 4.1 Credit | 7.0 | 135 |
| 4.1.1 Ease of getting credit* | 10.0 | 133 ○ |
| 4.1.2 Domestic credit to private sector, % GDP | 16.7 | 123 |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a |

| | | |
|--|------|-------|
| 4.2 Investment | 45.0 | 41 |
| 4.2.1 Ease of protecting investors* | 45.0 | 114 |
| 4.2.2 Market capitalization, % GDP | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | n/a | n/a |
| 4.3 Trade & competition | 58.3 | 131 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓐ] | 8.6 | 113 |
| 4.3.2 Intensity of local competition [†] | 46.7 | 129 ○ |

5 Business sophistication 20.9 135

| | | |
|---|------|-------|
| 5.1 Knowledge workers | 21.5 | 118 |
| 5.1.1 Knowledge-intensive employment, % | 17.6 | 82 |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 17.3 | 95 |
| 5.1.3 GERD performed by business, % of GDP | n/a | n/a |
| 5.1.4 GERD financed by business, % | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total [Ⓐ] | 4.4 | 77 |
| 5.2 Innovation linkages | 20.0 | 125 |
| 5.2.1 University/industry research collaboration [†] | 21.1 | 129 ○ |
| 5.2.2 State of cluster development [†] | 38.6 | 102 |
| 5.2.3 GERD financed by abroad, % | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 87 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓐ] | 0.0 | 103 |
| 5.3 Knowledge absorption | 21.4 | 132 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓐ] | 0.2 | 85 |
| 5.3.2 High-tech imports less re-imports, % total trade | 7.3 | 61 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓐ] | 0.2 | 118 |
| 5.3.4 FDI net inflows, % GDP | 0.8 | 118 |

6 Knowledge & technology outputs 17.8 115

| | | |
|---|-------|-------|
| 6.1 Knowledge creation | 4.0 | 113 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP | 0.2 | 88 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP | 0.0 | 95 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 4.2 | 107 |
| 6.1.5 Citable documents H index | 89.0 | 81 ● |
| 6.2 Knowledge impact | 34.4 | 87 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 1.6 | 57 ● |
| 6.2.2 New businesses/th pop. 15–64 | 0.5 | 85 |
| 6.2.3 Computer software spending, % GDP | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 1.0 | 114 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓐ] | 29.1 | 38 ● |
| 6.3 Knowledge diffusion | 14.9 | 128 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓐ] | 0.0 | 97 |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.0 | 126 ○ |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓐ] | 0.4 | 103 |
| 6.3.4 FDI net outflows, % GDP | (0.1) | 113 |

7 Creative outputs 15.6 131

| | | |
|---|-------|-------|
| 7.1 Intangible assets | 20.6 | 135 ○ |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP [Ⓐ] | 6.9 | 99 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP [Ⓐ] | 0.0 | 68 ○ |
| 7.1.3 ICTs & business model creation [†] | 34.5 | 131 ○ |
| 7.1.4 ICTs & organizational model creation [†] | 35.2 | 125 |
| 7.2 Creative goods & services | 8.1 | 105 |
| 7.2.1 Cultural & creative services exports, % total trade | 0.2 | 52 |
| 7.2.2 National feature films/mn pop. 15–69 | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69 | 1.5 | 51 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓐ] | 1.2 | 62 |
| 7.2.5 Creative goods exports, % total trade | 0.0 | 128 ○ |
| 7.3 Online creativity | 13.1 | 75 ● |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 0.5 | 116 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 0.1 | 121 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 399.7 | 95 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 48.7 | 66 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------|
| Population (millions)..... | 22.1 |
| GDP (US\$ billions)..... | 128.6 |
| GDP per capita, PPP\$..... | 6,484.7 |
| Income group..... | Upper-middle income |
| Region..... | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 26.2 | 120 |
| Innovation Output Sub-Index..... | 26.5 | 80 ● |
| Innovation Input Sub-Index..... | 25.9 | 137 |
| Innovation Efficiency Ratio..... | 1.0 | 1 ● |
| Global Innovation Index 2014 (out of 143)..... | 23.8 | 135 |
| 1 Institutions..... | 35.2 | 135 |
| 1.1 Political environment..... | 31.2 | 119 |
| 1.1.1 Political stability*..... | 55.0 | 86 ● |
| 1.1.2 Government effectiveness*..... | 7.5 | 137 |
| 1.2 Regulatory environment..... | 35.5 | 134 |
| 1.2.1 Regulatory quality*..... | 19.8 | 130 |
| 1.2.2 Rule of law*..... | 13.6 | 138 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 31.0 | 130 |
| 1.3 Business environment..... | 39.0 | 138 |
| 1.3.1 Ease of starting a business*..... | 56.6 | 135 |
| 1.3.2 Ease of resolving insolvency*..... | 0.0 | 139 ○ |
| 1.3.3 Ease of paying taxes*..... | 60.4 | 110 |
| 2 Human capital & research..... | 13.6 | 130 |
| 2.1 Education..... | 34.9 | 102 ● |
| 2.1.1 Expenditure on education, % GDP [Ⓓ] | 3.5 | 99 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years [Ⓓ] | 11.3 | 101 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓓ] | 27.4 | 102 |
| 2.2 Tertiary education..... | 5.8 | 133 |
| 2.2.1 Tertiary enrolment, % gross [Ⓓ] | 7.5 | 119 |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 0.3 | 123 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓓ] | 57.0 | 87 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 21.1 | 128 |
| 3.1 Information & communication technologies (ICTs)..... | 22.3 | 119 |
| 3.1.1 ICT access*..... | 25.2 | 126 |
| 3.1.2 ICT use*..... | 10.6 | 109 |
| 3.1.3 Government's online service*..... | 29.9 | 106 |
| 3.1.4 E-participation*..... | 23.5 | 115 |
| 3.2 General infrastructure..... | 12.3 | 135 |
| 3.2.1 Electricity output, kWh/cap..... | 269.6 | 112 |
| 3.2.2 Logistics performance*..... | 19.5 | 104 |
| 3.2.3 Gross capital formation, % GDP..... | 14.8 | 125 |
| 3.3 Ecological sustainability..... | 28.7 | 102 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 9.5 | 29 ● |
| 3.3.2 Environmental performance*..... | 28.7 | 130 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.1 | 131 |
| 4 Market sophistication..... | 35.3 | 131 |
| 4.1 Credit..... | 3.8 | 140 ○ |
| 4.1.1 Ease of getting credit*..... | 5.0 | 138 ○ |
| 4.1.2 Domestic credit to private sector, % GDP..... | 23.5 | 112 |
| 4.1.3 Microfinance gross loans, % GDP [Ⓓ] | 0.0 | 79 |

| | | |
|---|-------------|-------------|
| 4.2 Investment..... | 51.7 | 23 |
| 4.2.1 Ease of protecting investors*..... | 51.7 | 83 ● |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 50.3 | 137 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓓ] | 7.4 | 103 ● |
| 4.3.2 Intensity of local competition [†] | 26.7 | 133 ○ |
| 5 Business sophistication..... | 24.3 | 126 |
| 5.1 Knowledge workers..... | 26.5 | 102 |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms [Ⓓ] | 23.5 | 82 ● |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 23.2 | 111 |
| 5.2.1 University/industry research collaboration [†] | 16.9 | 132 ○ |
| 5.2.2 State of cluster development [†] | 26.3 | 131 ○ |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a |
| 5.3 Knowledge absorption..... | 23.2 | 124 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓓ] | 0.0 | 123 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | n/a | n/a |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓓ] | 0.9 | 64 ● |
| 5.3.4 FDI net inflows, % GDP..... | (3.5) | 139 ○ |
| 6 Knowledge & technology outputs..... | 30.8 | 45 ● |
| 6.1 Knowledge creation..... | 0.6 | 141 ○ |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.0 | 96 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 0.3 | 139 ○ |
| 6.1.5 Citable documents H index..... | 28.0 | 134 |
| 6.2 Knowledge impact..... | 43.7 | 43 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 2.0 | 43 ● |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.3 | 134 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 48.2 | 21 ● |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓓ] | 0.0 | 83 ● |
| 6.3.2 High-tech exports less re-exports, % total trade..... | n/a | n/a |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | 4.9 | 10 ● |
| 7 Creative outputs..... | 22.2 | 112 |
| 7.1 Intangible assets..... | 33.2 | 123 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 38.8 | 124 |
| 7.1.4 ICTs & organizational model creation [†] | 27.6 | 132 ○ |
| 7.2 Creative goods & services..... | n/a | n/a |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | n/a | n/a |
| 7.3 Online creativity..... | 0.1 | 131 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.0 | 140 ○ |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.0 | 133 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 58.5 | 118 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓓ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------------------|
| Population (millions)..... | 41.8 |
| GDP (US\$ billions)..... | 540.2 |
| GDP per capita, PPP\$..... | 18,917.3 |
| Income group..... | Upper-middle income |
| Region..... | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 34.3 | 72 |
| Innovation Output Sub-Index..... | 29.4 | 63 |
| Innovation Input Sub-Index..... | 39.2 | 81 |
| Innovation Efficiency Ratio..... | 0.7 | 52 |
| Global Innovation Index 2014 (out of 143)..... | 35.1 | 70 |

| | | |
|--|-------------|------------|
| 1 Institutions..... | 48.0 | 111 |
| 1.1 Political environment..... | 49.6 | 71 |
| 1.1.1 Political stability*..... | 65.6 | 61 |
| 1.1.2 Government effectiveness*..... | 33.6 | 85 |
| 1.2 Regulatory environment..... | 40.3 | 128 ○ |
| 1.2.1 Regulatory quality*..... | 21.5 | 128 ○ |
| 1.2.2 Rule of law*..... | 28.2 | 106 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 30.3 | 127 ○ |
| 1.3 Business environment..... | 54.2 | 120 |
| 1.3.1 Ease of starting a business*..... | 72.6 | 117 |
| 1.3.2 Ease of resolving insolvency*..... | 45.1 | 78 |
| 1.3.3 Ease of paying taxes*..... | 45.0 | 129 ○ |
| 2 Human capital & research..... | 37.7 | 44 |
| 2.1 Education..... | 49.8 | 54 |
| 2.1.1 Expenditure on education, % GDP..... | 5.1 | 52 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 19.6 | 59 |
| 2.1.3 School life expectancy, years..... | 17.9 | 6 ● |
| 2.1.4 PISA scales in reading, maths, & science..... | 396.7 | 55 |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓐ] | 10.9 | 32 |
| 2.2 Tertiary education..... | 39.1 | 48 |
| 2.2.1 Tertiary enrolment, % gross..... | 80.3 | 10 ● |
| 2.2.2 Graduates in science & engineering, % [Ⓐ] | 13.5 | 89 |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 24.1 | 39 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓐ] | 1,255.8 | 43 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓐ] | 0.6 | 56 |
| 2.3.3 QS university ranking, average score top 3*..... | 43.8 | 32 ● |
| 3 Infrastructure..... | 38.2 | 74 |
| 3.1 Information & communication technologies (ICTs)..... | 52.6 | 52 |
| 3.1.1 ICT access*..... | 66.2 | 52 |
| 3.1.2 ICT use*..... | 34.2 | 61 |
| 3.1.3 Government's online service*..... | 55.1 | 55 |
| 3.1.4 E-participation*..... | 54.9 | 54 |
| 3.2 General infrastructure..... | 25.4 | 98 |
| 3.2.1 Electricity output, kWh/cap..... | 3,280.0 | 57 |
| 3.2.2 Logistics performance*..... | 42.1 | 58 |
| 3.2.3 Gross capital formation, % GDP..... | 18.0 | 111 |
| 3.3 Ecological sustainability..... | 36.6 | 76 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 8.2 | 49 |
| 3.3.2 Environmental performance*..... | 49.6 | 83 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 1.4 | 53 |
| 4 Market sophistication..... | 35.9 | 127 |
| 4.1 Credit..... | 17.9 | 118 |
| 4.1.1 Ease of getting credit*..... | 50.0 | 65 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 15.8 | 126 ○ |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.0 | 83 ○ |

| | | |
|---|------|-------|
| 4.2 Investment..... | 24.0 | 130 ○ |
| 4.2.1 Ease of protecting investors*..... | 57.5 | 60 |
| 4.2.2 Market capitalization, % GDP..... | 5.7 | 100 ○ |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.2 | 87 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 58 |
| 4.3 Trade & competition..... | 65.9 | 113 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 5.6 | 87 |
| 4.3.2 Intensity of local competition [†] | 51.2 | 125 ○ |

| | | |
|---|-------------|-----------|
| 5 Business sophistication..... | 36.3 | 61 |
| 5.1 Knowledge workers..... | 46.1 | 43 |
| 5.1.1 Knowledge-intensive employment, % [Ⓐ] | 24.6 | 58 |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 63.6 | 6 ● |
| 5.1.3 GERD performed by business, % of GDP [Ⓐ] | 0.1 | 55 |
| 5.1.4 GERD financed by business, % [Ⓐ] | 21.3 | 59 |
| 5.1.5 Females employed w/advanced degrees, % total [Ⓐ] | 16.9 | 31 |
| 5.2 Innovation linkages..... | 17.7 | 130 ○ |
| 5.2.1 University/industry research collaboration [†] | 43.9 | 64 |
| 5.2.2 State of cluster development [†] | 35.3 | 115 |
| 5.2.3 GERD financed by abroad, % [Ⓐ] | 0.6 | 94 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 85 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 61 |
| 5.3 Knowledge absorption..... | 45.0 | 26 ● |
| 5.3.1 Royalty & license fees payments, % total trade..... | 2.6 | 6 ● |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 10.5 | 29 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.2 | 51 |
| 5.3.4 FDI net inflows, % GDP..... | 1.7 | 93 |

| | | |
|---|-------------|-----------|
| 6 Knowledge & technology outputs..... | 22.2 | 95 |
| 6.1 Knowledge creation..... | 9.7 | 71 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 0.7 | 70 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | 0.2 | 47 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 8.5 | 71 |
| 6.1.5 Citable documents H index..... | 249.0 | 35 ● |
| 6.2 Knowledge impact..... | 30.0 | 104 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 1.4 | 62 |
| 6.2.2 New businesses/th pop. 15–64..... | 0.5 | 91 |
| 6.2.3 Computer software spending, % GDP..... | 0.2 | 71 ○ |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 7.1 | 49 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 27.0 | 72 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.1 | 48 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 2.6 | 45 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.9 | 43 |
| 6.3.4 FDI net outflows, % GDP..... | 0.2 | 84 |

| | | |
|--|-------------|-----------|
| 7 Creative outputs..... | 36.5 | 50 |
| 7.1 Intangible assets..... | 44.0 | 77 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 70.4 | 25 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 45.9 | 107 |
| 7.1.4 ICTs & organizational model creation [†] | 47.1 | 94 |
| 7.2 Creative goods & services..... | 20.4 | 65 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.9 | 15 ● |
| 7.2.2 National feature films/mn pop. 15–69..... | 5.9 | 33 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 15.0 | 29 |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 0.2 | 82 |
| 7.3 Online creativity..... | 37.8 | 36 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 3.6 | 65 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 38.5 | 17 ● |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 3,777.6 | 35 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 81.2 | 31 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|----------------------------------|
| Population (millions) | 3.0 |
| GDP (US\$ billions) | 10.3 |
| GDP per capita, PPP\$ | 6,539.8 |
| Income group | Lower-middle income |
| Region | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 37.3 | 61 |
| Innovation Output Sub-Index | 32.8 | 51 |
| Innovation Input Sub-Index | 41.8 | 69 |
| Innovation Efficiency Ratio | 0.8 | 34 |
| Global Innovation Index 2014 (out of 143) | 36.1 | 65 |
| 1 Institutions..... | 67.0 | 57 |
| 1.1 Political environment..... | 54.5 | 59 |
| 1.1.1 Political stability*..... | 65.9 | 60 |
| 1.1.2 Government effectiveness*..... | 43.2 | 63 |
| 1.2 Regulatory environment | 70.3 | 53 |
| 1.2.1 Regulatory quality*..... | 53.9 | 62 |
| 1.2.2 Rule of law*..... | 39.3 | 79 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 11.0 | 41 |
| 1.3 Business environment..... | 76.0 | 42 |
| 1.3.1 Ease of starting a business*..... | 97.8 | 4 ● |
| 1.3.2 Ease of resolving insolvency*..... | 48.1 | 66 |
| 1.3.3 Ease of paying taxes*..... | 82.1 | 36 |
| 2 Human capital & research..... | 19.0 | 105 |
| 2.1 Education | 26.4 | 127 ○ |
| 2.1.1 Expenditure on education, % GDP | 2.3 | 122 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 17.7 | 71 |
| 2.1.3 School life expectancy, years [Ⓞ] | 12.3 | 88 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a |
| 2.2 Tertiary education..... | 27.9 | 80 |
| 2.2.1 Tertiary enrolment, % gross..... | 46.1 | 58 |
| 2.2.2 Graduates in science & engineering, % [Ⓞ] | 15.9 | 78 |
| 2.2.3 Tertiary inbound mobility, %..... | 3.0 | 53 |
| 2.3 Research & development (R&D)..... | 2.7 | 98 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.2 | 83 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 37.3 | 76 |
| 3.1 Information & communication technologies (ICTs)..... | 50.2 | 57 |
| 3.1.1 ICT access*..... | 56.4 | 68 |
| 3.1.2 ICT use*..... | 30.2 | 70 |
| 3.1.3 Government's online service*..... | 61.4 | 43 |
| 3.1.4 E-participation*..... | 52.9 | 59 |
| 3.2 General infrastructure..... | 25.4 | 97 |
| 3.2.1 Electricity output, kWh/cap..... | 2,705.7 | 66 |
| 3.2.2 Logistics performance*..... | 26.1 | 87 |
| 3.2.3 Gross capital formation, % GDP..... | 22.4 | 62 |
| 3.3 Ecological sustainability | 36.3 | 77 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.5 | 79 |
| 3.3.2 Environmental performance*..... | 61.7 | 45 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.2 | 120 ○ |
| 4 Market sophistication | 54.7 | 36 |
| 4.1 Credit..... | 59.6 | 11 ● |
| 4.1.1 Ease of getting credit*..... | 65.0 | 34 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 45.2 | 75 |
| 4.1.3 Microfinance gross loans, % GDP..... | 8.4 | 1 ● |

| | | |
|---|-------------|-----------|
| 4.2 Investment | 26.1 | 113 |
| 4.2.1 Ease of protecting investors*..... | 60.0 | 47 |
| 4.2.2 Market capitalization, % GDP..... | 1.3 | 107 ○ |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.0 | 106 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.1 | 30 |
| 4.3 Trade & competition | 78.3 | 61 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 2.3 | 48 |
| 4.3.2 Intensity of local competition [†] | 64.5 | 82 |
| 5 Business sophistication | 31.0 | 89 |
| 5.1 Knowledge workers..... | 39.8 | 65 |
| 5.1.1 Knowledge-intensive employment, % [Ⓞ] | 26.9 | 52 |
| 5.1.2 Firms offering formal training, % firms..... | 14.2 | 101 ○ |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | 27.4 | 5 ● |
| 5.2 Innovation linkages | 20.8 | 122 ○ |
| 5.2.1 University/industry research collaboration [†] | 34.2 | 109 ○ |
| 5.2.2 State of cluster development [†] | 36.9 | 110 ○ |
| 5.2.3 GERD financed by abroad, %..... | 2.8 | 75 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓞ] | 0.1 | 51 |
| 5.3 Knowledge absorption..... | 32.4 | 72 |
| 5.3.1 Royalty & license fees payments, % total trade..... | n/a | n/a |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 5.7 | 87 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.1 | 55 |
| 5.3.4 FDI net inflows, % GDP..... | 3.5 | 50 |
| 6 Knowledge & technology outputs | 30.6 | 46 |
| 6.1 Knowledge creation..... | 25.4 | 38 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 5.4 | 18 ● |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.2 | 53 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 1.7 | 17 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 28.5 | 27 ● |
| 6.1.5 Citable documents H index..... | 116.0 | 61 |
| 6.2 Knowledge impact..... | 36.6 | 72 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 4.6 | 11 ● |
| 6.2.2 New businesses/th pop. 15–64..... | 1.5 | 54 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.7 | 119 ○ |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 4.2 | 91 ○ |
| 6.3 Knowledge diffusion..... | 29.7 | 60 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.2 | 93 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 2.8 | 21 ● |
| 6.3.4 FDI net outflows, % GDP..... | 0.2 | 85 |
| 7 Creative outputs | 35.1 | 55 |
| 7.1 Intangible assets..... | 51.3 | 40 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 86.2 | 18 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 1.1 | 29 |
| 7.1.3 ICTs & business model creation [†] | 59.2 | 54 |
| 7.1.4 ICTs & organizational model creation [†] | 59.3 | 44 |
| 7.2 Creative goods & services..... | 23.7 | 53 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.3 | 47 |
| 7.2.2 National feature films/mn pop. 15–69..... | 13.1 | 12 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | 1.6 | 43 |
| 7.2.5 Creative goods exports, % total trade..... | 0.5 | 58 |
| 7.3 Online creativity..... | 14.1 | 74 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 3.4 | 67 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 4.4 | 57 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 4,651.3 | 30 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓞ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|-----------------------------|
| Population (millions)..... | 23.6 |
| GDP (US\$ billions)..... | 1,444.2 |
| GDP per capita, PPP\$..... | 44,345.9 |
| Income group..... | High income |
| Region..... | South East Asia and Oceania |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 55.2 | 17 |
| Innovation Output Sub-Index..... | 45.6 | 24 |
| Innovation Input Sub-Index..... | 64.8 | 10 |
| Innovation Efficiency Ratio..... | 0.7 | 72 |
| Global Innovation Index 2014 (out of 143)..... | 55.0 | 17 |

1 Institutions.....89.3 11

| | | |
|---|------|-----|
| 1.1 Political environment..... | 87.3 | 13 |
| 1.1.1 Political stability*..... | 89.3 | 17 |
| 1.1.2 Government effectiveness*..... | 85.3 | 11 |
| 1.2 Regulatory environment..... | 93.8 | 12 |
| 1.2.1 Regulatory quality*..... | 95.4 | 7 ● |
| 1.2.2 Rule of law*..... | 94.3 | 10 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 11.7 | 44 |
| 1.3 Business environment..... | 86.9 | 12 |
| 1.3.1 Ease of starting a business*..... | 96.5 | 7 ● |
| 1.3.2 Ease of resolving insolvency*..... | 81.6 | 13 |
| 1.3.3 Ease of paying taxes*..... | 82.5 | 34 |

2 Human capital & research.....57.0 9

| | | |
|--|---------|------|
| 2.1 Education..... | 54.3 | 32 |
| 2.1.1 Expenditure on education, % GDP..... | 5.1 | 54 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 17.9 | 69 ○ |
| 2.1.3 School life expectancy, years..... | 20.2 | 1 ● |
| 2.1.4 PISA scales in reading, maths, & science..... | 512.5 | 14 |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a |
| 2.2 Tertiary education..... | 52.9 | 13 |
| 2.2.1 Tertiary enrolment, % gross..... | 86.3 | 6 ● |
| 2.2.2 Graduates in science & engineering, % [Ⓔ] | 15.9 | 77 ○ |
| 2.2.3 Tertiary inbound mobility, %..... | 18.3 | 7 |
| 2.3 Research & development (R&D)..... | 63.9 | 10 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 4,280.4 | 16 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 2.3 | 15 |
| 2.3.3 QS university ranking, average score top 3*..... | 86.8 | 5 ● |

3 Infrastructure.....63.7 4 ●

| | | |
|--|----------|------|
| 3.1 Information & communication technologies (ICTs)..... | 86.0 | 7 ● |
| 3.1.1 ICT access*..... | 82.3 | 20 |
| 3.1.2 ICT use*..... | 74.8 | 11 |
| 3.1.3 Government's online service*..... | 92.9 | 8 |
| 3.1.4 E-participation*..... | 94.1 | 7 |
| 3.2 General infrastructure..... | 55.0 | 13 |
| 3.2.1 Electricity output, kWh/cap..... | 10,544.5 | 12 |
| 3.2.2 Logistics performance*..... | 84.1 | 16 |
| 3.2.3 Gross capital formation, % GDP..... | 26.9 | 37 |
| 3.3 Ecological sustainability..... | 50.1 | 27 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.9 | 69 ○ |
| 3.3.2 Environmental performance*..... | 82.4 | 3 ● |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 3.2 | 31 |

4 Market sophistication.....66.7 9

| | | |
|---|-------|-----|
| 4.1 Credit..... | 65.5 | 6 ● |
| 4.1.1 Ease of getting credit*..... | 90.0 | 4 ● |
| 4.1.2 Domestic credit to private sector, % GDP..... | 125.8 | 20 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|--|------|-----|
| 4.2 Investment..... | 46.2 | 36 |
| 4.2.1 Ease of protecting investors*..... | 56.7 | 67 |
| 4.2.2 Market capitalization, % GDP..... | 83.8 | 19 |
| 4.2.3 Total value of stocks traded, % GDP..... | 68.5 | 11 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.1 | 29 |
| 4.3 Trade & competition..... | 88.5 | 10 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 1.8 | 43 |
| 4.3.2 Intensity of local competition [†] | 83.2 | 6 ● |

5 Business sophistication.....47.4 23

| | | |
|---|------|------|
| 5.1 Knowledge workers..... | 66.7 | 10 |
| 5.1.1 Knowledge-intensive employment, %..... | 43.8 | 15 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 1.3 | 16 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 61.9 | 7 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 22.6 | 15 |
| 5.2 Innovation linkages..... | 41.2 | 38 |
| 5.2.1 University/industry research collaboration [†] | 64.1 | 20 |
| 5.2.2 State of cluster development [†] | 53.1 | 40 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 1.6 | 84 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 10 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.7 | 20 |
| 5.3 Knowledge absorption..... | 34.4 | 63 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.2 | 20 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 9.6 | 37 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.7 | 78 ○ |
| 5.3.4 FDI net inflows, % GDP..... | 3.2 | 60 |

6 Knowledge & technology outputs.....34.8 39

| | | |
|---|-------|-------|
| 6.1 Knowledge creation..... | 34.9 | 26 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 2.9 | 34 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 1.6 | 26 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 1.1 | 26 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 47.7 | 10 |
| 6.1.5 Citable documents H index..... | 583.0 | 10 |
| 6.2 Knowledge impact..... | 46.2 | 32 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 1.4 | 64 |
| 6.2.2 New businesses/th pop. 15–64..... | 12.2 | 8 |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 46 ○ |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 12.5 | 31 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 20.4 | 56 |
| 6.3 Knowledge diffusion..... | 23.2 | 99 ○ |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.2 | 32 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 1.7 | 54 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 0.9 | 79 ○ |
| 6.3.4 FDI net outflows, % GDP..... | (0.3) | 114 ○ |

7 Creative outputs.....56.5 7 ●

| | | |
|---|---------|------|
| 7.1 Intangible assets..... | 53.3 | 34 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 65.9 | 31 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 1.4 | 23 |
| 7.1.3 ICTs & business model creation [†] | 64.3 | 34 |
| 7.1.4 ICTs & organizational model creation [†] | 69.3 | 17 |
| 7.2 Creative goods & services..... | 44.8 | 7 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.1 | 61 ○ |
| 7.2.2 National feature films/mn pop. 15–69..... | 1.6 | 64 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 68.2 | 3 ● |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 6.1 | 1 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.6 | 51 |
| 7.3 Online creativity..... | 74.4 | 6 ● |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 77.6 | 10 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 73.2 | 14 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 7,868.5 | 9 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 88.6 | 17 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|-------------|
| Population (millions) | 8.5 |
| GDP (US\$ billions) | 437.1 |
| GDP per capita, PPP\$ | 43,796.0 |
| Income group | High income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 54.1 | 18 |
| Innovation Output Sub-Index | 47.2 | 18 |
| Innovation Input Sub-Index | 60.9 | 19 |
| Innovation Efficiency Ratio | 0.8 | 37 |
| Global Innovation Index 2014 (out of 143) | 53.4 | 20 |

| | | | |
|---|-------------|-----------|---|
| 1 Institutions | 88.7 | 12 | ● |
| 1.1 Political environment | 90.5 | 9 | ● |
| 1.1.1 Political stability* | 97.4 | 4 | ● |
| 1.1.2 Government effectiveness* | 83.7 | 15 | |
| 1.2 Regulatory environment | 95.9 | 8 | ● |
| 1.2.1 Regulatory quality* | 87.2 | 17 | |
| 1.2.2 Rule of law* | 96.3 | 6 | ● |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 8.0 | 1 | ● |
| 1.3 Business environment | 79.5 | 31 | |
| 1.3.1 Ease of starting a business* | 83.4 | 82 | ○ |
| 1.3.2 Ease of resolving insolvency* | 78.8 | 15 | |
| 1.3.3 Ease of paying taxes* | 76.4 | 58 | ○ |
| 2 Human capital & research | 57.4 | 8 | ● |
| 2.1 Education | 56.3 | 22 | |
| 2.1.1 Expenditure on education, % GDP | 5.8 | 35 | |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 30.5 | 22 | |
| 2.1.3 School life expectancy, years | 15.7 | 28 | |
| 2.1.4 PISA scales in reading, maths, & science | 500.3 | 18 | |
| 2.1.5 Pupil-teacher ratio, secondary | 9.5 | 23 | |
| 2.2 Tertiary education | 57.5 | 7 | ● |
| 2.2.1 Tertiary enrolment, % gross | 72.4 | 22 | |
| 2.2.2 Graduates in science & engineering, % | 25.4 | 22 | |
| 2.2.3 Tertiary inbound mobility, % | 15.4 | 11 | ● |
| 2.3 Research & development (R&D) | 58.3 | 16 | |
| 2.3.1 Researchers, FTE/mn pop. | 4,699.5 | 11 | ● |
| 2.3.2 Gross expenditure on R&D, % GDP | 2.9 | 9 | ● |
| 2.3.3 QS university ranking, average score top 3* | 49.8 | 26 | |
| 3 Infrastructure | 55.2 | 23 | |
| 3.1 Information & communication technologies (ICTs) | 70.8 | 25 | |
| 3.1.1 ICT access* | 82.8 | 17 | |
| 3.1.2 ICT use* | 62.8 | 22 | |
| 3.1.3 Government's online service* | 74.8 | 23 | |
| 3.1.4 E-participation* | 62.7 | 40 | |
| 3.2 General infrastructure | 42.7 | 33 | |
| 3.2.1 Electricity output, kWh/cap | 7,618.9 | 25 | |
| 3.2.2 Logistics performance* | 75.9 | 21 | |
| 3.2.3 Gross capital formation, % GDP | 20.9 | 74 | ○ |
| 3.3 Ecological sustainability | 52.2 | 21 | |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 9.3 | 35 | |
| 3.3.2 Environmental performance* | 78.3 | 8 | ● |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 2.8 | 38 | |
| 4 Market sophistication | 56.5 | 30 | |
| 4.1 Credit | 48.1 | 28 | |
| 4.1.1 Ease of getting credit* | 60.0 | 48 | |
| 4.1.2 Domestic credit to private sector, % GDP | 112.1 | 26 | |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a | |

| | | | |
|---|------|----|---|
| 4.2 Investment | 32.8 | 79 | ○ |
| 4.2.1 Ease of protecting investors* | 63.3 | 31 | |
| 4.2.2 Market capitalization, % GDP | 26.0 | 61 | ○ |
| 4.2.3 Total value of stocks traded, % GDP | 11.6 | 37 | |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.1 | 26 | |
| 4.3 Trade & competition | 88.5 | 12 | ● |
| 4.3.1 Applied tariff rate, weighted mean, % | 1.0 | 9 | |
| 4.3.2 Intensity of local competition† | 80.3 | 13 | ● |

| | | | |
|--|-------------|-----------|---|
| 5 Business sophistication | 47.0 | 24 | |
| 5.1 Knowledge workers | 56.1 | 27 | |
| 5.1.1 Knowledge-intensive employment, % | 39.8 | 24 | |
| 5.1.2 Firms offering formal training, % firms | n/a | n/a | |
| 5.1.3 GERD performed by business, % of GDP | 2.0 | 10 | |
| 5.1.4 GERD financed by business, % | 44.5 | 28 | |
| 5.1.5 Females employed w/advanced degrees, % total | 10.3 | 62 | ○ |
| 5.2 Innovation linkages | 43.6 | 26 | |
| 5.2.1 University/industry research collaboration† | 61.3 | 23 | |
| 5.2.2 State of cluster development† | 65.8 | 15 | |
| 5.2.3 GERD financed by abroad, % | 16.4 | 27 | |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 64 | ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 1.4 | 12 | ● |
| 5.3 Knowledge absorption | 41.3 | 37 | |
| 5.3.1 Royalty & license fees payments, % total trade | 0.8 | 38 | |
| 5.3.2 High-tech imports less re-imports, % total trade | 8.9 | 49 | |
| 5.3.3 Comm., computer & info. services imp., % total trade | 1.8 | 23 | |
| 5.3.4 FDI net inflows, % GDP | 3.3 | 52 | |

| | | | |
|--|-------------|-----------|---|
| 6 Knowledge & technology outputs | 43.0 | 17 | |
| 6.1 Knowledge creation | 37.9 | 23 | |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | 5.6 | 16 | |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | 3.5 | 14 | |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | 1.5 | 20 | |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 34.6 | 21 | |
| 6.1.5 Citable documents H index | 416.0 | 17 | |
| 6.2 Knowledge impact | 41.3 | 51 | |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | (0.0) | 100 | ○ |
| 6.2.2 New businesses/th pop. 15–64 | 0.5 | 89 | ○ |
| 6.2.3 Computer software spending, % GDP | 0.6 | 13 | |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 11.9 | 34 | |
| 6.2.5 High- & medium-high-tech manufactures, % | 42.4 | 18 | |
| 6.3 Knowledge diffusion | 49.9 | 16 | |
| 6.3.1 Royalty & license fees receipts, % total trade | 0.5 | 24 | |
| 6.3.2 High-tech exports less re-exports, % total trade | 9.0 | 24 | |
| 6.3.3 Comm., computer & info. services exp., % total trade | 2.8 | 20 | |
| 6.3.4 FDI net outflows, % GDP | 3.8 | 17 | |

| | | | |
|---|-------------|-----------|---|
| 7 Creative outputs | 51.3 | 17 | |
| 7.1 Intangible assets | 54.9 | 30 | |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | 69.8 | 26 | |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | 2.5 | 7 | ● |
| 7.1.3 ICTs & business model creation† | 65.4 | 31 | |
| 7.1.4 ICTs & organizational model creation† | 58.5 | 47 | |
| 7.2 Creative goods & services | 33.7 | 31 | |
| 7.2.1 Cultural & creative services exports, % total trade | 0.7 | 26 | |
| 7.2.2 National feature films/mn pop. 15–69 | 7.5 | 25 | |
| 7.2.3 Global ent. & media output/th pop. 15–69 | 55.4 | 9 | |
| 7.2.4 Printing & publishing output manufactures, % | 1.5 | 45 | ○ |
| 7.2.5 Creative goods exports, % total trade | 1.4 | 34 | |
| 7.3 Online creativity | 61.7 | 15 | |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 43.5 | 20 | |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 85.5 | 9 | ● |
| 7.3.3 Wikipedia edits/pop. 15–69 | 4,879.5 | 26 | |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 81.8 | 30 | ○ |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓜ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|----------------------------------|
| Population (millions)..... | 9.5 |
| GDP (US\$ billions)..... | 74.1 |
| GDP per capita, PPP\$..... | 11,675.7 |
| Income group..... | Upper-middle income |
| Region..... | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 30.1 | 93 |
| Innovation Output Sub-Index..... | 22.6 | 103 |
| Innovation Input Sub-Index..... | 37.6 | 89 |
| Innovation Efficiency Ratio..... | 0.6 | 115 |
| Global Innovation Index 2014 (out of 143)..... | 29.6 | 101 |

1 Institutions.....56.2 81

| | | |
|---|------|------|
| 1.1 Political environment..... | 41.6 | 94 |
| 1.1.1 Political stability*..... | 54.0 | 90 |
| 1.1.2 Government effectiveness*..... | 29.1 | 95 |
| 1.2 Regulatory environment..... | 53.0 | 107 |
| 1.2.1 Regulatory quality*..... | 36.5 | 105 |
| 1.2.2 Rule of law*..... | 29.7 | 103 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 21.7 | 101 |
| 1.3 Business environment..... | 74.1 | 51 |
| 1.3.1 Ease of starting a business*..... | 95.5 | 12 ● |
| 1.3.2 Ease of resolving insolvency*..... | 43.0 | 88 |
| 1.3.3 Ease of paying taxes*..... | 83.8 | 30 ● |

2 Human capital & research.....21.9 100

| | | |
|--|------|-------|
| 2.1 Education..... | 31.2 | 114 |
| 2.1.1 Expenditure on education, % GDP..... | 2.4 | 121 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years..... | 11.9 | 92 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a |
| 2.2 Tertiary education..... | 22.1 | 97 |
| 2.2.1 Tertiary enrolment, % gross..... | 20.4 | 90 |
| 2.2.2 Graduates in science & engineering, %..... | 16.2 | 73 |
| 2.2.3 Tertiary inbound mobility, %..... | 2.5 | 59 |
| 2.3 Research & development (R&D)..... | 12.3 | 62 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.2 | 88 |
| 2.3.3 QS university ranking, average score top 3*..... | 19.8 | 54 |

3 Infrastructure.....37.1 78

| | | |
|--|---------|-------|
| 3.1 Information & communication technologies (ICTs)..... | 47.8 | 69 |
| 3.1.1 ICT access*..... | 60.7 | 65 |
| 3.1.2 ICT use*..... | 44.0 | 49 |
| 3.1.3 Government's online service*..... | 43.3 | 76 |
| 3.1.4 E-participation*..... | 43.1 | 76 |
| 3.2 General infrastructure..... | 23.5 | 107 |
| 3.2.1 Electricity output, kWh/cap..... | 2,471.8 | 71 |
| 3.2.2 Logistics performance*..... | 14.7 | 115 ○ |
| 3.2.3 Gross capital formation, % GDP..... | 23.5 | 53 |
| 3.3 Ecological sustainability..... | 40.1 | 59 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 9.6 | 28 ● |
| 3.3.2 Environmental performance*..... | 55.5 | 58 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.4 | 90 |

4 Market sophistication.....52.0 47 ●

| | | |
|---|------|------|
| 4.1 Credit..... | 26.8 | 83 |
| 4.1.1 Ease of getting credit*..... | 40.0 | 93 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 25.5 | 107 |
| 4.1.3 Microfinance gross loans, % GDP..... | 2.8 | 18 ● |

| | | |
|--|------|-------|
| 4.2 Investment..... | 59.2 | 10 |
| 4.2.1 Ease of protecting investors*..... | 59.2 | 49 |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 70.1 | 95 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 4.5 | 76 |
| 4.3.2 Intensity of local competition†..... | 55.8 | 116 ○ |

5 Business sophistication.....20.7 136 ○

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 23.8 | 110 |
| 5.1.1 Knowledge-intensive employment, %..... | 23.4 | 64 |
| 5.1.2 Firms offering formal training, % firms..... | 20.3 | 90 |
| 5.1.3 GERD performed by business, % of GDP..... | 0.0 | 77 |
| 5.1.4 GERD financed by business, %..... | 4.6 | 74 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 12.9 | 49 |
| 5.2 Innovation linkages..... | 17.4 | 133 ○ |
| 5.2.1 University/industry research collaboration†..... | 36.0 | 101 |
| 5.2.2 State of cluster development†..... | 40.1 | 96 |
| 5.2.3 GERD financed by abroad, %..... | 0.2 | 97 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 78 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓞ] | 0.0 | 91 |
| 5.3 Knowledge absorption..... | 21.0 | 134 ○ |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓞ] | 0.1 | 101 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 3.9 | 112 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.5 | 91 |
| 5.3.4 FDI net inflows, % GDP..... | 3.6 | 49 ● |

6 Knowledge & technology outputs.....19.0 108

| | | |
|---|------|-------|
| 6.1 Knowledge creation..... | 2.8 | 130 ○ |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 1.0 | 61 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.0 | 99 ○ |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | 0.1 | 57 ○ |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 2.7 | 120 |
| 6.1.5 Citable documents H index..... | 50.0 | 116 |
| 6.2 Knowledge impact..... | 33.0 | 94 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 2.9 | 31 ● |
| 6.2.2 New businesses/th pop. 15–64..... | 0.7 | 81 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.6 | 102 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 10.9 | 73 |
| 6.3 Knowledge diffusion..... | 21.2 | 107 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓞ] | 0.0 | 114 ○ |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.3 | 92 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 0.4 | 99 |
| 6.3.4 FDI net outflows, % GDP..... | 2.0 | 34 ● |

7 Creative outputs.....26.2 93

| | | |
|--|---------|-------|
| 7.1 Intangible assets..... | 39.8 | 91 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 22.4 | 77 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.2 | 49 |
| 7.1.3 ICTs & business model creation†..... | 63.2 | 40 ● |
| 7.1.4 ICTs & organizational model creation†..... | 62.5 | 26 ● |
| 7.2 Creative goods & services..... | 20.1 | 68 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.0 | 69 |
| 7.2.2 National feature films/mn pop. 15–69..... | 26.1 | 1 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | 0.7 | 83 |
| 7.2.5 Creative goods exports, % total trade..... | 0.0 | 125 ○ |
| 7.3 Online creativity..... | 5.1 | 92 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 1.3 | 100 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 1.4 | 84 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 1,709.4 | 59 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓞ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|----------------------------------|
| Population (millions) | 1.3 |
| GDP (US\$ billions) | 33.9 |
| GDP per capita, PPP\$ | 36,039.2 |
| Income group | High income |
| Region | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 37.7 | 59 |
| Innovation Output Sub-Index | 29.1 | 65 |
| Innovation Input Sub-Index..... | 46.2 | 48 |
| Innovation Efficiency Ratio..... | 0.6 | 105 |
| Global Innovation Index 2014 (out of 143) | 36.3 | 62 |

| | | |
|--|-------------|-----------|
| 1 Institutions..... | 65.3 | 58 |
| 1.1 Political environment..... | 44.1 | 83 |
| 1.1.1 Political stability*..... | 31.0 | 132 ○ |
| 1.1.2 Government effectiveness*..... | 57.2 | 43 |
| 1.2 Regulatory environment | 80.2 | 31 |
| 1.2.1 Regulatory quality*..... | 63.8 | 45 |
| 1.2.2 Rule of law*..... | 57.0 | 51 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.0 | 1 ● |
| 1.3 Business environment..... | 71.7 | 59 |
| 1.3.1 Ease of starting a business*..... | 76.9 | 107 |
| 1.3.2 Ease of resolving insolvency*..... | 44.2 | 82 |
| 1.3.3 Ease of paying taxes*..... | 93.9 | 8 ● |
| 2 Human capital & research..... | 28.4 | 71 |
| 2.1 Education | 44.6 | 70 |
| 2.1.1 Expenditure on education, % GDP | 2.7 | 114 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years..... | n/a | n/a |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 9.8 | 28 |
| 2.2 Tertiary education..... | 33.2 | 65 |
| 2.2.1 Tertiary enrolment, % gross..... | 33.5 | 72 |
| 2.2.2 Graduates in science & engineering, % [ⓐ] | 17.9 | 64 |
| 2.2.3 Tertiary inbound mobility, %..... | 8.5 | 21 |
| 2.3 Research & development (R&D)..... | 7.5 | 74 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.0 | 115 ○ |
| 2.3.3 QS university ranking, average score top 3*..... | 14.3 | 59 |
| 3 Infrastructure..... | 52.5 | 27 |
| 3.1 Information & communication technologies (ICTs)..... | 81.0 | 10 ● |
| 3.1.1 ICT access*..... | 77.2 | 29 |
| 3.1.2 ICT use*..... | 70.6 | 16 ● |
| 3.1.3 Government's online service*..... | 93.7 | 7 ● |
| 3.1.4 E-participation*..... | 82.4 | 14 ● |
| 3.2 General infrastructure..... | 47.7 | 21 ● |
| 3.2.1 Electricity output, kWh/cap..... | 18,765.2 | 4 ● |
| 3.2.2 Logistics performance*..... | 47.0 | 50 |
| 3.2.3 Gross capital formation, % GDP..... | 18.9 | 102 |
| 3.3 Ecological sustainability | 28.8 | 100 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 3.8 | 112 ○ |
| 3.3.2 Environmental performance*..... | 51.8 | 73 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 1.1 | 64 |
| 4 Market sophistication | 46.8 | 71 |
| 4.1 Credit..... | 30.9 | 70 |
| 4.1.1 Ease of getting credit*..... | 40.0 | 93 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 69.1 | 51 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|------|-----|
| 4.2 Investment | 33.2 | 77 |
| 4.2.1 Ease of protecting investors*..... | 50.0 | 91 |
| 4.2.2 Market capitalization, % GDP..... | 52.2 | 36 |
| 4.2.3 Total value of stocks traded, % GDP..... | 1.0 | 65 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition | 76.3 | 68 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 5.7 | 89 |
| 4.3.2 Intensity of local competition [†] | 72.6 | 44 |

| | | |
|---|-------------|-----------|
| 5 Business sophistication | 38.1 | 48 |
| 5.1 Knowledge workers..... | n/a | n/a |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages | 47.3 | 19 ● |
| 5.2.1 University/industry research collaboration [†] | 37.9 | 87 |
| 5.2.2 State of cluster development [†] | 55.6 | 31 |
| 5.2.3 GERD financed by abroad, %..... | 30.4 | 15 ● |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.1 | 1 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [ⓐ] | 0.0 | 75 |
| 5.3 Knowledge absorption..... | 28.9 | 96 |
| 5.3.1 Royalty & license fees payments, % total trade..... | n/a | n/a |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 4.2 | 109 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP..... | 3.0 | 65 |

| | | |
|---|-------------|-----------|
| 6 Knowledge & technology outputs | 25.0 | 75 |
| 6.1 Knowledge creation..... | 1.9 | 137 ○ |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 0.1 | 106 ○ |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.0 | 85 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 2.6 | 121 ○ |
| 6.1.5 Citable documents H index..... | 43.0 | 122 ○ |
| 6.2 Knowledge impact..... | 34.5 | 86 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 1.5 | 61 |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 27 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 4.8 | 64 |
| 6.2.5 High- & medium-high-tech manufactures, % [ⓐ] | 9.9 | 78 |
| 6.3 Knowledge diffusion..... | 38.6 | 36 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.0 | 123 ○ |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | 3.2 | 21 ● |

| | | |
|---|-------------|-----------|
| 7 Creative outputs | 33.2 | 65 |
| 7.1 Intangible assets..... | 42.8 | 84 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 7.4 | 97 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 64.2 | 36 |
| 7.1.4 ICTs & organizational model creation [†] | 61.6 | 30 |
| 7.2 Creative goods & services..... | 23.2 | 56 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | 34.8 | 1 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 8.5 | 38 |
| 7.2.4 Printing & publishing output manufactures, % [ⓐ] | 1.0 | 72 |
| 7.2.5 Creative goods exports, % total trade [ⓐ] | 0.0 | 126 ○ |
| 7.3 Online creativity..... | 24.0 | 54 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 6.7 | 54 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 1.8 | 74 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 1,547.7 | 64 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 75.9 | 44 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------------|
| Population (millions) | 158.5 |
| GDP (US\$ billions) | 185.4 |
| GDP per capita, PPP\$ | 2,215.6 |
| Income group | Low income |
| Region | Central and Southern Asia |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|------------|
| Global Innovation Index (out of 141) | 23.7 | 129 |
| Innovation Output Sub-Index | 17.9 | 126 |
| Innovation Input Sub-Index..... | 29.5 | 129 |
| Innovation Efficiency Ratio..... | 0.6 | 112 |
| Global Innovation Index 2014 (out of 143) | 24.4 | 129 |

1 Institutions.....40.9 129

| | | |
|---|------|-------|
| 1.1 Political environment..... | 21.8 | 133 |
| 1.1.1 Political stability*..... | 24.3 | 134 ○ |
| 1.1.2 Government effectiveness*..... | 19.2 | 119 |
| 1.2 Regulatory environment | 39.4 | 129 |
| 1.2.1 Regulatory quality*..... | 23.1 | 124 |
| 1.2.2 Rule of law*..... | 25.5 | 115 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 31.0 | 129 |
| 1.3 Business environment..... | 61.6 | 97 |
| 1.3.1 Ease of starting a business*..... | 81.4 | 94 |
| 1.3.2 Ease of resolving insolvency*..... | 29.5 | 124 |
| 1.3.3 Ease of paying taxes*..... | 74.0 | 65 ● |

2 Human capital & research.....14.5 126

| | | |
|--|------|-------|
| 2.1 Education | 20.7 | 135 ○ |
| 2.1.1 Expenditure on education, % GDP [Ⓔ] | 2.2 | 123 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 13.9 | 88 |
| 2.1.3 School life expectancy, years [Ⓔ] | 10.0 | 116 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 32.2 | 111 |
| 2.2 Tertiary education..... | 17.3 | 108 |
| 2.2.1 Tertiary enrolment, % gross..... | 13.2 | 103 |
| 2.2.2 Graduates in science & engineering, %..... | 15.6 | 80 |
| 2.2.3 Tertiary inbound mobility, % [Ⓔ] | 0.1 | 111 ○ |
| 2.3 Research & development (R&D)..... | 5.6 | 80 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP..... | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3*..... | 5.6 | 67 |

3 Infrastructure.....27.3 109

| | | |
|--|-------|-------|
| 3.1 Information & communication technologies (ICTs)..... | 25.6 | 112 |
| 3.1.1 ICT access*..... | 25.7 | 124 |
| 3.1.2 ICT use*..... | 2.7 | 128 |
| 3.1.3 Government's online service*..... | 34.6 | 92 |
| 3.1.4 E-participation*..... | 39.2 | 82 |
| 3.2 General infrastructure..... | 28.3 | 78 |
| 3.2.1 Electricity output, kWh/cap..... | 317.0 | 109 |
| 3.2.2 Logistics performance*..... | 20.5 | 101 |
| 3.2.3 Gross capital formation, % GDP..... | 29.2 | 24 ● |
| 3.3 Ecological sustainability | 28.0 | 106 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 9.8 | 26 ● |
| 3.3.2 Environmental performance*..... | 25.6 | 136 ○ |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.1 | 125 |

4 Market sophistication.....39.0 115

| | | |
|---|------|------|
| 4.1 Credit..... | 23.0 | 99 |
| 4.1.1 Ease of getting credit*..... | 30.0 | 113 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 41.8 | 81 |
| 4.1.3 Microfinance gross loans, % GDP..... | 2.2 | 24 ● |

| | | |
|--|------|-------|
| 4.2 Investment | 34.3 | 74 |
| 4.2.1 Ease of protecting investors*..... | 60.8 | 41 ● |
| 4.2.2 Market capitalization, % GDP..... | 13.1 | 80 |
| 4.2.3 Total value of stocks traded, % GDP..... | 9.4 | 40 ● |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition | 59.8 | 129 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 13.0 | 133 ○ |
| 4.3.2 Intensity of local competition [†] | 65.4 | 76 |

5 Business sophistication.....25.6 122

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 28.7 | 97 |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 20.0 | 73 |
| 5.1.2 Firms offering formal training, % firms..... | 21.9 | 87 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages | 25.2 | 100 |
| 5.2.1 University/industry research collaboration [†] | 26.0 | 126 |
| 5.2.2 State of cluster development [†] | 47.5 | 63 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 73 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 108 ○ |
| 5.3 Knowledge absorption..... | 23.0 | 126 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 0.0 | 113 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 9.4 | 41 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 0.1 | 121 ○ |
| 5.3.4 FDI net inflows, % GDP..... | 1.2 | 108 |

6 Knowledge & technology outputs.....17.6 116

| | | |
|---|-------|-------|
| 6.1 Knowledge creation..... | 5.1 | 103 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 0.1 | 97 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 2.8 | 117 |
| 6.1.5 Citable documents H index..... | 112.0 | 65 ● |
| 6.2 Knowledge impact..... | 29.4 | 106 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 3.4 | 24 ● |
| 6.2.2 New businesses/th pop. 15–64..... | 0.1 | 101 ○ |
| 6.2.3 Computer software spending, % GDP..... | 0.2 | 72 ○ |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.5 | 123 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 10.9 | 74 |
| 6.3 Knowledge diffusion..... | 18.3 | 117 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓔ] | 0.0 | 110 ○ |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.1 | 102 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 1.3 | 69 |
| 6.3.4 FDI net outflows, % GDP..... | 0.0 | 103 |

7 Creative outputs.....18.3 124

| | | |
|---|-------|------|
| 7.1 Intangible assets..... | 32.0 | 126 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 16.1 | 92 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 45.7 | 109 |
| 7.1.4 ICTs & organizational model creation [†] | 42.5 | 107 |
| 7.2 Creative goods & services..... | 8.7 | 102 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.0 | 86 ○ |
| 7.2.2 National feature films/mn pop. 15–69..... | 0.5 | 94 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 1.5 | 46 ● |
| 7.2.5 Creative goods exports, % total trade [Ⓔ] | 0.1 | 98 |
| 7.3 Online creativity..... | 0.4 | 118 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.4 | 120 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.0 | 132 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 121.6 | 111 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------------------|
| Population (millions) | 0.3 |
| GDP (US\$ billions) | 4.3 |
| GDP per capita, PPP\$ | 25,193.3 |
| Income group | High income |
| Region | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 42.5 | 37 |
| Innovation Output Sub-Index | 38.0 | 36 |
| Innovation Input Sub-Index | 46.9 | 46 |
| Innovation Efficiency Ratio | 0.8 | 25 |
| Global Innovation Index 2014 (out of 143) | 40.8 | 41 |

| | | | |
|----------|--|-------------|------------|
| 1 | Institutions | 79.8 | 27 |
| 1.1 | Political environment | 86.9 | 15 ● |
| 1.1.1 | Political stability* | 96.1 | 8 ● |
| 1.1.2 | Government effectiveness* | 77.8 | 23 ● |
| 1.2 | Regulatory environment | 75.4 | 41 |
| 1.2.1 | Regulatory quality* | 59.2 | 54 |
| 1.2.2 | Rule of law* | 74.2 | 28 |
| 1.2.3 | Cost of redundancy dismissal, salary weeks | 16.0 | 73 |
| 1.3 | Business environment | 77.1 | 36 |
| 1.3.1 | Ease of starting a business* | 84.4 | 77 |
| 1.3.2 | Ease of resolving insolvency* | 74.1 | 24 ● |
| 1.3.3 | Ease of paying taxes* | 73.0 | 74 |
| 2 | Human capital & research | 30.5 | 62 |
| 2.1 | Education | 49.9 | 52 |
| 2.1.1 | Expenditure on education, % GDP | 5.6 | 39 |
| 2.1.2 | Gov't expenditure/pupil, secondary, % GDP/cap [Ⓓ] | 25.0 | 39 |
| 2.1.3 | School life expectancy, years [Ⓓ] | 15.4 | 34 |
| 2.1.4 | PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 | Pupil-teacher ratio, secondary [Ⓓ] | 14.6 | 60 |
| 2.2 | Tertiary education | 41.5 | 39 |
| 2.2.1 | Tertiary enrolment, % gross [Ⓓ] | 60.8 | 40 |
| 2.2.2 | Graduates in science & engineering, % [Ⓓ] | 15.0 | 83 ○ |
| 2.2.3 | Tertiary inbound mobility, % [Ⓓ] | 13.8 | 12 ● |
| 2.3 | Research & development (R&D) | - | 128 ○ |
| 2.3.1 | Researchers, FTE/mn pop. | n/a | n/a |
| 2.3.2 | Gross expenditure on R&D, % GDP | n/a | n/a |
| 2.3.3 | QS university ranking, average score top 3* | - | 73 ○ |
| 3 | Infrastructure | 29.2 | 100 |
| 3.1 | Information & communication technologies (ICTs) | 40.6 | 83 |
| 3.1.1 | ICT access* | 78.6 | 24 |
| 3.1.2 | ICT use* | 52.0 | 37 |
| 3.1.3 | Government's online service* | 22.0 | 119 ○ |
| 3.1.4 | E-participation* | 9.8 | 133 ○ |
| 3.2 | General infrastructure | 13.6 | 134 ○ |
| 3.2.1 | Electricity output, kWh/cap | n/a | n/a |
| 3.2.2 | Logistics performance* | n/a | n/a |
| 3.2.3 | Gross capital formation, % GDP | 14.5 | 127 ○ |
| 3.3 | Ecological sustainability | 33.3 | 86 |
| 3.3.1 | GDP/unit of energy use, 2005 PPP\$/kg oil eq | n/a | n/a |
| 3.3.2 | Environmental performance* | 45.5 | 93 |
| 3.3.3 | ISO 14001 environmental certificates/bn PPP\$ GDP | 1.1 | 62 |
| 4 | Market sophistication | 41.5 | 105 |
| 4.1 | Credit | 30.3 | 72 |
| 4.1.1 | Ease of getting credit* | 35.0 | 102 ○ |
| 4.1.2 | Domestic credit to private sector, % GDP [Ⓓ] | 80.6 | 39 |
| 4.1.3 | Microfinance gross loans, % GDP | n/a | n/a |

| | | | |
|-------|--|-------|-------|
| 4.2 | Investment | 31.9 | 85 |
| 4.2.1 | Ease of protecting investors* | 30.8 | 138 ○ |
| 4.2.2 | Market capitalization, % GDP | 106.4 | 11 ● |
| 4.2.3 | Total value of stocks traded, % GDP | 0.4 | 80 |
| 4.2.4 | Venture capital deals/tr PPP\$ GDP | n/a | n/a |
| 4.3 | Trade & competition | 62.2 | 122 ○ |
| 4.3.1 | Applied tariff rate, weighted mean, % [Ⓓ] | 14.8 | 135 ○ |
| 4.3.2 | Intensity of local competition [†] | 76.4 | 26 |

| | | | |
|----------|---|-------------|-----------|
| 5 | Business sophistication | 53.8 | 12 |
| 5.1 | Knowledge workers | 47.0 | 41 |
| 5.1.1 | Knowledge-intensive employment, % | 30.9 | 46 |
| 5.1.2 | Firms offering formal training, % firms [Ⓓ] | 35.5 | 50 |
| 5.1.3 | GERD performed by business, % of GDP | n/a | n/a |
| 5.1.4 | GERD financed by business, % | n/a | n/a |
| 5.1.5 | Females employed w/advanced degrees, % total | n/a | n/a |
| 5.2 | Innovation linkages | 60.5 | 4 ● |
| 5.2.1 | University/industry research collaboration [†] | 49.9 | 41 |
| 5.2.2 | State of cluster development [†] | 46.1 | 71 |
| 5.2.3 | GERD financed by abroad, % | n/a | n/a |
| 5.2.4 | JV-strategic alliance deals/tr PPP\$ GDP | n/a | n/a |
| 5.2.5 | Patent families 3+ offices/bn PPP\$ GDP | 6.7 | 1 ● |
| 5.3 | Knowledge absorption | 53.7 | 8 ● |
| 5.3.1 | Royalty & license fees payments, % total trade [Ⓓ] | 0.9 | 34 |
| 5.3.2 | High-tech imports less re-imports, % total trade | n/a | n/a |
| 5.3.3 | Comm., computer & info. services imp., % total trade [Ⓓ] | 1.9 | 20 ● |
| 5.3.4 | FDI net inflows, % GDP [Ⓓ] | 12.2 | 8 ● |

| | | | |
|----------|---|-------------|-------------|
| 6 | Knowledge & technology outputs | 42.4 | 18 ● |
| 6.1 | Knowledge creation | 32.7 | 30 |
| 6.1.1 | Domestic resident patent app/bn PPP\$ GDP | 0.7 | 71 |
| 6.1.2 | PCT resident patent app/bn PPP\$ GDP | 38.8 | 1 ● |
| 6.1.3 | Domestic res utility model app/bn PPP\$ GDP | n/a | n/a |
| 6.1.4 | Scientific & technical articles/bn PPP\$ GDP | 14.2 | 52 |
| 6.1.5 | Citable documents H index | 55.0 | 113 ○ |
| 6.2 | Knowledge impact | 36.5 | 73 |
| 6.2.1 | Growth rate of PPP\$ GDP/worker, % | (1.0) | 110 ○ |
| 6.2.2 | New businesses/th pop. 15–64 | n/a | n/a |
| 6.2.3 | Computer software spending, % GDP | n/a | n/a |
| 6.2.4 | ISO 9001 quality certificates/bn PPP\$ GDP | 10.3 | 40 |
| 6.2.5 | High- & medium-high-tech manufactures, % | n/a | n/a |
| 6.3 | Knowledge diffusion | 58.0 | 8 ● |
| 6.3.1 | Royalty & license fees receipts, % total trade [Ⓓ] | 0.2 | 42 |
| 6.3.2 | High-tech exports less re-exports, % total trade | n/a | n/a |
| 6.3.3 | Comm., computer & info. services exp., % total trade [Ⓓ] | 1.8 | 47 |
| 6.3.4 | FDI net outflows, % GDP [Ⓓ] | 7.7 | 7 ● |

| | | | |
|----------|---|-------------|-----------|
| 7 | Creative outputs | 33.6 | 63 |
| 7.1 | Intangible assets | 44.3 | 75 |
| 7.1.1 | Domestic res trademark app/bn PPP\$ GDP | 49.7 | 53 |
| 7.1.2 | Madrid trademark app. holders/bn PPP\$ GDP | n/a | n/a |
| 7.1.3 | ICTs & business model creation [†] | 53.5 | 76 |
| 7.1.4 | ICTs & organizational model creation [†] | 52.3 | 68 |
| 7.2 | Creative goods & services | n/a | n/a |
| 7.2.1 | Cultural & creative services exports, % total trade | n/a | n/a |
| 7.2.2 | National feature films/mn pop. 15–69 | n/a | n/a |
| 7.2.3 | Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 | Printing & publishing output manufactures, % | n/a | n/a |
| 7.2.5 | Creative goods exports, % total trade | n/a | n/a |
| 7.3 | Online creativity | 12.2 | 76 |
| 7.3.1 | Generic top-level domains (TLDs)/th pop. 15–69 | 19.3 | 31 |
| 7.3.2 | Country-code TLDs/th pop. 15–69 | 1.7 | 77 |
| 7.3.3 | Wikipedia edits/pop. 15–69 | 2,125.3 | 51 |
| 7.3.4 | Video uploads on YouTube/pop. 15–69 | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓓ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------|
| Population (millions)..... | 9.3 |
| GDP (US\$ billions)..... | 76.1 |
| GDP per capita, PPP\$..... | 16,327.4 |
| Income group..... | Upper-middle income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 38.2 | 53 |
| Innovation Output Sub-Index..... | 31.5 | 58 |
| Innovation Input Sub-Index..... | 44.9 | 55 |
| Innovation Efficiency Ratio..... | 0.7 | 73 |
| Global Innovation Index 2014 (out of 143)..... | 37.1 | 58 |

| | | |
|--|-------------|-------------|
| 1 Institutions..... | 53.2 | 94 |
| 1.1 Political environment..... | 39.7 | 101 |
| 1.1.1 Political stability*..... | 63.5 | 66 |
| 1.1.2 Government effectiveness*..... | 15.9 | 127 ○ |
| 1.2 Regulatory environment..... | 47.1 | 118 ○ |
| 1.2.1 Regulatory quality*..... | 18.7 | 132 ○ |
| 1.2.2 Rule of law*..... | 24.0 | 119 ○ |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 21.7 | 101 ○ |
| 1.3 Business environment..... | 72.8 | 55 |
| 1.3.1 Ease of starting a business*..... | 91.9 | 35 |
| 1.3.2 Ease of resolving insolvency*..... | 48.2 | 65 |
| 1.3.3 Ease of paying taxes*..... | 78.3 | 50 |
| 2 Human capital & research..... | 43.0 | 32 ● |
| 2.1 Education..... | 63.2 | 7 ● |
| 2.1.1 Expenditure on education, % GDP..... | 5.1 | 53 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years..... | 15.7 | 29 ● |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 7.8 | 2 ● |
| 2.2 Tertiary education..... | 49.9 | 18 ● |
| 2.2.1 Tertiary enrolment, % gross..... | 92.9 | 5 ● |
| 2.2.2 Graduates in science & engineering, %..... | 27.2 | 17 ● |
| 2.2.3 Tertiary inbound mobility, %..... | 2.4 | 60 |
| 2.3 Research & development (R&D)..... | 15.8 | 53 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.7 | 49 |
| 2.3.3 QS university ranking, average score top 3*..... | 15.5 | 57 |
| 3 Infrastructure..... | 42.0 | 60 |
| 3.1 Information & communication technologies (ICTs)..... | 47.8 | 67 |
| 3.1.1 ICT access*..... | 73.9 | 35 |
| 3.1.2 ICT use*..... | 49.9 | 38 |
| 3.1.3 Government's online service*..... | 32.3 | 95 |
| 3.1.4 E-participation*..... | 35.3 | 88 |
| 3.2 General infrastructure..... | 42.3 | 36 |
| 3.2.1 Electricity output, kWh/cap..... | 3,255.7 | 58 |
| 3.2.2 Logistics performance*..... | 24.3 | 94 |
| 3.2.3 Gross capital formation, % GDP..... | 37.7 | 8 ● |
| 3.3 Ecological sustainability..... | 35.7 | 79 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 4.7 | 102 ○ |
| 3.3.2 Environmental performance*..... | 67.7 | 32 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.4 | 88 |
| 4 Market sophistication..... | 56.1 | 32 ● |
| 4.1 Credit..... | 23.3 | 97 |
| 4.1.1 Ease of getting credit*..... | 40.0 | 93 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 24.1 | 110 ○ |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|------|-----|
| 4.2 Investment..... | 51.7 | 23 |
| 4.2.1 Ease of protecting investors*..... | 51.7 | 83 |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 93.3 | 2 ● |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 2.0 | 45 |
| 4.3.2 Intensity of local competition [†] | n/a | n/a |

| | | |
|---|-------------|-----------|
| 5 Business sophistication..... | 30.3 | 94 |
| 5.1 Knowledge workers..... | 59.6 | 23 ● |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 35.9 | 33 |
| 5.1.2 Firms offering formal training, % firms..... | 51.1 | 25 ● |
| 5.1.3 GERD performed by business, % of GDP..... | 0.4 | 35 |
| 5.1.4 GERD financed by business, %..... | 43.8 | 32 |
| 5.1.5 Females employed w/advanced degrees, % total [Ⓔ] | 33.8 | 1 ● |
| 5.2 Innovation linkages..... | 8.1 | 137 ○ |
| 5.2.1 University/industry research collaboration [†] | n/a | n/a |
| 5.2.2 State of cluster development [†] | n/a | n/a |
| 5.2.3 GERD financed by abroad, %..... | 7.9 | 49 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 61 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓔ] | 0.0 | 76 |
| 5.3 Knowledge absorption..... | 23.2 | 125 ○ |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.3 | 73 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 5.7 | 88 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.4 | 99 ○ |
| 5.3.4 FDI net inflows, % GDP..... | 3.1 | 63 |

| | | |
|---|-------------|-------------|
| 6 Knowledge & technology outputs..... | 37.1 | 32 ● |
| 6.1 Knowledge creation..... | 48.2 | 15 ● |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 8.9 | 7 ● |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.1 | 66 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | 6.3 | 1 ● |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 6.3 | 90 |
| 6.1.5 Citable documents H index..... | 114.0 | 63 |
| 6.2 Knowledge impact..... | 38.9 | 61 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 2.8 | 35 |
| 6.2.2 New businesses/th pop. 15–64..... | 1.1 | 63 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.8 | 118 ○ |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 31.4 | 35 |
| 6.3 Knowledge diffusion..... | 24.1 | 90 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.1 | 65 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 1.8 | 52 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.7 | 54 |
| 6.3.4 FDI net outflows, % GDP..... | 0.4 | 72 |

| | | |
|--|-------------|-----------|
| 7 Creative outputs..... | 26.0 | 94 |
| 7.1 Intangible assets..... | 44.9 | 70 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 97.0 | 14 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 1.1 | 28 |
| 7.1.3 ICTs & business model creation [†] | n/a | n/a |
| 7.1.4 ICTs & organizational model creation [†] | n/a | n/a |
| 7.2 Creative goods & services..... | 6.6 | 113 ○ |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.0 | 72 ○ |
| 7.2.2 National feature films/mn pop. 15–69..... | 0.6 | 91 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 0.4 | 65 |
| 7.3 Online creativity..... | 7.7 | 84 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 2.0 | 88 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 7.3 | 47 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 1,864.6 | 57 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|-------------|
| Population (millions) | 11.1 |
| GDP (US\$ billions) | 534.7 |
| GDP per capita, PPP\$ | 38,826.5 |
| Income group | High income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 50.9 | 25 |
| Innovation Output Sub-Index | 43.2 | 28 |
| Innovation Input Sub-Index..... | 58.6 | 21 |
| Innovation Efficiency Ratio..... | 0.7 | 59 |
| Global Innovation Index 2014 (out of 143) | 51.7 | 23 |
| 1 Institutions..... | 83.3 | 19 |
| 1.1 Political environment..... | 85.6 | 17 |
| 1.1.1 Political stability*..... | 86.8 | 27 |
| 1.1.2 Government effectiveness*..... | 84.4 | 14 ● |
| 1.2 Regulatory environment | 80.2 | 30 |
| 1.2.1 Regulatory quality*..... | 82.2 | 19 |
| 1.2.2 Rule of law*..... | 85.0 | 20 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 19.7 | 90 ○ |
| 1.3 Business environment..... | 84.2 | 18 |
| 1.3.1 Ease of starting a business*..... | 94.4 | 14 ● |
| 1.3.2 Ease of resolving insolvency*..... | 83.9 | 10 ● |
| 1.3.3 Ease of paying taxes*..... | 74.2 | 63 |
| 2 Human capital & research..... | 51.4 | 18 |
| 2.1 Education..... | 57.1 | 19 |
| 2.1.1 Expenditure on education, % GDP..... | 6.5 | 22 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 38.6 | 8 ● |
| 2.1.3 School life expectancy, years..... | 16.3 | 18 |
| 2.1.4 PISA scales in reading, maths, & science..... | 509.8 | 15 |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a |
| 2.2 Tertiary education..... | 40.2 | 44 |
| 2.2.1 Tertiary enrolment, % gross..... | 70.8 | 24 |
| 2.2.2 Graduates in science & engineering, %..... | 16.4 | 72 ○ |
| 2.2.3 Tertiary inbound mobility, %..... | 9.0 | 18 |
| 2.3 Research & development (R&D)..... | 56.8 | 17 |
| 2.3.1 Researchers, FTE/mn pop..... | 4,020.8 | 21 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 2.4 | 13 |
| 2.3.3 QS university ranking, average score top 3*..... | 66.3 | 15 |
| 3 Infrastructure..... | 52.5 | 28 |
| 3.1 Information & communication technologies (ICTs)..... | 68.7 | 29 |
| 3.1.1 ICT access*..... | 82.6 | 18 |
| 3.1.2 ICT use*..... | 61.8 | 25 |
| 3.1.3 Government's online service*..... | 67.7 | 31 |
| 3.1.4 E-participation*..... | 62.7 | 40 |
| 3.2 General infrastructure..... | 46.8 | 25 |
| 3.2.1 Electricity output, kWh/cap..... | 7,430.5 | 28 |
| 3.2.2 Logistics performance*..... | 96.1 | 3 ● |
| 3.2.3 Gross capital formation, % GDP..... | 20.3 | 82 ○ |
| 3.3 Ecological sustainability..... | 41.9 | 51 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.5 | 80 ○ |
| 3.3.2 Environmental performance*..... | 66.6 | 36 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 2.5 | 42 |
| 4 Market sophistication..... | 54.9 | 35 |
| 4.1 Credit..... | 36.8 | 50 |
| 4.1.1 Ease of getting credit*..... | 45.0 | 80 ○ |
| 4.1.2 Domestic credit to private sector, % GDP..... | 89.4 | 36 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|-------------|-------------|
| 4.2 Investment..... | 37.5 | 61 |
| 4.2.1 Ease of protecting investors*..... | 61.7 | 38 |
| 4.2.2 Market capitalization, % GDP..... | 60.1 | 31 |
| 4.2.3 Total value of stocks traded, % GDP..... | 20.7 | 29 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.1 | 28 |
| 4.3 Trade & competition..... | 90.4 | 6 ● |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition [†] | 84.1 | 5 ● |
| 5 Business sophistication..... | 51.0 | 14 ● |
| 5.1 Knowledge workers..... | 68.9 | 8 ● |
| 5.1.1 Knowledge-intensive employment, %..... | 44.4 | 12 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP..... | 1.6 | 12 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 60.2 | 12 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 23.2 | 12 |
| 5.2 Innovation linkages..... | 43.4 | 27 |
| 5.2.1 University/industry research collaboration [†] | 76.3 | 6 ● |
| 5.2.2 State of cluster development [†] | 61.6 | 20 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 13.0 | 36 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 40 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.8 | 18 |
| 5.3 Knowledge absorption..... | 40.8 | 39 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.7 | 45 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 9.6 | 38 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 2.0 | 18 |
| 5.3.4 FDI net inflows, % GDP..... | (0.6) | 133 ○ |
| 6 Knowledge & technology outputs..... | 36.1 | 36 |
| 6.1 Knowledge creation..... | 39.0 | 22 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 1.5 | 57 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 2.5 | 18 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 40.5 | 15 |
| 6.1.5 Citable documents H index..... | 502.0 | 13 ● |
| 6.2 Knowledge impact..... | 41.9 | 50 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.0 | 98 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 2.5 | 42 |
| 6.2.3 Computer software spending, % GDP..... | 0.7 | 6 ● |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 8.1 | 45 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 35.0 | 29 |
| 6.3 Knowledge diffusion..... | 27.3 | 70 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.8 | 18 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 10.0 | 21 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 2.7 | 24 |
| 6.3.4 FDI net outflows, % GDP..... | (4.9) | 123 ○ |
| 7 Creative outputs..... | 50.4 | 20 |
| 7.1 Intangible assets..... | 50.8 | 43 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 45.5 | 57 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 1.6 | 18 |
| 7.1.3 ICTs & business model creation [†] | 68.0 | 23 |
| 7.1.4 ICTs & organizational model creation [†] | 66.2 | 23 |
| 7.2 Creative goods & services..... | 39.4 | 19 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 1.4 | 5 ● |
| 7.2.2 National feature films/mn pop. 15–69..... | 9.0 | 19 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 46.2 | 15 |
| 7.2.4 Printing & publishing output manufactures, %..... | 1.4 | 54 ○ |
| 7.2.5 Creative goods exports, % total trade..... | 1.8 | 23 |
| 7.3 Online creativity..... | 60.4 | 16 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 25.8 | 26 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 80.7 | 11 ● |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 6,650.7 | 17 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 86.0 | 23 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------------|
| Population (millions)..... | 0.8 |
| GDP (US\$ billions)..... | 2.1 |
| GDP per capita, PPP\$..... | 6,864.3 |
| Income group..... | Lower-middle income |
| Region..... | Central and Southern Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 26.1 | 121 |
| Innovation Output Sub-Index..... | 12.9 | 135 ○ |
| Innovation Input Sub-Index..... | 39.2 | 82 |
| Innovation Efficiency Ratio..... | 0.3 | 138 ○ |
| Global Innovation Index 2014 (out of 143)..... | 31.8 | 86 |

| | | |
|--|-------------|-------------|
| 1 Institutions..... | 62.7 | 63 ● |
| 1.1 Political environment..... | 67.5 | 44 ● |
| 1.1.1 Political stability*..... | 83.9 | 34 ● |
| 1.1.2 Government effectiveness*..... | 51.1 | 51 ● |
| 1.2 Regulatory environment..... | 67.9 | 64 ● |
| 1.2.1 Regulatory quality*..... | 18.6 | 133 ○ |
| 1.2.2 Rule of law*..... | 54.1 | 55 ● |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.3 | 19 ● |
| 1.3 Business environment..... | 52.9 | 126 |
| 1.3.1 Ease of starting a business*..... | 85.0 | 76 |
| 1.3.2 Ease of resolving insolvency*..... | 0.0 | 139 ○ |
| 1.3.3 Ease of paying taxes*..... | 73.6 | 68 ● |
| 2 Human capital & research..... | 17.5 | 114 |
| 2.1 Education..... | 45.0 | 69 |
| 2.1.1 Expenditure on education, % GDP..... | 5.5 | 41 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 33.6 | 13 ● |
| 2.1.3 School life expectancy, years..... | 12.6 | 83 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 19.9 | 83 |
| 2.2 Tertiary education..... | 7.4 | 129 |
| 2.2.1 Tertiary enrolment, % gross..... | 9.4 | 114 |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 0.0 | 128 ○ |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP..... | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 41.8 | 61 ● |
| 3.1 Information & communication technologies (ICTs)..... | 27.1 | 109 |
| 3.1.1 ICT access*..... | 31.8 | 113 |
| 3.1.2 ICT use*..... | 16.7 | 97 |
| 3.1.3 Government's online service*..... | 24.4 | 113 |
| 3.1.4 E-participation*..... | 35.3 | 88 |
| 3.2 General infrastructure..... | 64.8 | 4 ● |
| 3.2.1 Electricity output, kWh/cap..... | n/a | n/a |
| 3.2.2 Logistics performance*..... | 6.6 | 125 ○ |
| 3.2.3 Gross capital formation, % GDP..... | 51.5 | 2 ● |
| 3.3 Ecological sustainability..... | 33.6 | 85 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | n/a | n/a |
| 3.3.2 Environmental performance*..... | 46.9 | 91 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.9 | 68 |
| 4 Market sophistication..... | 48.2 | 63 ● |
| 4.1 Credit..... | 45.6 | 32 |
| 4.1.1 Ease of getting credit*..... | 50.0 | 65 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 46.1 | 72 |
| 4.1.3 Microfinance gross loans, % GDP [Ⓔ] | 6.1 | 5 ● |

| | | |
|--|------|-------|
| 4.2 Investment..... | 50.0 | 29 |
| 4.2.1 Ease of protecting investors*..... | 50.0 | 91 |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 48.8 | 138 ○ |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 17.8 | 137 ○ |
| 4.3.2 Intensity of local competition [†] | 60.2 | 102 |

5 Business sophistication.....25.7 121

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 21.9 | 115 |
| 5.1.1 Knowledge-intensive employment, %..... | 16.5 | 88 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 23.3 | 83 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | 1.1 | 83 ○ |
| 5.2 Innovation linkages..... | 38.0 | 51 ● |
| 5.2.1 University/industry research collaboration [†] | 28.1 | 122 |
| 5.2.2 State of cluster development [†] | 42.9 | 80 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a |
| 5.3 Knowledge absorption..... | 17.3 | 139 ○ |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.0 | 122 ○ |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 3.3 | 119 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.4 | 103 |
| 5.3.4 FDI net inflows, % GDP..... | 1.1 | 110 |

6 Knowledge & technology outputs.....2.6 141 ○

| | | |
|---|------|-------|
| 6.1 Knowledge creation..... | 5.2 | 102 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 0.6 | 74 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 7.3 | 79 |
| 6.1.5 Citable documents H index..... | 20.0 | 140 ○ |
| 6.2 Knowledge impact..... | 2.4 | 138 ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | 0.2 | 97 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.7 | 100 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 0.3 | 138 ○ |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.0 | 105 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.0 | 124 ○ |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | n/a | n/a |

7 Creative outputs.....23.3 107

| | | |
|--|-------|-------|
| 7.1 Intangible assets..... | 29.0 | 130 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 2.9 | 102 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 45.4 | 111 |
| 7.1.4 ICTs & organizational model creation [†] | 41.4 | 112 |
| 7.2 Creative goods & services..... | 33.6 | 32 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓔ] | 58.5 | 1 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade [Ⓔ] | 0.0 | 120 |
| 7.3 Online creativity..... | 1.5 | 111 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 2.4 | 82 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.9 | 87 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 178.9 | 109 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Bolivia, Plurinational State of

Key indicators

| | |
|-----------------------------|---------------------------------|
| Population (millions) | 10.8 |
| GDP (US\$ billions) | 34.4 |
| GDP per capita, PPP\$ | 5,616.5 |
| Income group | Lower-middle income |
| Region | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|--------------|
| Global Innovation Index (out of 141)..... | 28.6 | 104 |
| Innovation Output Sub-Index | 24.7 | 92 |
| Innovation Input Sub-Index | 32.5 | 118 |
| Innovation Efficiency Ratio | 0.8 | 45 ● |
| Global Innovation Index 2014 (out of 143) | 27.8 | 111 |
| 1 Institutions..... | 30.9 | 139 ○ |
| 1.1 Political environment..... | 43.1 | 87 |
| 1.1.1 Political stability*..... | 55.6 | 84 |
| 1.1.2 Government effectiveness*..... | 30.6 | 91 |
| 1.2 Regulatory environment | 11.5 | 139 ○ |
| 1.2.1 Regulatory quality*..... | 26.8 | 121 ○ |
| 1.2.2 Rule of law*..... | 19.1 | 128 ○ |
| 1.2.3 Cost of redundancy dismissal, salary weeks [Ⓓ] | 82.3 | 138 ○ |
| 1.3 Business environment..... | 38.0 | 140 ○ |
| 1.3.1 Ease of starting a business*..... | 59.1 | 134 ○ |
| 1.3.2 Ease of resolving insolvency*..... | 42.8 | 90 |
| 1.3.3 Ease of paying taxes*..... | 12.2 | 141 ○ |
| 2 Human capital & research..... | 26.0 | 84 |
| 2.1 Education | 44.2 | 71 |
| 2.1.1 Expenditure on education, % GDP | 6.4 | 23 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 20.3 | 56 ● |
| 2.1.3 School life expectancy, years [Ⓓ] | 13.2 | 76 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓓ] | 18.2 | 79 |
| 2.2 Tertiary education..... | 31.8 | 71 |
| 2.2.1 Tertiary enrolment, % gross [Ⓓ] | 37.7 | 68 |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 1.8 | 105 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓓ] | 162.1 | 72 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓓ] | 0.2 | 96 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 28.7 | 104 |
| 3.1 Information & communication technologies (ICTs)..... | 35.1 | 94 |
| 3.1.1 ICT access*..... | 41.1 | 98 |
| 3.1.2 ICT use*..... | 18.6 | 92 |
| 3.1.3 Government's online service*..... | 39.4 | 82 |
| 3.1.4 E-participation*..... | 41.2 | 79 |
| 3.2 General infrastructure..... | 18.7 | 124 ○ |
| 3.2.1 Electricity output, kWh/cap..... | 729.6 | 99 |
| 3.2.2 Logistics performance*..... | 16.3 | 111 |
| 3.2.3 Gross capital formation, % GDP..... | 20.8 | 76 |
| 3.3 Ecological sustainability | 32.3 | 89 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.2 | 86 |
| 3.3.2 Environmental performance*..... | 50.5 | 78 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.8 | 71 |
| 4 Market sophistication | 46.4 | 73 |
| 4.1 Credit..... | 49.8 | 24 ● |
| 4.1.1 Ease of getting credit*..... | 35.0 | 102 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 47.0 | 70 |
| 4.1.3 Microfinance gross loans, % GDP | 14.7 | 1 ● |

| | | |
|---|-------------|------------|
| 4.2 Investment | 22.9 | 133 ○ |
| 4.2.1 Ease of protecting investors*..... | 40.8 | 128 ○ |
| 4.2.2 Market capitalization, % GDP..... | 16.4 | 78 |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.1 | 102 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition | 66.6 | 108 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 3.7 | 61 ● |
| 4.3.2 Intensity of local competition [†] | 46.0 | 130 ○ |
| 5 Business sophistication | 30.5 | 92 |
| 5.1 Knowledge workers..... | 39.6 | 66 ● |
| 5.1.1 Knowledge-intensive employment, % [Ⓓ] | 15.3 | 92 |
| 5.1.2 Firms offering formal training, % firms [Ⓓ] | 57.1 | 14 ● |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, % [Ⓓ] | 5.2 | 73 |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages | 22.3 | 115 |
| 5.2.1 University/industry research collaboration [†] | 42.3 | 70 |
| 5.2.2 State of cluster development [†] | 41.0 | 91 |
| 5.2.3 GERD financed by abroad, % [Ⓓ] | 1.9 | 81 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓓ] | 0.0 | 70 |
| 5.3 Knowledge absorption..... | 29.5 | 94 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓓ] | 0.4 | 64 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 7.9 | 55 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓓ] | 0.6 | 83 |
| 5.3.4 FDI net inflows, % GDP..... | 5.7 | 27 ● |
| 6 Knowledge & technology outputs | 20.0 | 102 |
| 6.1 Knowledge creation..... | 5.4 | 100 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 3.2 | 113 |
| 6.1.5 Citable documents H index..... | 71.0 | 94 |
| 6.2 Knowledge impact..... | 34.3 | 88 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 3.1 | 28 ● |
| 6.2.2 New businesses/th pop. 15–64..... | 0.6 | 84 |
| 6.2.3 Computer software spending, % GDP..... | 0.2 | 63 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 3.3 | 75 |
| 6.2.5 High- & medium-high-tech manufactures, % | n/a | n/a |
| 6.3 Knowledge diffusion..... | 20.3 | 111 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓓ] | 0.1 | 62 |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.4 | 82 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓓ] | 1.0 | 77 |
| 6.3.4 FDI net outflows, % GDP [Ⓓ] | 0.0 | 105 ○ |
| 7 Creative outputs | 29.4 | 84 |
| 7.1 Intangible assets..... | 47.4 | 60 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 47.7 | 99 |
| 7.1.4 ICTs & organizational model creation [†] | 47.2 | 92 |
| 7.2 Creative goods & services..... | 20.3 | 66 ● |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.2 | 48 |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓓ] | 4.1 | 42 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 1.1 | 38 ● |
| 7.3 Online creativity..... | 2.4 | 105 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 2.1 | 87 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.6 | 95 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 590.5 | 90 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓓ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------|
| Population (millions)..... | 3.8 |
| GDP (US\$ billions)..... | 18.0 |
| GDP per capita, PPP\$..... | 8,589.8 |
| Income group..... | Upper-middle income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 32.3 | 79 |
| Innovation Output Sub-Index..... | 18.2 | 122 ○ |
| Innovation Input Sub-Index..... | 46.4 | 47 |
| Innovation Efficiency Ratio..... | 0.4 | 135 ○ |
| Global Innovation Index 2014 (out of 143)..... | 32.4 | 81 |
| 1 Institutions..... | 59.6 | 71 |
| 1.1 Political environment..... | 42.1 | 92 |
| 1.1.1 Political stability*..... | 55.1 | 85 |
| 1.1.2 Government effectiveness*..... | 29.2 | 94 |
| 1.2 Regulatory environment..... | 71.0 | 50 |
| 1.2.1 Regulatory quality*..... | 45.6 | 76 |
| 1.2.2 Rule of law*..... | 43.2 | 68 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 9.2 | 28 ● |
| 1.3 Business environment..... | 65.6 | 81 |
| 1.3.1 Ease of starting a business*..... | 72.5 | 118 ○ |
| 1.3.2 Ease of resolving insolvency*..... | 66.2 | 32 ● |
| 1.3.3 Ease of paying taxes*..... | 58.2 | 116 ○ |
| 2 Human capital & research..... | 39.9 | 38 |
| 2.1 Education..... | 89.6 | 1 |
| 2.1.1 Expenditure on education, % GDP..... | n/a | n/a |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years..... | n/a | n/a |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 11.1 | 33 ● |
| 2.2 Tertiary education..... | 27.6 | 81 |
| 2.2.1 Tertiary enrolment, % gross..... | n/a | n/a |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | 6.5 | 26 ● |
| 2.3 Research & development (R&D)..... | 2.6 | 99 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓜ] | 150.6 | 77 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓜ] | 0.3 | 80 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 30.9 | 96 |
| 3.1 Information & communication technologies (ICTs)..... | 36.3 | 92 |
| 3.1.1 ICT access*..... | 56.3 | 69 |
| 3.1.2 ICT use*..... | 37.1 | 59 |
| 3.1.3 Government's online service*..... | 28.3 | 110 |
| 3.1.4 E-participation*..... | 23.5 | 115 ○ |
| 3.2 General infrastructure..... | 24.9 | 100 |
| 3.2.1 Electricity output, kWh/cap..... | 3,676.8 | 53 |
| 3.2.2 Logistics performance*..... | 29.9 | 78 |
| 3.2.3 Gross capital formation, % GDP..... | 19.8 | 88 |
| 3.3 Ecological sustainability..... | 31.4 | 92 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 4.2 | 106 ○ |
| 3.3.2 Environmental performance*..... | 45.8 | 92 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 3.8 | 25 ● |
| 4 Market sophistication..... | 61.6 | 18 |
| 4.1 Credit..... | 35.4 | 54 |
| 4.1.1 Ease of getting credit*..... | 65.0 | 34 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 62.0 | 54 |
| 4.1.3 Microfinance gross loans, % GDP..... | 1.8 | 28 |

| | | |
|---|-------------|--------------|
| 4.2 Investment..... | 54.2 | 17 |
| 4.2.1 Ease of protecting investors*..... | 54.2 | 75 |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 95.3 | 1 ● |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.4 | 39 ● |
| 4.3.2 Intensity of local competition [†] | n/a | n/a |
| 5 Business sophistication..... | 40.1 | 41 |
| 5.1 Knowledge workers..... | 33.6 | 84 |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms..... | 52.1 | 21 ● |
| 5.1.3 GERD performed by business, % of GDP [Ⓜ] | 0.2 | 53 |
| 5.1.4 GERD financed by business, % [Ⓜ] | 1.2 | 84 ○ |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 62.2 | 3 |
| 5.2.1 University/industry research collaboration [†] | n/a | n/a |
| 5.2.2 State of cluster development [†] | n/a | n/a |
| 5.2.3 GERD financed by abroad, % [Ⓜ] | 48.7 | 7 ● |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a |
| 5.3 Knowledge absorption..... | 24.5 | 119 ○ |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.1 | 106 ○ |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 5.4 | 92 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.8 | 65 |
| 5.3.4 FDI net inflows, % GDP..... | 1.8 | 91 |
| 6 Knowledge & technology outputs..... | 23.0 | 89 |
| 6.1 Knowledge creation..... | 5.0 | 105 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 0.2 | 90 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.1 | 59 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 9.1 | 70 |
| 6.1.5 Citable documents H index..... | 49.0 | 117 ○ |
| 6.2 Knowledge impact..... | 38.7 | 63 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.3 | 90 |
| 6.2.2 New businesses/th pop. 15–64..... | 0.7 | 80 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 21.3 | 18 ● |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 25.2 | 86 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.2 | 39 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.9 | 66 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | 0.1 | 88 |
| 7 Creative outputs..... | 13.4 | 135 ○ |
| 7.1 Intangible assets..... | 9.9 | 137 ○ |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 17.9 | 88 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.5 | 41 |
| 7.1.3 ICTs & business model creation [†] | n/a | n/a |
| 7.1.4 ICTs & organizational model creation [†] | n/a | n/a |
| 7.2 Creative goods & services..... | 6.9 | 112 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.0 | 73 ○ |
| 7.2.2 National feature films/mn pop. 15–69..... | 3.9 | 43 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 0.2 | 79 |
| 7.3 Online creativity..... | 26.9 | 49 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 2.8 | 75 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 2.5 | 68 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 3,913.2 | 34 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 73.4 | 51 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓜ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------|
| Population (millions) | 2.0 |
| GDP (US\$ billions) | 15.8 |
| GDP per capita, PPP\$ | 17,106.3 |
| Income group | Upper-middle income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 30.5 | 90 |
| Innovation Output Sub-Index | 21.3 | 108 |
| Innovation Input Sub-Index | 39.6 | 79 |
| Innovation Efficiency Ratio | 0.5 | 120 |
| Global Innovation Index 2014 (out of 143) | 30.9 | 92 |

| | | |
|--|-------------|-----------|
| 1 Institutions | 69.0 | 48 |
| 1.1 Political environment | 69.6 | 40 ● |
| 1.1.1 Political stability* | 90.3 | 14 ● |
| 1.1.2 Government effectiveness* | 48.9 | 56 |
| 1.2 Regulatory environment | 68.6 | 60 |
| 1.2.1 Regulatory quality* | 65.3 | 41 ● |
| 1.2.2 Rule of law* | 63.4 | 39 ● |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 21.7 | 100 |
| 1.3 Business environment | 68.8 | 70 |
| 1.3.1 Ease of starting a business* | 71.7 | 119 |
| 1.3.2 Ease of resolving insolvency* | 57.2 | 47 ● |
| 1.3.3 Ease of paying taxes* | 77.5 | 55 |
| 2 Human capital & research | 23.4 | 93 |
| 2.1 Education | 56.0 | 24 ● |
| 2.1.1 Expenditure on education, % GDP [Ⓓ] | 9.5 | 2 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓓ] | 33.0 | 17 ● |
| 2.1.3 School life expectancy, years [Ⓓ] | 12.5 | 85 |
| 2.1.4 PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓓ] | 13.9 | 52 |
| 2.2 Tertiary education | 8.1 | 126 ○ |
| 2.2.1 Tertiary enrolment, % gross [Ⓓ] | 17.9 | 94 |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, % [Ⓓ] | 0.4 | 100 |
| 2.3 Research & development (R&D) | 6.2 | 76 |
| 2.3.1 Researchers, FTE/mn pop. | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓓ] | 0.5 | 59 |
| 2.3.3 QS university ranking, average score top 3* | 0.0 | 73 ○ |
| 3 Infrastructure | 34.8 | 86 |
| 3.1 Information & communication technologies (ICTs) | 33.2 | 98 |
| 3.1.1 ICT access* | 40.6 | 99 |
| 3.1.2 ICT use* | 30.3 | 69 |
| 3.1.3 Government's online service* | 30.7 | 101 |
| 3.1.4 E-participation* | 31.4 | 101 |
| 3.2 General infrastructure | 30.1 | 72 |
| 3.2.1 Electricity output, kWh/cap | 125.0 | 119 ○ |
| 3.2.2 Logistics performance* | 16.9 | 110 |
| 3.2.3 Gross capital formation, % GDP | 31.9 | 16 ● |
| 3.3 Ecological sustainability | 41.0 | 54 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 11.9 | 15 ● |
| 3.3.2 Environmental performance* | 47.6 | 89 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 0.3 | 103 |
| 4 Market sophistication | 43.9 | 91 |
| 4.1 Credit | 32.1 | 62 |
| 4.1.1 Ease of getting credit* | 55.0 | 56 |
| 4.1.2 Domestic credit to private sector, % GDP | 32.0 | 94 |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a |

| | | |
|---|------|-----|
| 4.2 Investment | 29.6 | 98 |
| 4.2.1 Ease of protecting investors* | 49.2 | 93 |
| 4.2.2 Market capitalization, % GDP | 31.6 | 55 |
| 4.2.3 Total value of stocks traded, % GDP | 0.8 | 72 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | n/a | n/a |
| 4.3 Trade & competition | 70.0 | 96 |
| 4.3.1 Applied tariff rate, weighted mean, % | 6.4 | 93 |
| 4.3.2 Intensity of local competition [†] | 62.4 | 92 |

| | | |
|---|-------------|------------|
| 5 Business sophistication | 27.0 | 112 |
| 5.1 Knowledge workers | 36.0 | 77 |
| 5.1.1 Knowledge-intensive employment, % [Ⓓ] | 17.9 | 81 |
| 5.1.2 Firms offering formal training, % firms [Ⓓ] | 51.9 | 22 ● |
| 5.1.3 GERD performed by business, % of GDP [Ⓓ] | 0.1 | 62 |
| 5.1.4 GERD financed by business, % | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total [Ⓓ] | 9.2 | 65 |
| 5.2 Innovation linkages | 27.1 | 91 |
| 5.2.1 University/industry research collaboration [†] | 35.7 | 102 |
| 5.2.2 State of cluster development [†] | 38.7 | 101 |
| 5.2.3 GERD financed by abroad, % | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 37 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 0.0 | 108 ○ |
| 5.3 Knowledge absorption | 17.9 | 138 ○ |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓓ] | 0.2 | 91 |
| 5.3.2 High-tech imports less re-imports, % total trade | 3.2 | 121 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓓ] | 0.4 | 104 |
| 5.3.4 FDI net inflows, % GDP | 1.3 | 103 |
| 6 Knowledge & technology outputs | 20.0 | 104 |
| 6.1 Knowledge creation | 4.3 | 110 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | 0.3 | 87 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP [Ⓓ] | 0.1 | 52 ○ |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 7.7 | 76 |
| 6.1.5 Citable documents H index | 63.0 | 101 |
| 6.2 Knowledge impact | 41.2 | 52 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64 | 12.3 | 7 ● |
| 6.2.3 Computer software spending, % GDP | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 0.4 | 133 ○ |
| 6.2.5 High- & medium-high-tech manufactures, % | n/a | n/a |
| 6.3 Knowledge diffusion | 14.4 | 129 ○ |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓓ] | 0.0 | 106 ○ |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.3 | 86 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓓ] | 0.1 | 118 ○ |
| 6.3.4 FDI net outflows, % GDP | (0.0) | 108 ○ |
| 7 Creative outputs | 22.7 | 110 |
| 7.1 Intangible assets | 41.5 | 89 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 44.2 | 114 |
| 7.1.4 ICTs & organizational model creation [†] | 38.8 | 121 ○ |
| 7.2 Creative goods & services | 6.1 | 114 |
| 7.2.1 Cultural & creative services exports, % total trade | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade | 0.2 | 77 |
| 7.3 Online creativity | 1.8 | 109 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 1.5 | 98 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 2.2 | 70 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 240.5 | 105 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓓ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------------------|
| Population (millions)..... | 202.0 |
| GDP (US\$ billions)..... | 2,353.0 |
| GDP per capita, PPP\$..... | 12,525.7 |
| Income group..... | Upper-middle income |
| Region..... | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 34.9 | 70 |
| Innovation Output Sub-Index..... | 27.5 | 74 |
| Innovation Input Sub-Index..... | 42.4 | 65 |
| Innovation Efficiency Ratio..... | 0.6 | 99 |
| Global Innovation Index 2014 (out of 143)..... | 36.3 | 61 |
| 1 Institutions..... | 55.8 | 85 |
| 1.1 Political environment..... | 48.3 | 75 |
| 1.1.1 Political stability*..... | 57.3 | 83 |
| 1.1.2 Government effectiveness*..... | 39.3 | 75 |
| 1.2 Regulatory environment..... | 66.1 | 73 |
| 1.2.1 Regulatory quality*..... | 49.6 | 69 |
| 1.2.2 Rule of law*..... | 44.5 | 64 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 15.4 | 68 |
| 1.3 Business environment..... | 53.1 | 124 ○ |
| 1.3.1 Ease of starting a business*..... | 63.4 | 131 ○ |
| 1.3.2 Ease of resolving insolvency*..... | 54.5 | 53 |
| 1.3.3 Ease of paying taxes*..... | 41.3 | 134 ○ |
| 2 Human capital & research..... | 30.1 | 63 |
| 2.1 Education..... | 43.7 | 73 |
| 2.1.1 Expenditure on education, % GDP [Ⓔ] | 5.8 | 33 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓔ] | 21.6 | 49 |
| 2.1.3 School life expectancy, years [Ⓔ] | 14.2 | 55 |
| 2.1.4 PISA scales in reading, maths, & science..... | 402.1 | 53 ○ |
| 2.1.5 Pupil-teacher ratio, secondary..... | 16.0 | 69 |
| 2.2 Tertiary education..... | 16.0 | 111 ○ |
| 2.2.1 Tertiary enrolment, % gross [Ⓔ] | 25.5 | 83 |
| 2.2.2 Graduates in science & engineering, %..... | 12.0 | 94 ○ |
| 2.2.3 Tertiary inbound mobility, %..... | 0.2 | 104 ○ |
| 2.3 Research & development (R&D)..... | 30.5 | 33 ● |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 710.3 | 55 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 1.2 | 30 ● |
| 2.3.3 QS university ranking, average score top 3*..... | 54.0 | 23 ● |
| 3 Infrastructure..... | 40.1 | 67 |
| 3.1 Information & communication technologies (ICTs)..... | 58.0 | 43 |
| 3.1.1 ICT access*..... | 61.4 | 64 |
| 3.1.2 ICT use*..... | 40.1 | 56 |
| 3.1.3 Government's online service*..... | 59.8 | 49 |
| 3.1.4 E-participation*..... | 70.6 | 24 ● |
| 3.2 General infrastructure..... | 23.2 | 109 ○ |
| 3.2.1 Electricity output, kWh/cap..... | 2,781.0 | 65 |
| 3.2.2 Logistics performance*..... | 39.9 | 63 |
| 3.2.3 Gross capital formation, % GDP..... | 17.0 | 116 ○ |
| 3.3 Ecological sustainability..... | 39.1 | 63 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 9.0 | 41 |
| 3.3.2 Environmental performance*..... | 53.0 | 69 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 1.2 | 61 |
| 4 Market sophistication..... | 44.3 | 87 |
| 4.1 Credit..... | 22.7 | 102 |
| 4.1.1 Ease of getting credit*..... | 45.0 | 80 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 70.7 | 47 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.1 | 69 |

| | | |
|---|------|------|
| 4.2 Investment..... | 38.2 | 60 |
| 4.2.1 Ease of protecting investors*..... | 62.5 | 34 |
| 4.2.2 Market capitalization, % GDP..... | 54.7 | 35 |
| 4.2.3 Total value of stocks traded, % GDP..... | 37.1 | 21 ● |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 52 |
| 4.3 Trade & competition..... | 72.0 | 89 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 7.7 | 106 |
| 4.3.2 Intensity of local competition [†] | 71.2 | 50 |

| | | |
|---|-------------|-----------|
| 5 Business sophistication..... | 41.6 | 37 |
| 5.1 Knowledge workers..... | 42.2 | 54 |
| 5.1.1 Knowledge-intensive employment, %..... | 21.0 | 69 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 42.2 | 41 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, % [Ⓔ] | 43.1 | 33 |
| 5.1.5 Females employed w/advanced degrees, % total [Ⓔ] | 8.3 | 67 ○ |
| 5.2 Innovation linkages..... | 35.8 | 59 |
| 5.2.1 University/industry research collaboration [†] | 46.7 | 52 |
| 5.2.2 State of cluster development [†] | 60.4 | 22 ● |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 75 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 63 |
| 5.3 Knowledge absorption..... | 46.7 | 21 ● |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.2 | 21 ● |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 12.0 | 23 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.7 | 29 ● |
| 5.3.4 FDI net inflows, % GDP..... | 3.6 | 46 |

| | | |
|---|-------------|-----------|
| 6 Knowledge & technology outputs..... | 25.4 | 72 |
| 6.1 Knowledge creation..... | 15.9 | 56 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 1.5 | 55 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.2 | 51 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | 0.9 | 29 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 11.8 | 63 |
| 6.1.5 Citable documents H index..... | 342.0 | 22 ● |
| 6.2 Knowledge impact..... | 36.5 | 74 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.8 | 80 |
| 6.2.2 New businesses/th pop. 15–64..... | 2.2 | 45 |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 49 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 6.9 | 51 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 39.8 | 22 ● |
| 6.3 Knowledge diffusion..... | 23.9 | 93 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.2 | 38 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 3.0 | 44 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 0.3 | 109 ○ |
| 6.3.4 FDI net outflows, % GDP..... | 0.6 | 64 |

| | | |
|--|-------------|-----------|
| 7 Creative outputs..... | 29.6 | 82 |
| 7.1 Intangible assets..... | 42.3 | 87 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 41.2 | 61 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 54.1 | 73 |
| 7.1.4 ICTs & organizational model creation [†] | 50.8 | 74 |
| 7.2 Creative goods & services..... | 9.8 | 96 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.3 | 45 |
| 7.2.2 National feature films/mn pop. 15–69..... | 0.9 | 79 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 9.3 | 36 |
| 7.2.4 Printing & publishing output manufactures, %..... | 0.9 | 77 ○ |
| 7.2.5 Creative goods exports, % total trade..... | 0.2 | 76 |
| 7.3 Online creativity..... | 23.9 | 55 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 1.9 | 90 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 10.3 | 43 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 971.2 | 76 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 76.2 | 43 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Bulgaria

Key indicators

| | |
|----------------------------|---------------------|
| Population (millions)..... | 7.2 |
| GDP (US\$ billions)..... | 55.8 |
| GDP per capita, PPP\$..... | 15,031.3 |
| Income group..... | Upper-middle income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 42.2 | 39 |
| Innovation Output Sub-Index..... | 38.2 | 35 |
| Innovation Input Sub-Index..... | 46.1 | 49 |
| Innovation Efficiency Ratio..... | 0.8 | 21 ● |
| Global Innovation Index 2014 (out of 143)..... | 40.7 | 44 |
| 1 Institutions..... | 69.7 | 45 |
| 1.1 Political environment..... | 57.0 | 54 |
| 1.1.1 Political stability*..... | 68.5 | 56 |
| 1.1.2 Government effectiveness*..... | 45.5 | 61 |
| 1.2 Regulatory environment..... | 75.8 | 39 |
| 1.2.1 Regulatory quality*..... | 61.6 | 49 |
| 1.2.2 Rule of law*..... | 44.0 | 66 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.6 | 20 ● |
| 1.3 Business environment..... | 76.3 | 40 |
| 1.3.1 Ease of starting a business*..... | 91.1 | 42 |
| 1.3.2 Ease of resolving insolvency*..... | 64.8 | 36 |
| 1.3.3 Ease of paying taxes*..... | 73.2 | 71 |
| 2 Human capital & research..... | 32.2 | 58 |
| 2.1 Education..... | 43.6 | 74 |
| 2.1.1 Expenditure on education, % GDP..... | 3.8 | 89 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 22.2 | 48 |
| 2.1.3 School life expectancy, years..... | 14.4 | 52 |
| 2.1.4 PISA scales in reading, maths, & science..... | 440.4 | 42 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 12.3 | 43 |
| 2.2 Tertiary education..... | 38.7 | 50 |
| 2.2.1 Tertiary enrolment, % gross..... | 62.7 | 33 |
| 2.2.2 Graduates in science & engineering, %..... | 21.5 | 43 |
| 2.2.3 Tertiary inbound mobility, %..... | 3.9 | 46 |
| 2.3 Research & development (R&D)..... | 14.4 | 57 |
| 2.3.1 Researchers, FTE/mn pop..... | 1,699.3 | 39 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.7 | 52 |
| 2.3.3 QS university ranking, average score top 3*..... | 7.3 | 65 |
| 3 Infrastructure..... | 43.3 | 53 |
| 3.1 Information & communication technologies (ICTs)..... | 41.1 | 81 |
| 3.1.1 ICT access*..... | 67.7 | 50 |
| 3.1.2 ICT use*..... | 47.7 | 41 |
| 3.1.3 Government's online service*..... | 23.6 | 117 ○ |
| 3.1.4 E-participation*..... | 25.5 | 110 ○ |
| 3.2 General infrastructure..... | 37.5 | 50 |
| 3.2.1 Electricity output, kWh/cap..... | 6,372.0 | 30 |
| 3.2.2 Logistics performance*..... | 50.8 | 45 |
| 3.2.3 Gross capital formation, % GDP..... | 23.5 | 54 |
| 3.3 Ecological sustainability..... | 51.2 | 26 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 4.9 | 99 ○ |
| 3.3.2 Environmental performance*..... | 64.0 | 40 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 11.0 | 5 ● |
| 4 Market sophistication..... | 48.9 | 61 |
| 4.1 Credit..... | 36.1 | 52 |
| 4.1.1 Ease of getting credit*..... | 70.0 | 22 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 69.6 | 50 |
| 4.1.3 Microfinance gross loans, % GDP..... | 1.4 | 34 |

| | | |
|---|-------------|-----------|
| 4.2 Investment..... | 29.1 | 101 ○ |
| 4.2.1 Ease of protecting investors*..... | 68.3 | 14 ● |
| 4.2.2 Market capitalization, % GDP..... | 12.7 | 81 ○ |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.7 | 74 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 63 ○ |
| 4.3 Trade & competition..... | 81.3 | 45 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition†..... | 66.1 | 72 |
| 5 Business sophistication..... | 36.4 | 60 |
| 5.1 Knowledge workers..... | 42.8 | 50 |
| 5.1.1 Knowledge-intensive employment, %..... | 31.0 | 45 |
| 5.1.2 Firms offering formal training, % firms..... | 42.8 | 39 |
| 5.1.3 GERD performed by business, % of GDP..... | 0.4 | 38 |
| 5.1.4 GERD financed by business, %..... | 19.4 | 62 ○ |
| 5.1.5 Females employed w/advanced degrees, % total..... | 18.5 | 26 |
| 5.2 Innovation linkages..... | 38.6 | 48 |
| 5.2.1 University/industry research collaboration†..... | 33.3 | 110 ○ |
| 5.2.2 State of cluster development†..... | 32.6 | 123 ○ |
| 5.2.3 GERD financed by abroad, %..... | 48.3 | 8 ● |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.1 | 54 |
| 5.3 Knowledge absorption..... | 27.8 | 102 ○ |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.5 | 52 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 6.3 | 75 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.7 | 76 |
| 5.3.4 FDI net inflows, % GDP..... | 3.6 | 48 |
| 6 Knowledge & technology outputs..... | 35.4 | 37 |
| 6.1 Knowledge creation..... | 25.6 | 37 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 2.3 | 45 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.4 | 43 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 2.9 | 11 ● |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 16.1 | 48 |
| 6.1.5 Citable documents H index..... | 154.0 | 45 |
| 6.2 Knowledge impact..... | 51.3 | 18 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.7 | 83 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 9.0 | 12 ● |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 40 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 43.1 | 3 ● |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 18.9 | 60 |
| 6.3 Knowledge diffusion..... | 29.2 | 62 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.1 | 63 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 3.1 | 42 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 2.1 | 38 |
| 6.3.4 FDI net outflows, % GDP..... | 1.2 | 49 |
| 7 Creative outputs..... | 41.1 | 34 |
| 7.1 Intangible assets..... | 53.5 | 33 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 111.5 | 9 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 2.2 | 11 ● |
| 7.1.3 ICTs & business model creation†..... | 51.0 | 89 |
| 7.1.4 ICTs & organizational model creation†..... | 48.0 | 88 |
| 7.2 Creative goods & services..... | 22.3 | 59 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.8 | 25 |
| 7.2.2 National feature films/mn pop. 15–69..... | 2.8 | 53 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | 1.2 | 64 |
| 7.2.5 Creative goods exports, % total trade..... | 0.8 | 43 |
| 7.3 Online creativity..... | 35.1 | 38 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 24.8 | 28 ● |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 2.8 | 65 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 4,772.6 | 28 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 77.4 | 41 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓜ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|--------------------|
| Population (millions) | 17.4 |
| GDP (US\$ billions) | 12.5 |
| GDP per capita, PPP\$ | 1,666.6 |
| Income group | Low income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 28.7 | 102 |
| Innovation Output Sub-Index | 23.2 | 100 |
| Innovation Input Sub-Index..... | 34.2 | 109 |
| Innovation Efficiency Ratio..... | 0.7 | 85 |
| Global Innovation Index 2014 (out of 143) | 28.2 | 109 |
| 1 Institutions..... | 52.3 | 97 |
| 1.1 Political environment..... | 35.1 | 110 |
| 1.1.1 Political stability*..... | 45.5 | 109 |
| 1.1.2 Government effectiveness*..... | 24.7 | 107 |
| 1.2 Regulatory environment | 66.8 | 69 ● |
| 1.2.1 Regulatory quality*..... | 43.4 | 83 |
| 1.2.2 Rule of law*..... | 33.6 | 92 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 10.4 | 38 ● |
| 1.3 Business environment..... | 55.1 | 116 |
| 1.3.1 Ease of starting a business*..... | 69.1 | 121 |
| 1.3.2 Ease of resolving insolvency*..... | 38.1 | 105 |
| 1.3.3 Ease of paying taxes*..... | 58.1 | 117 |
| 2 Human capital & research..... | 15.7 | 119 |
| 2.1 Education | 22.2 | 131 ○ |
| 2.1.1 Expenditure on education, % GDP | 3.4 | 100 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 16.6 | 75 |
| 2.1.3 School life expectancy, years..... | 7.8 | 129 ○ |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 26.9 | 100 |
| 2.2 Tertiary education..... | 23.3 | 94 |
| 2.2.1 Tertiary enrolment, % gross..... | 4.8 | 125 ○ |
| 2.2.2 Graduates in science & engineering, % | 19.9 | 57 |
| 2.2.3 Tertiary inbound mobility, %..... | 2.9 | 54 ● |
| 2.3 Research & development (R&D)..... | 1.7 | 109 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 47.8 | 91 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.2 | 89 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 22.6 | 127 |
| 3.1 Information & communication technologies (ICTs)..... | 18.2 | 125 |
| 3.1.1 ICT access*..... | 24.6 | 127 ○ |
| 3.1.2 ICT use*..... | 4.5 | 124 |
| 3.1.3 Government's online service*..... | 29.9 | 106 |
| 3.1.4 E-participation*..... | 13.7 | 129 ○ |
| 3.2 General infrastructure..... | 22.4 | 111 |
| 3.2.1 Electricity output, kWh/cap..... | n/a | n/a |
| 3.2.2 Logistics performance*..... | 24.3 | 93 |
| 3.2.3 Gross capital formation, % GDP..... | 18.0 | 109 |
| 3.3 Ecological sustainability | 27.3 | 110 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | n/a | n/a |
| 3.3.2 Environmental performance*..... | 40.5 | 106 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.1 | 126 |
| 4 Market sophistication | 42.9 | 97 |
| 4.1 Credit..... | 17.9 | 119 |
| 4.1.1 Ease of getting credit*..... | 30.0 | 113 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 26.1 | 106 |
| 4.1.3 Microfinance gross loans, % GDP | 1.4 | 33 ● |

| | | |
|---|------|-----|
| 4.2 Investment | 45.8 | 37 |
| 4.2.1 Ease of protecting investors*..... | 45.8 | 107 |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition | 65.1 | 118 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 8.4 | 110 |
| 4.3.2 Intensity of local competition [†] | 59.4 | 106 |

5 Business sophistication **37.4** **52 ●**

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 24.0 | 108 |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 24.8 | 78 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, % [Ⓔ] | 11.9 | 68 |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages | 50.4 | 14 |
| 5.2.1 University/industry research collaboration [†] | 36.1 | 100 |
| 5.2.2 State of cluster development [†] | 31.6 | 126 ○ |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 59.6 | 2 ● |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a |
| 5.3 Knowledge absorption..... | 37.7 | 48 ● |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 0.0 | 120 ○ |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 4.5 | 107 |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 2.5 | 8 ● |
| 5.3.4 FDI net inflows, % GDP..... | 3.2 | 57 ● |

6 Knowledge & technology outputs **21.4** **99**

| | | |
|---|------|------|
| 6.1 Knowledge creation..... | 5.1 | 104 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP [Ⓔ] | 0.1 | 101 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP [Ⓔ] | 0.1 | 50 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 10.0 | 68 ● |
| 6.1.5 Citable documents H index..... | 71.0 | 94 |
| 6.2 Knowledge impact..... | 36.6 | 71 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 2.9 | 30 ● |
| 6.2.2 New businesses/th pop. 15–64..... | 0.1 | 98 ○ |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.6 | 104 |
| 6.2.5 High- & medium-high-tech manufactures, % | n/a | n/a |
| 6.3 Knowledge diffusion..... | 22.5 | 101 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓔ] | 0.0 | 87 |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.1 | 110 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 2.3 | 31 ● |
| 6.3.4 FDI net outflows, % GDP [Ⓔ] | 0.0 | 100 |

7 Creative outputs **24.9** **100**

| | | |
|--|------|-------|
| 7.1 Intangible assets..... | 48.4 | 55 ● |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 55.0 | 71 ● |
| 7.1.4 ICTs & organizational model creation [†] | 41.8 | 110 |
| 7.2 Creative goods & services..... | 2.8 | 121 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | 1.8 | 59 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade [Ⓔ] | 0.0 | 112 |
| 7.3 Online creativity..... | 0.1 | 139 ○ |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.1 | 132 ○ |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.0 | 129 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 8.7 | 138 ○ |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|--------------------|
| Population (millions)..... | 10.5 |
| GDP (US\$ billions)..... | 3.1 |
| GDP per capita, PPP\$..... | 666.4 |
| Income group..... | Low income |
| Region..... | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 21.0 | 136 |
| Innovation Output Sub-Index..... | 11.1 | 138 ○ |
| Innovation Input Sub-Index..... | 31.0 | 122 |
| Innovation Efficiency Ratio..... | 0.4 | 137 ○ |
| Global Innovation Index 2014 (out of 143)..... | 22.4 | 138 |

| | | |
|--|-------------|------------|
| 1 Institutions..... | 46.4 | 118 |
| 1.1 Political environment..... | 22.2 | 132 |
| 1.1.1 Political stability*..... | 32.1 | 130 |
| 1.1.2 Government effectiveness*..... | 12.3 | 131 |
| 1.2 Regulatory environment..... | 53.2 | 106 |
| 1.2.1 Regulatory quality*..... | 24.6 | 123 |
| 1.2.2 Rule of law*..... | 19.4 | 127 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 15.9 | 71 ● |
| 1.3 Business environment..... | 63.9 | 87 ● |
| 1.3.1 Ease of starting a business*..... | 94.3 | 17 ● |
| 1.3.2 Ease of resolving insolvency*..... | 30.6 | 122 |
| 1.3.3 Ease of paying taxes*..... | 66.8 | 98 |
| 2 Human capital & research..... | 17.3 | 115 |
| 2.1 Education..... | 35.8 | 94 |
| 2.1.1 Expenditure on education, % GDP..... | 5.8 | 34 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 33.0 | 16 ● |
| 2.1.3 School life expectancy, years [Ⓐ] | 10.1 | 115 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 31.7 | 110 |
| 2.2 Tertiary education..... | 14.9 | 113 |
| 2.2.1 Tertiary enrolment, % gross [Ⓐ] | 3.2 | 130 |
| 2.2.2 Graduates in science & engineering, % [Ⓐ] | 9.6 | 97 |
| 2.2.3 Tertiary inbound mobility, % [Ⓐ] | 6.2 | 29 ● |
| 2.3 Research & development (R&D)..... | 1.3 | 111 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓐ] | 0.1 | 103 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 17.7 | 136 |
| 3.1 Information & communication technologies (ICTs)..... | 3.7 | 141 ○ |
| 3.1.1 ICT access*..... | n/a | n/a |
| 3.1.2 ICT use*..... | n/a | n/a |
| 3.1.3 Government's online service*..... | 1.6 | 139 ○ |
| 3.1.4 E-participation*..... | 5.9 | 139 ○ |
| 3.2 General infrastructure..... | 23.5 | 108 |
| 3.2.1 Electricity output, kWh/cap..... | n/a | n/a |
| 3.2.2 Logistics performance*..... | 20.6 | 100 |
| 3.2.3 Gross capital formation, % GDP..... | 19.6 | 91 |
| 3.3 Ecological sustainability..... | 25.8 | 118 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | n/a | n/a |
| 3.3.2 Environmental performance*..... | 25.8 | 135 ○ |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | n/a | n/a |
| 4 Market sophistication..... | 42.7 | 99 |
| 4.1 Credit..... | 13.3 | 126 |
| 4.1.1 Ease of getting credit*..... | 10.0 | 133 ○ |
| 4.1.2 Domestic credit to private sector, % GDP..... | 18.0 | 118 |
| 4.1.3 Microfinance gross loans, % GDP..... | 2.1 | 25 ● |

| | | |
|---|-------------|--------------|
| 4.2 Investment..... | 51.7 | 23 |
| 4.2.1 Ease of protecting investors*..... | 51.7 | 83 ● |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 63.1 | 121 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 6.4 | 94 |
| 4.3.2 Intensity of local competition [†] | 48.6 | 127 |
| 5 Business sophistication..... | 30.7 | 91 |
| 5.1 Knowledge workers..... | 24.7 | 105 |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 22.1 | 85 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 36.2 | 54 ● |
| 5.2.1 University/industry research collaboration [†] | 29.7 | 118 |
| 5.2.2 State of cluster development [†] | 28.9 | 129 |
| 5.2.3 GERD financed by abroad, % [Ⓐ] | 39.9 | 12 ● |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓐ] | 0.2 | 31 ● |
| 5.3 Knowledge absorption..... | 31.2 | 85 ● |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓐ] | 0.0 | 125 ○ |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 9.8 | 33 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP..... | 0.3 | 126 |
| 6 Knowledge & technology outputs..... | 7.2 | 139 ○ |
| 6.1 Knowledge creation..... | 2.6 | 133 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 2.7 | 118 |
| 6.1.5 Citable documents H index..... | 26.0 | 136 |
| 6.2 Knowledge impact..... | 1.3 | 140 ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.0 | 141 ○ |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓐ] | 1.8 | 97 |
| 6.3 Knowledge diffusion..... | 17.7 | 120 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓐ] | 0.0 | 108 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.2 | 95 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | 0.0 | 101 |
| 7 Creative outputs..... | 15.1 | 133 |
| 7.1 Intangible assets..... | 26.4 | 132 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 29.0 | 132 ○ |
| 7.1.4 ICTs & organizational model creation [†] | 23.9 | 133 ○ |
| 7.2 Creative goods & services..... | 7.4 | 107 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓐ] | 0.8 | 81 |
| 7.2.5 Creative goods exports, % total trade [Ⓐ] | 0.1 | 87 |
| 7.3 Online creativity..... | 0.1 | 137 ○ |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.0 | 136 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.1 | 118 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 7.6 | 139 ○ |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------|
| Population (millions) | 0.5 |
| GDP (US\$ billions) | 1.9 |
| GDP per capita, PPP\$ | 4,482.6 |
| Income group | Lower-middle income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 28.6 | 103 |
| Innovation Output Sub-Index | 20.1 | 114 |
| Innovation Input Sub-Index | 37.1 | 92 |
| Innovation Efficiency Ratio | 0.5 | 119 |
| Global Innovation Index 2014 (out of 143) | 30.1 | 97 |

| | | | |
|----------|--|-------------|-------------|
| 1 | Institutions..... | 57.6 | 79 |
| 1.1 | Political environment..... | 64.4 | 49 ● |
| 1.1.1 | Political stability*..... | 84.1 | 33 ● |
| 1.1.2 | Government effectiveness*..... | 44.8 | 62 ● |
| 1.2 | Regulatory environment | 55.0 | 102 |
| 1.2.1 | Regulatory quality*..... | 44.6 | 81 |
| 1.2.2 | Rule of law*..... | 60.5 | 44 ● |
| 1.2.3 | Cost of redundancy dismissal, salary weeks..... | 29.5 | 125 |
| 1.3 | Business environment..... | 53.4 | 122 |
| 1.3.1 | Ease of starting a business*..... | 87.0 | 66 ● |
| 1.3.2 | Ease of resolving insolvency*..... | 0.0 | 139 ○ |
| 1.3.3 | Ease of paying taxes*..... | 73.1 | 73 |
| 2 | Human capital & research..... | 17.5 | 113 |
| 2.1 | Education | 40.4 | 85 |
| 2.1.1 | Expenditure on education, % GDP | 5.0 | 56 ● |
| 2.1.2 | Gov't expenditure/pupil, secondary, % GDP/cap..... | 14.8 | 87 |
| 2.1.3 | School life expectancy, years..... | 13.5 | 72 |
| 2.1.4 | PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 | Pupil-teacher ratio, secondary..... | 16.7 | 74 |
| 2.2 | Tertiary education..... | 11.5 | 122 |
| 2.2.1 | Tertiary enrolment, % gross..... | 22.8 | 87 |
| 2.2.2 | Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 | Tertiary inbound mobility, %..... | 1.0 | 82 |
| 2.3 | Research & development (R&D)..... | 0.7 | 117 |
| 2.3.1 | Researchers, FTE/mn pop. [Ⓔ] | 51.0 | 89 |
| 2.3.2 | Gross expenditure on R&D, % GDP [Ⓔ] | 0.1 | 111 ○ |
| 2.3.3 | QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 | Infrastructure..... | 41.0 | 62 ● |
| 3.1 | Information & communication technologies (ICTs)..... | 25.2 | 113 |
| 3.1.1 | ICT access*..... | 45.5 | 88 |
| 3.1.2 | ICT use*..... | 29.0 | 73 |
| 3.1.3 | Government's online service*..... | 16.5 | 125 |
| 3.1.4 | E-participation*..... | 9.8 | 133 ○ |
| 3.2 | General infrastructure..... | 67.7 | 2 |
| 3.2.1 | Electricity output, kWh/cap..... | n/a | n/a |
| 3.2.2 | Logistics performance*..... | n/a | n/a |
| 3.2.3 | Gross capital formation, % GDP..... | 39.4 | 7 ● |
| 3.3 | Ecological sustainability | 30.2 | 94 |
| 3.3.1 | GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | n/a | n/a |
| 3.3.2 | Environmental performance*..... | 44.1 | 97 |
| 3.3.3 | ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.3 | 100 |
| 4 | Market sophistication | 41.9 | 102 |
| 4.1 | Credit..... | 29.9 | 76 |
| 4.1.1 | Ease of getting credit*..... | 40.0 | 93 |
| 4.1.2 | Domestic credit to private sector, % GDP..... | 63.2 | 53 ● |
| 4.1.3 | Microfinance gross loans, % GDP | n/a | n/a |

| | | | |
|-------|--|------|-------|
| 4.2 | Investment | 35.0 | 68 |
| 4.2.1 | Ease of protecting investors*..... | 35.0 | 133 ○ |
| 4.2.2 | Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 | Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 | Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 | Trade & competition | 60.9 | 127 |
| 4.3.1 | Applied tariff rate, weighted mean, % [Ⓔ] | 10.2 | 122 |
| 4.3.2 | Intensity of local competition [†] | 57.6 | 112 |

| | | | |
|----------|---|-------------|------------|
| 5 | Business sophistication | 27.6 | 107 |
| 5.1 | Knowledge workers..... | 17.4 | 127 |
| 5.1.1 | Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 | Firms offering formal training, % firms [Ⓔ] | 16.6 | 96 |
| 5.1.3 | GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 | GERD financed by business, %..... | n/a | n/a |
| 5.1.5 | Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 | Innovation linkages | 38.6 | 49 |
| 5.2.1 | University/industry research collaboration [†] | 36.9 | 94 |
| 5.2.2 | State of cluster development [†] | 39.4 | 98 |
| 5.2.3 | GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 | JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 | Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a |
| 5.3 | Knowledge absorption..... | 26.8 | 107 |
| 5.3.1 | Royalty & license fees payments, % total trade..... | 0.0 | 119 ○ |
| 5.3.2 | High-tech imports less re-imports, % total trade..... | 3.5 | 118 |
| 5.3.3 | Comm., computer & info. services imp., % total trade..... | 1.4 | 40 ● |
| 5.3.4 | FDI net inflows, % GDP..... | 2.1 | 80 |

| | | | |
|----------|---|-------------|------------|
| 6 | Knowledge & technology outputs | 12.8 | 129 |
| 6.1 | Knowledge creation..... | 6.0 | 94 |
| 6.1.1 | Domestic resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 | PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 | Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 | Scientific & technical articles/bn PPP\$ GDP..... | 8.2 | 73 |
| 6.1.5 | Citable documents H index..... | 13.0 | 141 ○ |
| 6.2 | Knowledge impact..... | 7.0 | 129 |
| 6.2.1 | Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 | New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 | Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 | ISO 9001 quality certificates/bn PPP\$ GDP..... | 3.4 | 73 |
| 6.2.5 | High- & medium-high-tech manufactures, % | n/a | n/a |
| 6.3 | Knowledge diffusion..... | 25.3 | 85 |
| 6.3.1 | Royalty & license fees receipts, % total trade [Ⓔ] | 0.0 | 115 ○ |
| 6.3.2 | High-tech exports less re-exports, % total trade | 0.0 | 125 ○ |
| 6.3.3 | Comm., computer & info. services exp., % total trade..... | 2.9 | 19 ● |
| 6.3.4 | FDI net outflows, % GDP | 0.7 | 59 ● |

| | | | |
|----------|--|-------------|-----------|
| 7 | Creative outputs | 27.3 | 88 |
| 7.1 | Intangible assets..... | 53.1 | 35 |
| 7.1.1 | Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 | Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 | ICTs & business model creation [†] | 56.4 | 68 |
| 7.1.4 | ICTs & organizational model creation [†] | 49.7 | 77 |
| 7.2 | Creative goods & services..... | 1.1 | 130 ○ |
| 7.2.1 | Cultural & creative services exports, % total trade..... | 0.0 | 66 |
| 7.2.2 | National feature films/mn pop. 15–69..... | 0.0 | 104 ○ |
| 7.2.3 | Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 | Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 | Creative goods exports, % total trade..... | n/a | n/a |
| 7.3 | Online creativity..... | 2.0 | 108 |
| 7.3.1 | Generic top-level domains (TLDs)/th pop. 15–69..... | 2.6 | 78 |
| 7.3.2 | Country-code TLDs/th pop. 15–69..... | 1.0 | 85 |
| 7.3.3 | Wikipedia edits/pop. 15–69..... | 299.8 | 100 |
| 7.3.4 | Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Cambodia

Key indicators

| | |
|-----------------------------|-----------------------------|
| Population (millions) | 15.4 |
| GDP (US\$ billions) | 16.6 |
| GDP per capita, PPP\$ | 2,777.2 |
| Income group | Low income |
| Region | South East Asia and Oceania |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 30.4 | 91 |
| Innovation Output Sub-Index | 24.7 | 91 |
| Innovation Input Sub-Index | 36.0 | 96 |
| Innovation Efficiency Ratio | 0.7 | 80 |
| Global Innovation Index 2014 (out of 143) | 28.7 | 106 |

1 Institutions **48.4** **108**

| | | |
|--|------|-------|
| 1.1 Political environment | 38.4 | 106 |
| 1.1.1 Political stability* | 60.3 | 77 |
| 1.1.2 Government effectiveness* | 16.5 | 124 |
| 1.2 Regulatory environment | 53.7 | 105 |
| 1.2.1 Regulatory quality* | 38.5 | 98 |
| 1.2.2 Rule of law* | 21.3 | 124 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 19.3 | 88 |
| 1.3 Business environment | 53.1 | 123 |
| 1.3.1 Ease of starting a business* | 41.2 | 140 ○ |
| 1.3.2 Ease of resolving insolvency* | 45.0 | 79 |
| 1.3.3 Ease of paying taxes* | 73.1 | 72 ● |

2 Human capital & research **14.8** **122**

| | | |
|--|------|-------|
| 2.1 Education | 30.2 | 120 |
| 2.1.1 Expenditure on education, % GDP [ⓐ] | 2.6 | 116 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | n/a | n/a |
| 2.1.3 School life expectancy, years [ⓐ] | 10.9 | 107 |
| 2.1.4 PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [ⓐ] | 28.9 | 104 |
| 2.2 Tertiary education | 14.3 | 114 |
| 2.2.1 Tertiary enrolment, % gross [ⓐ] | 15.8 | 99 |
| 2.2.2 Graduates in science & engineering, % [ⓐ] | 12.5 | 93 ○ |
| 2.2.3 Tertiary inbound mobility, % [ⓐ] | 0.1 | 114 ○ |
| 2.3 Research & development (R&D) | 0.0 | 128 ○ |
| 2.3.1 Researchers, FTE/mn pop. | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3* | 0.0 | 73 ○ |

3 Infrastructure **22.7** **125** ○

| | | |
|---|------|-------|
| 3.1 Information & communication technologies (ICTs) | 19.9 | 123 |
| 3.1.1 ICT access* | 37.3 | 106 |
| 3.1.2 ICT use* | 5.5 | 119 |
| 3.1.3 Government's online service* | 17.3 | 122 ○ |
| 3.1.4 E-participation* | 19.6 | 121 |
| 3.2 General infrastructure | 22.0 | 112 |
| 3.2.1 Electricity output, kWh/cap | 96.4 | 121 ○ |
| 3.2.2 Logistics performance* | 29.6 | 79 |
| 3.2.3 Gross capital formation, % GDP | 21.5 | 71 ● |
| 3.3 Ecological sustainability | 26.3 | 116 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 6.8 | 74 |
| 3.3.2 Environmental performance* | 35.4 | 121 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 0.2 | 119 |

4 Market sophistication **60.6** **20** ●

| | | |
|--|------|------|
| 4.1 Credit | 64.6 | 7 ● |
| 4.1.1 Ease of getting credit* | 80.0 | 11 ● |
| 4.1.2 Domestic credit to private sector, % GDP | 45.3 | 74 |
| 4.1.3 Microfinance gross loans, % GDP | 17.3 | 1 ● |

| | | |
|--|------|-----|
| 4.2 Investment | 52.5 | 21 |
| 4.2.1 Ease of protecting investors* | 52.5 | 82 |
| 4.2.2 Market capitalization, % GDP | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | n/a | n/a |
| 4.3 Trade & competition | 64.7 | 119 |
| 4.3.1 Applied tariff rate, weighted mean, % [ⓐ] | 9.9 | 120 |
| 4.3.2 Intensity of local competition [†] | 64.3 | 83 |

5 Business sophistication **33.3** **74**

| | | |
|---|------|-------|
| 5.1 Knowledge workers | 32.6 | 86 |
| 5.1.1 Knowledge-intensive employment, % [ⓐ] | 4.1 | 110 ○ |
| 5.1.2 Firms offering formal training, % firms [ⓐ] | 48.4 | 31 ● |
| 5.1.3 GERD performed by business, % of GDP | n/a | n/a |
| 5.1.4 GERD financed by business, % | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total | n/a | n/a |
| 5.2 Innovation linkages | 42.8 | 30 ● |
| 5.2.1 University/industry research collaboration [†] | 33.0 | 112 |
| 5.2.2 State of cluster development [†] | 47.7 | 61 ● |
| 5.2.3 GERD financed by abroad, % | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | n/a | n/a |
| 5.3 Knowledge absorption | 24.6 | 118 |
| 5.3.1 Royalty & license fees payments, % total trade | 0.1 | 97 |
| 5.3.2 High-tech imports less re-imports, % total trade | 4.4 | 108 |
| 5.3.3 Comm., computer & info. services imp., % total trade | 0.5 | 94 |
| 5.3.4 FDI net inflows, % GDP | 8.8 | 13 ● |

6 Knowledge & technology outputs **26.6** **68** ●

| | | |
|--|------|-------|
| 6.1 Knowledge creation | 3.6 | 119 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | 0.0 | 112 ○ |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 4.3 | 106 |
| 6.1.5 Citable documents H index | 57.0 | 112 |
| 6.2 Knowledge impact | 57.4 | 6 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 5.0 | 9 ● |
| 6.2.2 New businesses/th pop. 15–64 | n/a | n/a |
| 6.2.3 Computer software spending, % GDP | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 0.4 | 131 ○ |
| 6.2.5 High- & medium-high-tech manufactures, % | n/a | n/a |
| 6.3 Knowledge diffusion | 18.7 | 114 |
| 6.3.1 Royalty & license fees receipts, % total trade | 0.0 | 82 |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.7 | 70 |
| 6.3.3 Comm., computer & info. services exp., % total trade | 0.7 | 85 |
| 6.3.4 FDI net outflows, % GDP | 0.3 | 76 |

7 Creative outputs **22.8** **108**

| | | |
|---|-------|------|
| 7.1 Intangible assets | 39.6 | 92 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | 21.0 | 81 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 53.2 | 77 |
| 7.1.4 ICTs & organizational model creation [†] | 55.2 | 58 ● |
| 7.2 Creative goods & services | 11.3 | 95 |
| 7.2.1 Cultural & creative services exports, % total trade | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 | 2.0 | 57 |
| 7.2.3 Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade | 0.4 | 61 ● |
| 7.3 Online creativity | 0.8 | 115 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 0.9 | 105 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 0.1 | 124 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 202.6 | 108 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------|
| Population (millions) | 22.8 |
| GDP (US\$ billions) | 31.7 |
| GDP per capita, PPP\$ | 2,514.2 |
| Income group | Lower-middle income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 27.8 | 110 |
| Innovation Output Sub-Index | 25.4 | 90 |
| Innovation Input Sub-Index | 30.2 | 126 |
| Innovation Efficiency Ratio | 0.8 | 19 ● |
| Global Innovation Index 2014 (out of 143) | 27.5 | 114 |

| | | |
|--|-------------|--------------|
| 1 Institutions..... | 44.5 | 125 |
| 1.1 Political environment..... | 34.7 | 111 |
| 1.1.1 Political stability*..... | 51.4 | 98 |
| 1.1.2 Government effectiveness*..... | 18.0 | 121 |
| 1.2 Regulatory environment | 49.0 | 116 |
| 1.2.1 Regulatory quality*..... | 23.1 | 125 |
| 1.2.2 Rule of law*..... | 19.8 | 126 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 19.9 | 91 |
| 1.3 Business environment..... | 49.7 | 133 ○ |
| 1.3.1 Ease of starting a business*..... | 76.4 | 108 |
| 1.3.2 Ease of resolving insolvency*..... | 36.4 | 109 |
| 1.3.3 Ease of paying taxes*..... | 36.3 | 137 ○ |
| 2 Human capital & research..... | 18.0 | 111 |
| 2.1 Education | 29.7 | 121 |
| 2.1.1 Expenditure on education, % GDP | 3.0 | 109 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 19.7 | 58 ● |
| 2.1.3 School life expectancy, years [Ⓓ] | 10.4 | 111 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 21.4 | 89 |
| 2.2 Tertiary education..... | 24.5 | 88 |
| 2.2.1 Tertiary enrolment, % gross [Ⓓ] | 11.9 | 107 |
| 2.2.2 Graduates in science & engineering, % [Ⓓ] | 21.0 | 48 ● |
| 2.2.3 Tertiary inbound mobility, % [Ⓓ] | 1.4 | 76 |
| 2.3 Research & development (R&D)..... | 0.0 | 128 ○ |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP..... | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 19.6 | 133 ○ |
| 3.1 Information & communication technologies (ICTs)..... | 16.4 | 131 ○ |
| 3.1.1 ICT access*..... | 27.5 | 120 |
| 3.1.2 ICT use*..... | 2.8 | 127 ○ |
| 3.1.3 Government's online service*..... | 19.7 | 121 |
| 3.1.4 E-participation*..... | 15.7 | 126 |
| 3.2 General infrastructure..... | 15.1 | 132 ○ |
| 3.2.1 Electricity output, kWh/cap..... | 290.4 | 110 |
| 3.2.2 Logistics performance*..... | 6.9 | 124 ○ |
| 3.2.3 Gross capital formation, % GDP..... | 20.2 | 83 |
| 3.3 Ecological sustainability | 27.4 | 109 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 7.0 | 65 ● |
| 3.3.2 Environmental performance*..... | 36.7 | 118 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.2 | 118 |
| 4 Market sophistication | 40.6 | 110 |
| 4.1 Credit..... | 17.5 | 121 |
| 4.1.1 Ease of getting credit*..... | 35.0 | 102 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 14.8 | 130 ○ |
| 4.1.3 Microfinance gross loans, % GDP..... | 1.2 | 35 ● |

| | | |
|---|------|-------|
| 4.2 Investment | 46.7 | 33 |
| 4.2.1 Ease of protecting investors*..... | 46.7 | 102 |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition | 57.6 | 132 ○ |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 12.7 | 131 ○ |
| 4.3.2 Intensity of local competition [†] | 59.7 | 105 |

5 Business sophistication **28.2** **103**

| | | |
|---|------|------|
| 5.1 Knowledge workers..... | 29.2 | 95 |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms [Ⓓ] | 25.5 | 76 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages | 32.1 | 64 ● |
| 5.2.1 University/industry research collaboration [†] | 39.6 | 79 |
| 5.2.2 State of cluster development [†] | 41.9 | 84 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓓ] | 0.0 | 73 |
| 5.3 Knowledge absorption..... | 23.4 | 122 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓓ] | 0.1 | 103 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | n/a | n/a |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓓ] | 0.5 | 98 |
| 5.3.4 FDI net inflows, % GDP..... | 2.0 | 87 |

6 Knowledge & technology outputs **18.2** **114**

| | | |
|---|-------|-------|
| 6.1 Knowledge creation..... | 8.0 | 85 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP [Ⓓ] | 0.0 | 93 ○ |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 11.3 | 66 ● |
| 6.1.5 Citable documents H index..... | 78.0 | 90 |
| 6.2 Knowledge impact..... | 28.6 | 110 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 1.7 | 54 ● |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | 0.2 | 73 ○ |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.5 | 124 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓓ] | 5.1 | 90 |
| 6.3 Knowledge diffusion..... | 18.0 | 119 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓓ] | 0.0 | 102 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | n/a | n/a |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓓ] | 1.2 | 71 |
| 6.3.4 FDI net outflows, % GDP..... | (1.3) | 121 ○ |

7 Creative outputs **32.6** **68** ●

| | | |
|---|------|-------|
| 7.1 Intangible assets..... | 51.1 | 41 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 53.1 | 78 ● |
| 7.1.4 ICTs & organizational model creation [†] | 49.2 | 79 |
| 7.2 Creative goods & services..... | 28.0 | 44 ● |
| 7.2.1 Cultural & creative services exports, % total trade..... | 1.2 | 11 ● |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓓ] | 1.8 | 58 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓓ] | 1.3 | 58 ● |
| 7.2.5 Creative goods exports, % total trade..... | n/a | n/a |
| 7.3 Online creativity..... | 0.3 | 124 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.2 | 125 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.4 | 104 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 27.5 | 130 ○ |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓓ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|------------------|
| Population (millions) | 35.5 |
| GDP (US\$ billions) | 1,788.7 |
| GDP per capita, PPP\$ | 44,655.7 |
| Income group | High income |
| Region | Northern America |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 55.7 | 16 |
| Innovation Output Sub-Index | 46.4 | 22 |
| Innovation Input Sub-Index..... | 65.1 | 9 |
| Innovation Efficiency Ratio..... | 0.7 | 70 ○ |
| Global Innovation Index 2014 (out of 143) | 56.1 | 12 |
| 1 Institutions..... | 92.7 | 6 ● |
| 1.1 Political environment..... | 89.5 | 11 |
| 1.1.1 Political stability*..... | 89.6 | 16 |
| 1.1.2 Government effectiveness*..... | 89.3 | 7 |
| 1.2 Regulatory environment | 94.9 | 10 |
| 1.2.1 Regulatory quality*..... | 93.5 | 11 |
| 1.2.2 Rule of law*..... | 93.9 | 12 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 10.0 | 34 |
| 1.3 Business environment..... | 93.7 | 1 ● |
| 1.3.1 Ease of starting a business*..... | 98.8 | 2 ● |
| 1.3.2 Ease of resolving insolvency*..... | 89.2 | 6 ● |
| 1.3.3 Ease of paying taxes*..... | 93.0 | 9 |
| 2 Human capital & research..... | 49.0 | 22 |
| 2.1 Education..... | 37.5 | 92 ○ |
| 2.1.1 Expenditure on education, % GDP | 5.3 | 45 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 18.3 | 65 ○ |
| 2.1.3 School life expectancy, years..... | n/a | n/a |
| 2.1.4 PISA scales in reading, maths, & science..... | 522.2 | 8 |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a |
| 2.2 Tertiary education..... | n/a | n/a |
| 2.2.1 Tertiary enrolment, % gross..... | n/a | n/a |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 60.4 | 14 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓣ] | 4,493.7 | 13 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 1.6 | 24 |
| 2.3.3 QS university ranking, average score top 3*..... | 88.8 | 4 ● |
| 3 Infrastructure..... | 60.9 | 11 |
| 3.1 Information & communication technologies (ICTs)..... | 80.0 | 11 |
| 3.1.1 ICT access*..... | 80.1 | 22 |
| 3.1.2 ICT use*..... | 66.3 | 20 |
| 3.1.3 Government's online service*..... | 91.3 | 10 |
| 3.1.4 E-participation*..... | 82.4 | 14 |
| 3.2 General infrastructure..... | 62.6 | 5 ● |
| 3.2.1 Electricity output, kWh/cap..... | 18,511.8 | 5 ● |
| 3.2.2 Logistics performance*..... | 86.4 | 12 |
| 3.2.3 Gross capital formation, % GDP..... | 23.8 | 51 |
| 3.3 Ecological sustainability | 40.1 | 58 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 5.2 | 94 ○ |
| 3.3.2 Environmental performance*..... | 73.1 | 24 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 1.2 | 60 |
| 4 Market sophistication | 73.5 | 4 ● |
| 4.1 Credit..... | 62.8 | 9 |
| 4.1.1 Ease of getting credit*..... | 85.0 | 7 |
| 4.1.2 Domestic credit to private sector, % GDP [Ⓣ] | 124.9 | 21 |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a |

| | | |
|---|-------------|-----------|
| 4.2 Investment | 71.5 | 5 ● |
| 4.2.1 Ease of protecting investors*..... | 72.5 | 7 |
| 4.2.2 Market capitalization, % GDP..... | 110.7 | 10 |
| 4.2.3 Total value of stocks traded, % GDP..... | 66.3 | 12 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.7 | 4 ● |
| 4.3 Trade & competition | 86.1 | 20 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 0.8 | 5 ● |
| 4.3.2 Intensity of local competition [†] | 75.0 | 31 |
| 5 Business sophistication | 49.3 | 18 |
| 5.1 Knowledge workers..... | 56.0 | 28 |
| 5.1.1 Knowledge-intensive employment, %..... | 44.2 | 14 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP..... | 0.8 | 25 |
| 5.1.4 GERD financed by business, %..... | 46.4 | 25 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 15.6 | 35 |
| 5.2 Innovation linkages | 50.1 | 15 |
| 5.2.1 University/industry research collaboration [†] | 65.0 | 18 |
| 5.2.2 State of cluster development [†] | 62.9 | 18 |
| 5.2.3 GERD financed by abroad, %..... | 6.0 | 61 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.1 | 4 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 1.0 | 16 |
| 5.3 Knowledge absorption..... | 41.6 | 35 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.9 | 9 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 10.2 | 30 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.0 | 58 ○ |
| 5.3.4 FDI net inflows, % GDP..... | 3.7 | 44 |
| 6 Knowledge & technology outputs | 41.9 | 21 |
| 6.1 Knowledge creation..... | 45.0 | 18 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 3.0 | 32 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 1.9 | 24 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 37.4 | 17 |
| 6.1.5 Citable documents H index..... | 725.0 | 5 ● |
| 6.2 Knowledge impact..... | 39.7 | 56 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.1 | 97 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 1.1 | 66 ○ |
| 6.2.3 Computer software spending, % GDP..... | 0.8 | 3 ● |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 5.5 | 59 |
| 6.2.5 High- & medium-high-tech manufactures, % | 28.5 | 39 |
| 6.3 Knowledge diffusion..... | 41.0 | 33 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.7 | 19 |
| 6.3.2 High-tech exports less re-exports, % total trade | 5.7 | 29 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.7 | 52 ○ |
| 6.3.4 FDI net outflows, % GDP | 2.5 | 26 |
| 7 Creative outputs | 50.9 | 18 |
| 7.1 Intangible assets..... | 55.9 | 23 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 51.4 | 47 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 68.9 | 20 |
| 7.1.4 ICTs & organizational model creation [†] | 70.8 | 12 |
| 7.2 Creative goods & services..... | 23.3 | 55 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.7 | 28 |
| 7.2.2 National feature films/mn pop. 15–69..... | 3.6 | 46 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 49.5 | 13 |
| 7.2.4 Printing & publishing output manufactures, %..... | 0.4 | 93 ○ |
| 7.2.5 Creative goods exports, % total trade..... | 1.0 | 39 |
| 7.3 Online creativity..... | 68.5 | 11 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 89.9 | 6 ● |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 37.7 | 20 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 7,167.2 | 16 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 93.5 | 6 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓣ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------------------|
| Population (millions) | 17.8 |
| GDP (US\$ billions) | 258.0 |
| GDP per capita, PPP\$ | 19,887.3 |
| Income group | High income |
| Region | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 41.2 | 42 |
| Innovation Output Sub-Index | 33.4 | 48 |
| Innovation Input Sub-Index..... | 49.0 | 36 |
| Innovation Efficiency Ratio..... | 0.7 | 82 |
| Global Innovation Index 2014 (out of 143) | 40.6 | 46 |
| 1 Institutions..... | 73.8 | 37 |
| 1.1 Political environment..... | 74.2 | 34 |
| 1.1.1 Political stability*..... | 73.4 | 50 |
| 1.1.2 Government effectiveness*..... | 75.0 | 25 |
| 1.2 Regulatory environment | 73.4 | 44 |
| 1.2.1 Regulatory quality*..... | 87.2 | 16 ● |
| 1.2.2 Rule of law*..... | 83.2 | 22 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 27.4 | 118 ○ |
| 1.3 Business environment..... | 73.9 | 54 |
| 1.3.1 Ease of starting a business*..... | 89.8 | 50 |
| 1.3.2 Ease of resolving insolvency*..... | 47.4 | 68 |
| 1.3.3 Ease of paying taxes*..... | 84.5 | 28 |
| 2 Human capital & research..... | 32.3 | 57 |
| 2.1 Education | 42.2 | 78 |
| 2.1.1 Expenditure on education, % GDP | 4.6 | 71 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 18.1 | 68 |
| 2.1.3 School life expectancy, years..... | 15.2 | 37 |
| 2.1.4 PISA scales in reading, maths, & science..... | 436.3 | 45 ○ |
| 2.1.5 Pupil-teacher ratio, secondary..... | 20.0 | 85 ○ |
| 2.2 Tertiary education..... | 34.7 | 59 |
| 2.2.1 Tertiary enrolment, % gross..... | 74.4 | 18 ● |
| 2.2.2 Graduates in science & engineering, % | 19.2 | 58 |
| 2.2.3 Tertiary inbound mobility, %..... | 0.3 | 101 ○ |
| 2.3 Research & development (R&D)..... | 19.9 | 46 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 389.2 | 62 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.4 | 72 |
| 2.3.3 QS university ranking, average score top 3*..... | 46.8 | 29 |
| 3 Infrastructure..... | 50.0 | 35 |
| 3.1 Information & communication technologies (ICTs)..... | 70.1 | 26 |
| 3.1.1 ICT access*..... | 63.5 | 60 |
| 3.1.2 ICT use*..... | 40.8 | 55 |
| 3.1.3 Government's online service*..... | 81.9 | 16 ● |
| 3.1.4 E-participation*..... | 94.1 | 7 ● |
| 3.2 General infrastructure..... | 34.7 | 57 |
| 3.2.1 Electricity output, kWh/cap..... | 4,282.7 | 49 |
| 3.2.2 Logistics performance*..... | 55.8 | 40 |
| 3.2.3 Gross capital formation, % GDP..... | 22.2 | 64 |
| 3.3 Ecological sustainability | 45.2 | 44 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 7.5 | 56 |
| 3.3.2 Environmental performance*..... | 69.9 | 29 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 2.5 | 41 |
| 4 Market sophistication | 50.9 | 51 |
| 4.1 Credit..... | 30.7 | 71 |
| 4.1.1 Ease of getting credit*..... | 50.0 | 65 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 105.9 | 29 |
| 4.1.3 Microfinance gross loans, % GDP | 0.7 | 43 |

| | | |
|--|-------|------|
| 4.2 Investment | 40.8 | 49 |
| 4.2.1 Ease of protecting investors*..... | 58.3 | 54 |
| 4.2.2 Market capitalization, % GDP..... | 117.7 | 7 ● |
| 4.2.3 Total value of stocks traded, % GDP..... | 17.6 | 30 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 68 ○ |
| 4.3 Trade & competition | 81.3 | 46 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 4.0 | 64 |
| 4.3.2 Intensity of local competition [†] | 76.5 | 25 |

5 Business sophistication **37.7** **51**

| | | |
|---|------|------|
| 5.1 Knowledge workers..... | 45.2 | 46 |
| 5.1.1 Knowledge-intensive employment, %..... | 24.3 | 60 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 57.5 | 13 ● |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 0.1 | 56 ○ |
| 5.1.4 GERD financed by business, % [Ⓔ] | 34.9 | 44 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 14.5 | 39 |
| 5.2 Innovation linkages | 30.6 | 76 |
| 5.2.1 University/industry research collaboration [†] | 53.3 | 37 |
| 5.2.2 State of cluster development [†] | 48.4 | 58 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 17.5 | 24 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 45 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 0.0 | 85 ○ |
| 5.3 Knowledge absorption..... | 37.5 | 51 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.0 | 27 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 9.7 | 35 |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 0.8 | 67 |
| 5.3.4 FDI net inflows, % GDP..... | 7.3 | 18 ● |

6 Knowledge & technology outputs **28.3** **57**

| | | |
|---|-------|-------|
| 6.1 Knowledge creation..... | 10.7 | 67 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP | 0.9 | 67 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP | 0.4 | 46 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP | 0.2 | 44 ○ |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 16.6 | 46 |
| 6.1.5 Citable documents H index..... | 214.0 | 37 |
| 6.2 Knowledge impact..... | 44.4 | 40 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 3.8 | 16 ● |
| 6.2.2 New businesses/th pop. 15–64..... | 5.7 | 20 |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 45 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 10.7 | 38 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 21.7 | 52 |
| 6.3 Knowledge diffusion..... | 29.9 | 58 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.1 | 58 |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.7 | 71 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 0.4 | 101 ○ |
| 6.3.4 FDI net outflows, % GDP | 3.9 | 16 ● |

7 Creative outputs **38.6** **45**

| | | |
|--|---------|-------|
| 7.1 Intangible assets..... | 55.7 | 25 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 73.6 | 24 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 66.4 | 28 |
| 7.1.4 ICTs & organizational model creation [†] | 59.9 | 40 |
| 7.2 Creative goods & services..... | 8.2 | 104 ○ |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | 2.4 | 55 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 8.6 | 37 ○ |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 0.2 | 75 |
| 7.3 Online creativity..... | 34.7 | 40 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 2.5 | 81 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 15.6 | 38 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 5,520.3 | 21 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 80.2 | 34 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|-----------------------------|
| Population (millions)..... | 1,393.8 |
| GDP (US\$ billions)..... | 10,380.4 |
| GDP per capita, PPP\$..... | 10,694.7 |
| Income group..... | Upper-middle income |
| Region..... | South East Asia and Oceania |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 47.5 | 29 |
| Innovation Output Sub-Index..... | 46.6 | 21 |
| Innovation Input Sub-Index..... | 48.4 | 41 |
| Innovation Efficiency Ratio..... | 1.0 | 6 ● |
| Global Innovation Index 2014 (out of 143)..... | 46.6 | 29 |
| 1 Institutions..... | 54.0 | 91 |
| 1.1 Political environment..... | 45.6 | 79 |
| 1.1.1 Political stability*..... | 50.7 | 99 |
| 1.1.2 Government effectiveness*..... | 40.6 | 70 |
| 1.2 Regulatory environment..... | 49.6 | 115 |
| 1.2.1 Regulatory quality*..... | 39.6 | 92 |
| 1.2.2 Rule of law*..... | 35.5 | 88 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 27.4 | 118 ○ |
| 1.3 Business environment..... | 66.7 | 78 |
| 1.3.1 Ease of starting a business*..... | 77.4 | 105 |
| 1.3.2 Ease of resolving insolvency*..... | 55.3 | 51 |
| 1.3.3 Ease of paying taxes*..... | 67.4 | 94 |
| 2 Human capital & research..... | 43.1 | 31 |
| 2.1 Education..... | 70.8 | 2 ● |
| 2.1.1 Expenditure on education, % GDP..... | n/a | n/a |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years..... | 13.1 | 78 |
| 2.1.4 PISA scales in reading, maths, & science..... | 587.5 | 1 ● |
| 2.1.5 Pupil-teacher ratio, secondary..... | 14.5 | 59 |
| 2.2 Tertiary education..... | 11.7 | 121 ○ |
| 2.2.1 Tertiary enrolment, % gross..... | 26.7 | 82 |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | 0.3 | 103 ○ |
| 2.3 Research & development (R&D)..... | 46.9 | 21 |
| 2.3.1 Researchers, FTE/mn pop..... | 1,071.1 | 47 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 2.1 | 17 |
| 2.3.3 QS university ranking, average score top 3*..... | 78.5 | 11 |
| 3 Infrastructure..... | 50.5 | 32 |
| 3.1 Information & communication technologies (ICTs)..... | 51.6 | 54 |
| 3.1.1 ICT access*..... | 51.0 | 77 |
| 3.1.2 ICT use*..... | 29.9 | 71 |
| 3.1.3 Government's online service*..... | 60.6 | 47 |
| 3.1.4 E-participation*..... | 64.7 | 33 |
| 3.2 General infrastructure..... | 65.1 | 3 ● |
| 3.2.1 Electricity output, kWh/cap..... | 3,690.5 | 52 |
| 3.2.2 Logistics performance*..... | 69.9 | 27 |
| 3.2.3 Gross capital formation, % GDP..... | 47.7 | 4 ● |
| 3.3 Ecological sustainability..... | 35.0 | 82 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 4.5 | 103 ○ |
| 3.3.2 Environmental performance*..... | 43.0 | 102 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 6.5 | 17 |
| 4 Market sophistication..... | 49.2 | 59 |
| 4.1 Credit..... | 31.9 | 63 |
| 4.1.1 Ease of getting credit*..... | 50.0 | 65 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 140.0 | 16 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.0 | 86 ○ |

| | | |
|---|-------------|------------|
| 4.2 Investment..... | 36.6 | 62 |
| 4.2.1 Ease of protecting investors*..... | 45.0 | 114 ○ |
| 4.2.2 Market capitalization, % GDP..... | 44.9 | 44 |
| 4.2.3 Total value of stocks traded, % GDP..... | 70.8 | 8 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.1 | 34 |
| 4.3 Trade & competition..... | 79.2 | 59 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 4.1 | 66 |
| 4.3.2 Intensity of local competition [†] | 72.6 | 42 |
| 5 Business sophistication..... | 44.9 | 31 |
| 5.1 Knowledge workers..... | 61.2 | 20 |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 7.4 | 104 ○ |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 79.2 | 1 ● |
| 5.1.3 GERD performed by business, % of GDP..... | 1.6 | 13 |
| 5.1.4 GERD financed by business, %..... | 74.6 | 3 ● |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 31.1 | 71 |
| 5.2.1 University/industry research collaboration [†] | 56.7 | 31 |
| 5.2.2 State of cluster development [†] | 59.3 | 23 |
| 5.2.3 GERD financed by abroad, %..... | 0.9 | 89 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 57 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.3 | 29 |
| 5.3 Knowledge absorption..... | 42.6 | 32 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.9 | 35 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 18.8 | 8 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.3 | 112 ○ |
| 5.3.4 FDI net inflows, % GDP..... | 3.8 | 40 |
| 6 Knowledge & technology outputs..... | 58.0 | 3 ● |
| 6.1 Knowledge creation..... | 64.1 | 6 ● |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 43.6 | 1 ● |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 1.4 | 27 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 54.7 | 1 ● |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 14.0 | 53 |
| 6.1.5 Citable documents H index..... | 436.0 | 16 |
| 6.2 Knowledge impact..... | 67.2 | 1 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 7.1 | 1 ● |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | 0.4 | 23 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 20.8 | 19 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 43.1 | 15 |
| 6.3 Knowledge diffusion..... | 42.8 | 28 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.0 | 76 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 28.4 | 1 ● |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 0.7 | 86 |
| 6.3.4 FDI net outflows, % GDP..... | 1.8 | 36 |
| 7 Creative outputs..... | 35.1 | 54 |
| 7.1 Intangible assets..... | 52.4 | 39 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 107.2 | 11 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.1 | 54 |
| 7.1.3 ICTs & business model creation [†] | 60.6 | 47 |
| 7.1.4 ICTs & organizational model creation [†] | 61.4 | 32 |
| 7.2 Creative goods & services..... | 33.0 | 35 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.2 | 49 |
| 7.2.2 National feature films/mn pop. 15–69..... | 0.6 | 89 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 3.0 | 47 |
| 7.2.4 Printing & publishing output manufactures, %..... | 0.5 | 91 ○ |
| 7.2.5 Creative goods exports, % total trade..... | 14.0 | 1 ● |
| 7.3 Online creativity..... | 2.6 | 104 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 2.3 | 84 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 4.5 | 54 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 149.8 | 110 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------------------|
| Population (millions) | 48.9 |
| GDP (US\$ billions) | 384.9 |
| GDP per capita, PPP\$ | 11,730.3 |
| Income group | Upper-middle income |
| Region | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 36.4 | 67 |
| Innovation Output Sub-Index | 27.4 | 75 |
| Innovation Input Sub-Index | 45.4 | 51 |
| Innovation Efficiency Ratio | 0.6 | 114 ○ |
| Global Innovation Index 2014 (out of 143) | 35.5 | 68 |

| | | |
|--|-------------|-----------|
| 1 Institutions | 58.2 | 77 |
| 1.1 Political environment | 37.7 | 107 |
| 1.1.1 Political stability* | 32.8 | 127 ○ |
| 1.1.2 Government effectiveness* | 42.5 | 66 |
| 1.2 Regulatory environment | 64.9 | 76 |
| 1.2.1 Regulatory quality* | 58.1 | 57 |
| 1.2.2 Rule of law* | 35.7 | 87 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 16.7 | 76 |
| 1.3 Business environment | 71.9 | 58 |
| 1.3.1 Ease of starting a business* | 86.1 | 70 |
| 1.3.2 Ease of resolving insolvency* | 70.0 | 28 |
| 1.3.3 Ease of paying taxes* | 59.7 | 112 ○ |

| | | |
|---|-------------|-----------|
| 2 Human capital & research | 31.2 | 59 |
| 2.1 Education | 35.7 | 95 |
| 2.1.1 Expenditure on education, % GDP | 4.9 | 63 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 17.0 | 73 |
| 2.1.3 School life expectancy, years [Ⓔ] | 13.5 | 68 |
| 2.1.4 PISA scales in reading, maths, & science | 392.9 | 58 ○ |
| 2.1.5 Pupil-teacher ratio, secondary | 25.2 | 96 ○ |
| 2.2 Tertiary education | 41.8 | 37 |
| 2.2.1 Tertiary enrolment, % gross | 48.3 | 52 |
| 2.2.2 Graduates in science & engineering, % | 21.5 | 45 |
| 2.2.3 Tertiary inbound mobility, % | n/a | n/a |
| 2.3 Research & development (R&D) | 16.1 | 51 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 161.5 | 74 |
| 2.3.2 Gross expenditure on R&D, % GDP | 0.2 | 84 |
| 2.3.3 QS university ranking, average score top 3* | 41.4 | 34 |

| | | |
|---|-------------|-----------|
| 3 Infrastructure | 48.4 | 39 |
| 3.1 Information & communication technologies (ICTs) | 63.0 | 38 |
| 3.1.1 ICT access* | 54.4 | 74 |
| 3.1.2 ICT use* | 30.7 | 68 |
| 3.1.3 Government's online service* | 78.7 | 17 ● |
| 3.1.4 E-participation* | 88.2 | 11 ● |
| 3.2 General infrastructure | 26.0 | 95 |
| 3.2.1 Electricity output, kWh/cap | 1,306.9 | 91 |
| 3.2.2 Logistics performance* | 24.4 | 92 |
| 3.2.3 Gross capital formation, % GDP | 25.0 | 44 |
| 3.3 Ecological sustainability | 56.1 | 14 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 15.6 | 2 ● |
| 3.3.2 Environmental performance* | 50.8 | 76 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 4.6 | 23 ● |

| | | |
|--|-------------|-----------|
| 4 Market sophistication | 53.7 | 38 |
| 4.1 Credit | 44.8 | 34 |
| 4.1.1 Ease of getting credit* | 95.0 | 2 ● |
| 4.1.2 Domestic credit to private sector, % GDP | 50.2 | 67 |
| 4.1.3 Microfinance gross loans, % GDP | 2.0 | 27 |

| | | |
|---|------|------|
| 4.2 Investment | 38.7 | 58 |
| 4.2.1 Ease of protecting investors* | 71.7 | 10 ● |
| 4.2.2 Market capitalization, % GDP | 70.8 | 22 |
| 4.2.3 Total value of stocks traded, % GDP | 7.0 | 45 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.0 | 61 ○ |
| 4.3 Trade & competition | 77.5 | 65 |
| 4.3.1 Applied tariff rate, weighted mean, % | 4.4 | 75 |
| 4.3.2 Intensity of local competition [†] | 70.3 | 54 |

| | | |
|---|-------------|-----------|
| 5 Business sophistication | 35.8 | 63 |
| 5.1 Knowledge workers | 42.4 | 53 |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 16.8 | 86 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 65.2 | 5 ● |
| 5.1.3 GERD performed by business, % of GDP | 0.1 | 70 |
| 5.1.4 GERD financed by business, % | 29.0 | 50 |
| 5.1.5 Females employed w/advanced degrees, % total | 13.2 | 47 |
| 5.2 Innovation linkages | 22.1 | 116 ○ |
| 5.2.1 University/industry research collaboration [†] | 48.8 | 47 |
| 5.2.2 State of cluster development [†] | 45.2 | 75 |
| 5.2.3 GERD financed by abroad, % | 2.4 | 79 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 58 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 0.0 | 94 ○ |
| 5.3 Knowledge absorption | 42.8 | 31 |
| 5.3.1 Royalty & license fees payments, % total trade | 0.8 | 39 |
| 5.3.2 High-tech imports less re-imports, % total trade | 15.6 | 13 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade | 0.8 | 66 |
| 5.3.4 FDI net inflows, % GDP | 4.4 | 35 |

| | | |
|--|-------------|-----------|
| 6 Knowledge & technology outputs | 23.7 | 86 |
| 6.1 Knowledge creation | 6.4 | 93 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP | 0.4 | 78 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP | 0.2 | 55 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP | 0.4 | 39 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 5.1 | 97 |
| 6.1.5 Citable documents H index | 151.0 | 47 |
| 6.2 Knowledge impact | 39.7 | 57 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 2.2 | 41 |
| 6.2.2 New businesses/th pop. 15–64 | 2.0 | 47 |
| 6.2.3 Computer software spending, % GDP | 0.2 | 64 ○ |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 22.2 | 17 ● |
| 6.2.5 High- & medium-high-tech manufactures, % | 22.1 | 50 |
| 6.3 Knowledge diffusion | 25.1 | 87 |
| 6.3.1 Royalty & license fees receipts, % total trade | 0.1 | 53 |
| 6.3.2 High-tech exports less re-exports, % total trade | 1.2 | 60 |
| 6.3.3 Comm., computer & info. services exp., % total trade | 0.4 | 100 ○ |
| 6.3.4 FDI net outflows, % GDP | 2.0 | 33 |

| | | |
|---|-------------|-----------|
| 7 Creative outputs | 31.0 | 77 |
| 7.1 Intangible assets | 38.7 | 95 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP | 32.0 | 68 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | 0.1 | 56 ○ |
| 7.1.3 ICTs & business model creation [†] | 60.2 | 49 |
| 7.1.4 ICTs & organizational model creation [†] | 57.6 | 52 |
| 7.2 Creative goods & services | 18.2 | 71 |
| 7.2.1 Cultural & creative services exports, % total trade | 0.4 | 40 |
| 7.2.2 National feature films/mn pop. 15–69 | 0.8 | 83 |
| 7.2.3 Global ent. & media output/th pop. 15–69 | 5.7 | 44 |
| 7.2.4 Printing & publishing output manufactures, % | 2.6 | 17 ● |
| 7.2.5 Creative goods exports, % total trade | 0.3 | 72 |
| 7.3 Online creativity | 28.4 | 45 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 3.4 | 68 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 21.3 | 33 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 2,259.6 | 49 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 72.2 | 55 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------------------|
| Population (millions)..... | 4.9 |
| GDP (US\$ billions)..... | 48.1 |
| GDP per capita, PPP\$..... | 13,341.1 |
| Income group..... | Upper-middle income |
| Region..... | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|--------------|
| Global Innovation Index (out of 141)..... | 38.6 | 51 |
| Innovation Output Sub-Index..... | 34.0 | 45 |
| Innovation Input Sub-Index..... | 43.2 | 61 |
| Innovation Efficiency Ratio..... | 0.8 | 32 |
| Global Innovation Index 2014 (out of 143)..... | 37.3 | 57 |
| 1 Institutions..... | 67.3 | 56 |
| 1.1 Political environment..... | 67.4 | 45 |
| 1.1.1 Political stability*..... | 80.6 | 38 |
| 1.1.2 Government effectiveness*..... | 54.1 | 45 |
| 1.2 Regulatory environment..... | 70.4 | 52 |
| 1.2.1 Regulatory quality*..... | 63.2 | 47 |
| 1.2.2 Rule of law*..... | 60.8 | 43 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 18.7 | 84 |
| 1.3 Business environment..... | 64.0 | 86 |
| 1.3.1 Ease of starting a business*..... | 80.9 | 96 |
| 1.3.2 Ease of resolving insolvency*..... | 44.0 | 83 |
| 1.3.3 Ease of paying taxes*..... | 67.3 | 95 |
| 2 Human capital & research..... | 26.3 | 80 |
| 2.1 Education..... | 48.2 | 57 |
| 2.1.1 Expenditure on education, % GDP..... | 6.9 | 14 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 24.8 | 40 |
| 2.1.3 School life expectancy, years..... | 13.9 | 60 |
| 2.1.4 PISA scales in reading, maths, & science..... | 425.6 | 46 ○ |
| 2.1.5 Pupil-teacher ratio, secondary..... | 13.8 | 50 |
| 2.2 Tertiary education..... | 22.0 | 98 |
| 2.2.1 Tertiary enrolment, % gross..... | 47.6 | 55 |
| 2.2.2 Graduates in science & engineering, % [Ⓐ] | 11.9 | 95 ○ |
| 2.2.3 Tertiary inbound mobility, % [Ⓐ] | 1.4 | 74 |
| 2.3 Research & development (R&D)..... | 8.8 | 72 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓐ] | 1,289.0 | 42 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓐ] | 0.5 | 64 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 44.7 | 49 |
| 3.1 Information & communication technologies (ICTs)..... | 62.8 | 40 |
| 3.1.1 ICT access*..... | 62.7 | 62 |
| 3.1.2 ICT use*..... | 44.8 | 48 |
| 3.1.3 Government's online service*..... | 61.4 | 43 |
| 3.1.4 E-participation*..... | 82.4 | 14 ● |
| 3.2 General infrastructure..... | 24.5 | 102 |
| 3.2.1 Electricity output, kWh/cap..... | 2,115.4 | 77 |
| 3.2.2 Logistics performance*..... | 27.5 | 82 |
| 3.2.3 Gross capital formation, % GDP..... | 21.9 | 68 |
| 3.3 Ecological sustainability..... | 46.8 | 38 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 11.9 | 15 ● |
| 3.3.2 Environmental performance*..... | 58.5 | 51 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 1.2 | 58 |
| 4 Market sophistication..... | 38.4 | 120 ○ |
| 4.1 Credit..... | 20.7 | 112 ○ |
| 4.1.1 Ease of getting credit*..... | 45.0 | 80 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 50.4 | 66 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.1 | 62 |

| | | |
|--|------|-------|
| 4.2 Investment..... | 14.8 | 141 ○ |
| 4.2.1 Ease of protecting investors*..... | 28.3 | 141 ○ |
| 4.2.2 Market capitalization, % GDP..... | 4.4 | 102 ○ |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.1 | 101 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 79.5 | 55 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓐ] | 3.1 | 58 |
| 4.3.2 Intensity of local competition [†] | 69.7 | 57 |

| | | |
|---|-------------|-----------|
| 5 Business sophistication..... | 39.4 | 42 |
| 5.1 Knowledge workers..... | 40.6 | 61 |
| 5.1.1 Knowledge-intensive employment, %..... | 25.0 | 56 |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 54.7 | 20 ● |
| 5.1.3 GERD performed by business, % of GDP [Ⓐ] | 0.1 | 65 |
| 5.1.4 GERD financed by business, % [Ⓐ] | 18.8 | 64 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 13.2 | 48 |
| 5.2 Innovation linkages..... | 30.6 | 75 |
| 5.2.1 University/industry research collaboration [†] | 56.0 | 32 |
| 5.2.2 State of cluster development [†] | 53.9 | 36 |
| 5.2.3 GERD financed by abroad, % [Ⓐ] | 6.5 | 58 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 83 |
| 5.3 Knowledge absorption..... | 46.9 | 20 ● |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.3 | 72 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 20.9 | 5 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.6 | 84 |
| 5.3.4 FDI net inflows, % GDP..... | 6.5 | 23 ● |

| | | |
|---|-------------|-----------|
| 6 Knowledge & technology outputs..... | 30.3 | 47 |
| 6.1 Knowledge creation..... | 4.4 | 109 ○ |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 0.3 | 84 ○ |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.1 | 61 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 0.0 | 58 ○ |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 7.2 | 80 |
| 6.1.5 Citable documents H index..... | 115.0 | 62 |
| 6.2 Knowledge impact..... | 32.8 | 95 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 2.0 | 47 |
| 6.2.2 New businesses/th pop. 15–64..... | 3.5 | 34 |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 48 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 3.2 | 78 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 11.9 | 72 |
| 6.3 Knowledge diffusion..... | 53.8 | 11 ● |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.0 | 85 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 16.8 | 8 ● |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 11.1 | 1 ● |
| 6.3.4 FDI net outflows, % GDP..... | 1.6 | 39 |

| | | |
|--|-------------|-----------|
| 7 Creative outputs..... | 37.6 | 48 |
| 7.1 Intangible assets..... | 59.8 | 13 ● |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP [Ⓐ] | 101.0 | 12 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 62.2 | 41 |
| 7.1.4 ICTs & organizational model creation [†] | 60.8 | 36 |
| 7.2 Creative goods & services..... | 20.3 | 67 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.0 | 75 ○ |
| 7.2.2 National feature films/mn pop. 15–69..... | 0.6 | 92 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | 2.7 | 14 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.6 | 52 |
| 7.3 Online creativity..... | 10.4 | 77 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 12.8 | 39 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 1.9 | 73 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 2,245.2 | 50 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------|
| Population (millions) | 20.8 |
| GDP (US\$ billions) | 34.0 |
| GDP per capita, PPP\$ | 1,938.2 |
| Income group | Lower-middle income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 27.2 | 116 |
| Innovation Output Sub-Index | 25.7 | 87 |
| Innovation Input Sub-Index..... | 28.6 | 131 ○ |
| Innovation Efficiency Ratio..... | 0.9 | 10 ● |
| Global Innovation Index 2014 (out of 143) | 27.0 | 116 |

1 Institutions.....47.7 113

| | | |
|---|------|-------|
| 1.1 Political environment..... | 25.8 | 129 ○ |
| 1.1.1 Political stability*..... | 38.2 | 115 |
| 1.1.2 Government effectiveness*..... | 13.4 | 130 ○ |
| 1.2 Regulatory environment | 57.8 | 93 |
| 1.2.1 Regulatory quality*..... | 28.4 | 119 |
| 1.2.2 Rule of law*..... | 22.8 | 121 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 13.1 | 54 ● |
| 1.3 Business environment..... | 59.6 | 104 |
| 1.3.1 Ease of starting a business*..... | 91.2 | 38 ● |
| 1.3.2 Ease of resolving insolvency*..... | 45.0 | 80 ● |
| 1.3.3 Ease of paying taxes*..... | 42.7 | 132 ○ |

2 Human capital & research.....16.0 118

| | | |
|--|------|-------|
| 2.1 Education | 34.7 | 103 |
| 2.1.1 Expenditure on education, % GDP [Ⓔ] | 4.6 | 69 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years..... | 8.9 | 122 ○ |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 22.7 | 91 |
| 2.2 Tertiary education..... | 12.9 | 118 |
| 2.2.1 Tertiary enrolment, % gross..... | 9.1 | 116 |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | 4.4 | 39 ● |
| 2.3 Research & development (R&D)..... | 0.4 | 120 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 73.0 | 86 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |

3 Infrastructure.....19.8 131 ○

| | | |
|--|-------|-------|
| 3.1 Information & communication technologies (ICTs)..... | 17.1 | 127 ○ |
| 3.1.1 ICT access*..... | 31.9 | 112 |
| 3.1.2 ICT use*..... | 1.6 | 132 ○ |
| 3.1.3 Government's online service*..... | 17.3 | 122 |
| 3.1.4 E-participation*..... | 17.6 | 124 ○ |
| 3.2 General infrastructure..... | 19.6 | 120 |
| 3.2.1 Electricity output, kWh/cap..... | 353.6 | 108 |
| 3.2.2 Logistics performance*..... | 30.6 | 76 ● |
| 3.2.3 Gross capital formation, % GDP..... | 18.8 | 104 |
| 3.3 Ecological sustainability | 22.7 | 126 ○ |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 3.8 | 111 ○ |
| 3.3.2 Environmental performance*..... | 39.7 | 108 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.2 | 112 |

4 Market sophistication.....35.3 132 ○

| | | |
|---|------|-------|
| 4.1 Credit..... | 12.3 | 128 ○ |
| 4.1.1 Ease of getting credit*..... | 30.0 | 113 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 18.4 | 117 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.2 | 59 |

| | | |
|---|------|------|
| 4.2 Investment | 25.8 | 119 |
| 4.2.1 Ease of protecting investors*..... | 42.5 | 120 |
| 4.2.2 Market capitalization, % GDP..... | 28.9 | 58 ● |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.6 | 76 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition | 67.7 | 103 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 6.8 | 100 |
| 4.3.2 Intensity of local competition [†] | 59.2 | 108 |

5 Business sophistication.....24.0 127 ○

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 20.7 | 120 |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 19.1 | 92 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages | 28.5 | 86 |
| 5.2.1 University/industry research collaboration [†] | 39.0 | 83 |
| 5.2.2 State of cluster development [†] | 37.6 | 106 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 108 ○ |
| 5.3 Knowledge absorption..... | 22.8 | 128 ○ |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 0.2 | 95 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 4.6 | 104 |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 0.8 | 70 ● |
| 5.3.4 FDI net inflows, % GDP..... | 1.2 | 106 |

6 Knowledge & technology outputs.....26.8 65

| | | |
|---|------|-------|
| 6.1 Knowledge creation..... | 3.7 | 117 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP [Ⓔ] | 0.4 | 76 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.0 | 81 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 3.2 | 114 |
| 6.1.5 Citable documents H index..... | 76.0 | 91 |
| 6.2 Knowledge impact..... | 58.4 | 3 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 5.2 | 8 ● |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.0 | 113 |
| 6.2.5 High- & medium-high-tech manufactures, % | n/a | n/a |
| 6.3 Knowledge diffusion..... | 18.1 | 118 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓔ] | 0.0 | 107 ○ |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.9 | 68 ● |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 0.9 | 80 |
| 6.3.4 FDI net outflows, % GDP [Ⓔ] | 0.2 | 86 |

7 Creative outputs.....24.7 102

| | | |
|--|------|-------|
| 7.1 Intangible assets..... | 48.9 | 51 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 49.2 | 97 |
| 7.1.4 ICTs & organizational model creation [†] | 48.6 | 83 |
| 7.2 Creative goods & services..... | 0.8 | 134 ○ |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade [Ⓔ] | 0.0 | 114 |
| 7.3 Online creativity..... | 0.3 | 122 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.6 | 114 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.2 | 114 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 23.7 | 132 ○ |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|-------------|
| Population (millions) | 4.3 |
| GDP (US\$ billions) | 57.2 |
| GDP per capita, PPP\$ | 18,354.7 |
| Income group | High income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 41.7 | 40 |
| Innovation Output Sub-Index | 35.7 | 41 |
| Innovation Input Sub-Index..... | 47.7 | 43 |
| Innovation Efficiency Ratio..... | 0.8 | 50 |
| Global Innovation Index 2014 (out of 143) | 40.7 | 42 |

1 Institutions.....71.8 41

| | | |
|---|------|------|
| 1.1 Political environment..... | 69.7 | 39 |
| 1.1.1 Political stability*..... | 79.3 | 39 |
| 1.1.2 Government effectiveness*..... | 60.0 | 41 |
| 1.2 Regulatory environment | 71.5 | 47 |
| 1.2.1 Regulatory quality*..... | 59.5 | 53 |
| 1.2.2 Rule of law*..... | 54.7 | 53 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 15.1 | 66 |
| 1.3 Business environment..... | 74.1 | 52 |
| 1.3.1 Ease of starting a business*..... | 85.4 | 73 |
| 1.3.2 Ease of resolving insolvency*..... | 53.9 | 54 |
| 1.3.3 Ease of paying taxes*..... | 82.9 | 32 ● |

2 Human capital & research.....36.9 47

| | | |
|--|---------|------|
| 2.1 Education..... | 58.1 | 15 ● |
| 2.1.1 Expenditure on education, % GDP | 4.2 | 79 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years..... | 14.8 | 44 |
| 2.1.4 PISA scales in reading, maths, & science..... | 482.4 | 33 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 7.8 | 3 ● |
| 2.2 Tertiary education..... | 37.5 | 51 |
| 2.2.1 Tertiary enrolment, % gross..... | 61.6 | 38 |
| 2.2.2 Graduates in science & engineering, % | 23.8 | 30 |
| 2.2.3 Tertiary inbound mobility, %..... | 0.5 | 92 ○ |
| 2.3 Research & development (R&D)..... | 15.1 | 54 |
| 2.3.1 Researchers, FTE/mn pop..... | 1,522.0 | 40 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.8 | 41 |
| 2.3.3 QS university ranking, average score top 3*..... | 7.9 | 64 |

3 Infrastructure.....44.6 50

| | | |
|--|---------|-------|
| 3.1 Information & communication technologies (ICTs)..... | 52.3 | 53 |
| 3.1.1 ICT access*..... | 73.1 | 37 |
| 3.1.2 ICT use*..... | 56.2 | 29 ● |
| 3.1.3 Government's online service*..... | 46.5 | 70 |
| 3.1.4 E-participation*..... | 33.3 | 92 ○ |
| 3.2 General infrastructure..... | 26.4 | 92 ○ |
| 3.2.1 Electricity output, kWh/cap..... | 2,434.4 | 72 |
| 3.2.2 Logistics performance*..... | 45.5 | 53 |
| 3.2.3 Gross capital formation, % GDP..... | 19.1 | 100 ○ |
| 3.3 Ecological sustainability..... | 55.1 | 16 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 8.6 | 45 |
| 3.3.2 Environmental performance*..... | 62.2 | 44 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 9.5 | 8 ● |

4 Market sophistication.....47.1 68

| | | |
|---|------|------|
| 4.1 Credit..... | 26.5 | 84 |
| 4.1.1 Ease of getting credit*..... | 55.0 | 56 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 76.7 | 40 |
| 4.1.3 Microfinance gross loans, % GDP ^{d)} | 0.0 | 80 ○ |

| | | |
|---|------|------|
| 4.2 Investment..... | 34.8 | 69 |
| 4.2.1 Ease of protecting investors*..... | 57.5 | 60 |
| 4.2.2 Market capitalization, % GDP..... | 38.2 | 51 |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.9 | 68 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 80.1 | 53 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.4 | 38 |
| 4.3.2 Intensity of local competition [†] | 64.7 | 80 |

5 Business sophistication.....37.9 50

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 49.7 | 36 |
| 5.1.1 Knowledge-intensive employment, %..... | 35.4 | 35 |
| 5.1.2 Firms offering formal training, % firms..... | 48.9 | 29 |
| 5.1.3 GERD performed by business, % of GDP..... | 0.4 | 37 |
| 5.1.4 GERD financed by business, %..... | 42.8 | 34 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 13.8 | 45 |
| 5.2 Innovation linkages..... | 26.5 | 94 ○ |
| 5.2.1 University/industry research collaboration [†] | 39.9 | 78 |
| 5.2.2 State of cluster development [†] | 36.1 | 113 ○ |
| 5.2.3 GERD financed by abroad, %..... | 15.5 | 30 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 35 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 55 |
| 5.3 Knowledge absorption..... | 37.6 | 49 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.0 | 31 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 7.6 | 58 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.7 | 33 |
| 5.3.4 FDI net inflows, % GDP..... | 1.0 | 113 ○ |

6 Knowledge & technology outputs.....31.0 44

| | | |
|---|-------|-------|
| 6.1 Knowledge creation..... | 20.7 | 48 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 2.6 | 38 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.6 | 34 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 0.9 | 30 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 35.0 | 20 ● |
| 6.1.5 Citable documents H index..... | 161.0 | 42 |
| 6.2 Knowledge impact..... | 46.1 | 34 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.1 | 96 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 2.8 | 39 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 30.1 | 9 ● |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 26.2 | 78 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.1 | 52 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 4.1 | 37 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 2.0 | 41 |
| 6.3.4 FDI net outflows, % GDP..... | (0.3) | 116 ○ |

7 Creative outputs.....40.5 39

| | | |
|--|---------|------|
| 7.1 Intangible assets..... | 47.4 | 61 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 53.1 | 42 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 1.8 | 13 ● |
| 7.1.3 ICTs & business model creation [†] | 57.9 | 62 |
| 7.1.4 ICTs & organizational model creation [†] | 57.8 | 50 |
| 7.2 Creative goods & services..... | 34.6 | 29 ● |
| 7.2.1 Cultural & creative services exports, % total trade..... | 1.4 | 6 ● |
| 7.2.2 National feature films/mn pop. 15–69..... | 8.4 | 21 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 0.5 | 60 |
| 7.3 Online creativity..... | 32.7 | 43 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 15.9 | 34 ● |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 11.9 | 40 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 3,562.7 | 37 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 76.7 | 42 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

^{d)} indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|----------------------------------|
| Population (millions)..... | 1.2 |
| GDP (US\$ billions)..... | 23.3 |
| GDP per capita, PPP\$..... | 24,170.5 |
| Income group..... | High income |
| Region..... | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-------------|
| Global Innovation Index (out of 141)..... | 43.5 | 34 |
| Innovation Output Sub-Index..... | 34.7 | 43 |
| Innovation Input Sub-Index..... | 52.4 | 32 |
| Innovation Efficiency Ratio..... | 0.7 | 90 |
| Global Innovation Index 2014 (out of 143)..... | 45.8 | 30 |
| 1 Institutions..... | 79.8 | 28 |
| 1.1 Political environment..... | 77.4 | 28 |
| 1.1.1 Political stability*..... | 77.0 | 42 |
| 1.1.2 Government effectiveness*..... | 77.9 | 22 |
| 1.2 Regulatory environment..... | 86.6 | 20 |
| 1.2.1 Regulatory quality*..... | 72.1 | 34 |
| 1.2.2 Rule of law*..... | 74.2 | 29 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.0 | 1 ● |
| 1.3 Business environment..... | 75.5 | 45 |
| 1.3.1 Ease of starting a business*..... | 89.2 | 54 |
| 1.3.2 Ease of resolving insolvency*..... | 56.7 | 49 |
| 1.3.3 Ease of paying taxes*..... | 80.5 | 44 |
| 2 Human capital & research..... | 40.6 | 35 |
| 2.1 Education..... | 58.7 | 11 ● |
| 2.1.1 Expenditure on education, % GDP..... | 7.2 | 12 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 41.7 | 6 ● |
| 2.1.3 School life expectancy, years..... | 14.0 | 57 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 9.7 | 25 |
| 2.2 Tertiary education..... | 55.8 | 9 ● |
| 2.2.1 Tertiary enrolment, % gross..... | 45.9 | 59 |
| 2.2.2 Graduates in science & engineering, %..... | 21.5 | 44 |
| 2.2.3 Tertiary inbound mobility, %..... | 23.5 | 1 ● |
| 2.3 Research & development (R&D)..... | 7.1 | 75 |
| 2.3.1 Researchers, FTE/mn pop..... | 775.5 | 50 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.5 | 60 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 37.8 | 75 |
| 3.1 Information & communication technologies (ICTs)..... | 47.8 | 68 |
| 3.1.1 ICT access*..... | 69.3 | 48 |
| 3.1.2 ICT use*..... | 43.4 | 50 |
| 3.1.3 Government's online service*..... | 47.2 | 68 |
| 3.1.4 E-participation*..... | 31.4 | 101 ○ |
| 3.2 General infrastructure..... | 19.5 | 121 ○ |
| 3.2.1 Electricity output, kWh/cap..... | 5,484.9 | 36 |
| 3.2.2 Logistics performance*..... | 42.8 | 56 |
| 3.2.3 Gross capital formation, % GDP..... | 9.7 | 138 ○ |
| 3.3 Ecological sustainability..... | 46.2 | 39 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 9.2 | 36 |
| 3.3.2 Environmental performance*..... | 66.2 | 37 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 2.1 | 45 |
| 4 Market sophistication..... | 64.3 | 11 ● |
| 4.1 Credit..... | 77.5 | 2 ● |
| 4.1.1 Ease of getting credit*..... | 55.0 | 56 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 300.6 | 1 ● |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|-------------|-----------|
| 4.2 Investment..... | 30.3 | 95 |
| 4.2.1 Ease of protecting investors*..... | 68.3 | 14 ● |
| 4.2.2 Market capitalization, % GDP..... | 8.8 | 92 ○ |
| 4.2.3 Total value of stocks traded, % GDP..... | 1.3 | 62 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.1 | 31 |
| 4.3 Trade & competition..... | 85.2 | 26 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition†..... | 73.8 | 35 |
| 5 Business sophistication..... | 39.2 | 43 |
| 5.1 Knowledge workers..... | 40.2 | 62 |
| 5.1.1 Knowledge-intensive employment, %..... | 35.1 | 37 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP..... | 0.1 | 63 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 10.9 | 69 ○ |
| 5.1.5 Females employed w/advanced degrees, % total..... | 22.6 | 16 |
| 5.2 Innovation linkages..... | 41.4 | 35 |
| 5.2.1 University/industry research collaboration†..... | 53.2 | 38 |
| 5.2.2 State of cluster development†..... | 50.7 | 47 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 17.5 | 25 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 15 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.3 | 26 |
| 5.3 Knowledge absorption..... | 36.0 | 57 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.3 | 74 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 4.6 | 105 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 2.1 | 11 ● |
| 5.3.4 FDI net inflows, % GDP..... | 2.8 | 67 |
| 6 Knowledge & technology outputs..... | 24.7 | 78 |
| 6.1 Knowledge creation..... | 19.9 | 50 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 0.1 | 104 ○ |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 1.4 | 29 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 35.2 | 19 |
| 6.1.5 Citable documents H index..... | 100.0 | 71 |
| 6.2 Knowledge impact..... | 30.2 | 103 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | (7.4) | 116 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 22.5 | 1 ● |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 15.4 | 24 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 13.4 | 70 |
| 6.3 Knowledge diffusion..... | 24.1 | 92 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.0 | 90 ○ |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.6 | 72 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.2 | 74 |
| 6.3.4 FDI net outflows, % GDP..... | 1.8 | 35 |
| 7 Creative outputs..... | 44.6 | 27 |
| 7.1 Intangible assets..... | 55.4 | 26 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 62.7 | 36 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 7.6 | 1 ● |
| 7.1.3 ICTs & business model creation†..... | 56.8 | 66 |
| 7.1.4 ICTs & organizational model creation†..... | 52.8 | 64 |
| 7.2 Creative goods & services..... | 25.5 | 50 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.8 | 22 |
| 7.2.2 National feature films/mn pop. 15–69..... | 1.2 | 71 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | 3.1 | 11 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.0 | 118 ○ |
| 7.3 Online creativity..... | 42.0 | 28 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 79.6 | 8 ● |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 6.4 | 49 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 5,408.8 | 22 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Czech Republic

Key indicators

| | |
|-----------------------------|-------------|
| Population (millions) | 10.7 |
| GDP (US\$ billions) | 205.7 |
| GDP per capita, PPP\$ | 28,086.5 |
| Income group | High income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 51.3 | 24 |
| Innovation Output Sub-Index | 48.5 | 17 |
| Innovation Input Sub-Index | 54.2 | 27 |
| Innovation Efficiency Ratio | 0.9 | 11 ● |
| Global Innovation Index 2014 (out of 143) | 50.2 | 26 |
| 1 Institutions..... | 76.4 | 32 |
| 1.1 Political environment..... | 77.6 | 27 |
| 1.1.1 Political stability*..... | 90.2 | 15 ● |
| 1.1.2 Government effectiveness*..... | 65.1 | 37 |
| 1.2 Regulatory environment | 75.6 | 40 |
| 1.2.1 Regulatory quality*..... | 76.8 | 27 |
| 1.2.2 Rule of law*..... | 74.3 | 27 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 20.3 | 93 ○ |
| 1.3 Business environment..... | 75.9 | 43 |
| 1.3.1 Ease of starting a business*..... | 82.6 | 90 ○ |
| 1.3.2 Ease of resolving insolvency*..... | 77.5 | 18 |
| 1.3.3 Ease of paying taxes*..... | 67.7 | 93 ○ |
| 2 Human capital & research..... | 45.8 | 29 |
| 2.1 Education | 52.5 | 39 |
| 2.1.1 Expenditure on education, % GDP | 4.5 | 72 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 25.2 | 38 |
| 2.1.3 School life expectancy, years..... | 16.3 | 19 |
| 2.1.4 PISA scales in reading, maths, & science..... | 500.0 | 19 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 11.2 | 34 |
| 2.2 Tertiary education..... | 44.5 | 33 |
| 2.2.1 Tertiary enrolment, % gross..... | 64.2 | 31 |
| 2.2.2 Graduates in science & engineering, % | 21.6 | 41 |
| 2.2.3 Tertiary inbound mobility, %..... | 9.0 | 19 |
| 2.3 Research & development (R&D)..... | 40.5 | 26 |
| 2.3.1 Researchers, FTE/mn pop..... | 3,202.2 | 26 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 2.0 | 19 |
| 2.3.3 QS university ranking, average score top 3*..... | 35.5 | 37 |
| 3 Infrastructure..... | 51.0 | 30 |
| 3.1 Information & communication technologies (ICTs)..... | 46.8 | 71 |
| 3.1.1 ICT access*..... | 72.6 | 39 |
| 3.1.2 ICT use*..... | 52.2 | 35 |
| 3.1.3 Government's online service*..... | 37.0 | 87 ○ |
| 3.1.4 E-participation*..... | 25.5 | 110 ○ |
| 3.2 General infrastructure..... | 43.0 | 32 |
| 3.2.1 Electricity output, kWh/cap..... | 8,199.3 | 21 |
| 3.2.2 Logistics performance*..... | 67.9 | 31 |
| 3.2.3 Gross capital formation, % GDP..... | 22.4 | 60 |
| 3.3 Ecological sustainability | 63.0 | 6 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.0 | 91 ○ |
| 3.3.2 Environmental performance*..... | 81.5 | 5 ○ |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 15.8 | 1 ● |
| 4 Market sophistication | 52.4 | 45 |
| 4.1 Credit..... | 43.6 | 37 |
| 4.1.1 Ease of getting credit*..... | 70.0 | 22 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 55.4 | 59 |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a |

| | | |
|---|-------------|-------------|
| 4.2 Investment | 25.8 | 118 ○ |
| 4.2.1 Ease of protecting investors*..... | 54.2 | 75 |
| 4.2.2 Market capitalization, % GDP..... | 18.0 | 74 ○ |
| 4.2.3 Total value of stocks traded, % GDP..... | 4.9 | 49 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 40 |
| 4.3 Trade & competition | 87.8 | 13 ● |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition†..... | 78.9 | 15 |
| 5 Business sophistication | 45.3 | 28 |
| 5.1 Knowledge workers..... | 53.7 | 32 |
| 5.1.1 Knowledge-intensive employment, %..... | 37.8 | 27 |
| 5.1.2 Firms offering formal training, % firms..... | 55.2 | 18 |
| 5.1.3 GERD performed by business, % of GDP..... | 1.1 | 21 |
| 5.1.4 GERD financed by business, %..... | 37.6 | 41 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 10.6 | 59 ○ |
| 5.2 Innovation linkages | 36.4 | 53 |
| 5.2.1 University/industry research collaboration† | 50.0 | 40 |
| 5.2.2 State of cluster development† | 51.0 | 44 |
| 5.2.3 GERD financed by abroad, %..... | 27.2 | 16 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 65 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.2 | 32 |
| 5.3 Knowledge absorption..... | 45.9 | 24 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.6 | 49 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 15.7 | 12 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.4 | 39 |
| 5.3.4 FDI net inflows, % GDP..... | 2.5 | 70 |
| 6 Knowledge & technology outputs | 46.7 | 15 ● |
| 6.1 Knowledge creation..... | 48.0 | 16 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 3.2 | 30 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.6 | 36 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 5.5 | 7 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 35.4 | 18 |
| 6.1.5 Citable documents H index..... | 268.0 | 32 |
| 6.2 Knowledge impact..... | 49.6 | 21 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | (0.4) | 105 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 3.0 | 36 |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 34 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 41.7 | 4 ● |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 50.2 | 7 ● |
| 6.3 Knowledge diffusion..... | 42.4 | 29 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.2 | 41 |
| 6.3.2 High-tech exports less re-exports, % total trade | 16.3 | 9 ● |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.7 | 51 |
| 6.3.4 FDI net outflows, % GDP | 1.6 | 42 |
| 7 Creative outputs | 50.2 | 21 |
| 7.1 Intangible assets..... | 55.4 | 28 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 109.5 | 10 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 1.0 | 31 |
| 7.1.3 ICTs & business model creation†..... | 60.9 | 45 |
| 7.1.4 ICTs & organizational model creation†..... | 59.7 | 42 |
| 7.2 Creative goods & services..... | 41.6 | 12 ● |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.6 | 31 |
| 7.2.2 National feature films/mn pop. 15–69..... | 5.6 | 35 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 17.0 | 27 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 1.3 | 57 |
| 7.2.5 Creative goods exports, % total trade..... | 10.1 | 4 ● |
| 7.3 Online creativity..... | 48.6 | 24 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 18.9 | 32 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 62.5 | 15 ● |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 3,275.3 | 41 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 89.0 | 16 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|-------------|
| Population (millions)..... | 5.6 |
| GDP (US\$ billions)..... | 340.8 |
| GDP per capita, PPP\$..... | 38,916.8 |
| Income group..... | High income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 57.7 | 10 |
| Innovation Output Sub-Index..... | 49.5 | 12 |
| Innovation Input Sub-Index..... | 65.9 | 8 |
| Innovation Efficiency Ratio..... | 0.8 | 49 |
| Global Innovation Index 2014 (out of 143)..... | 57.5 | 8 |
| 1 Institutions..... | 93.1 | 4 ● |
| 1.1 Political environment..... | 91.1 | 7 |
| 1.1.1 Political stability*..... | 87.6 | 21 |
| 1.1.2 Government effectiveness*..... | 94.7 | 3 ● |
| 1.2 Regulatory environment..... | 98.3 | 2 ● |
| 1.2.1 Regulatory quality*..... | 95.8 | 6 ● |
| 1.2.2 Rule of law*..... | 97.5 | 4 ● |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.0 | 1 ● |
| 1.3 Business environment..... | 90.0 | 7 |
| 1.3.1 Ease of starting a business*..... | 93.4 | 22 |
| 1.3.2 Ease of resolving insolvency*..... | 84.6 | 8 |
| 1.3.3 Ease of paying taxes*..... | 91.9 | 12 |
| 2 Human capital & research..... | 62.4 | 3 ● |
| 2.1 Education..... | 62.9 | 9 |
| 2.1.1 Expenditure on education, % GDP..... | 8.7 | 3 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 30.1 | 24 |
| 2.1.3 School life expectancy, years..... | 18.7 | 4 ● |
| 2.1.4 PISA scales in reading, maths, & science..... | 498.2 | 22 |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a |
| 2.2 Tertiary education..... | 46.5 | 27 |
| 2.2.1 Tertiary enrolment, % gross..... | 79.6 | 12 |
| 2.2.2 Graduates in science & engineering, %..... | 21.2 | 46 ○ |
| 2.2.3 Tertiary inbound mobility, %..... | 8.1 | 22 |
| 2.3 Research & development (R&D)..... | 77.9 | 3 ● |
| 2.3.1 Researchers, FTE/mn pop..... | 7,271.3 | 2 ● |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 3.1 | 7 |
| 2.3.3 QS university ranking, average score top 3*..... | 72.7 | 14 |
| 3 Infrastructure..... | 55.7 | 21 |
| 3.1 Information & communication technologies (ICTs)..... | 74.0 | 21 |
| 3.1.1 ICT access*..... | 88.0 | 11 |
| 3.1.2 ICT use*..... | 87.1 | 1 ● |
| 3.1.3 Government's online service*..... | 66.1 | 35 |
| 3.1.4 E-participation*..... | 54.9 | 54 ○ |
| 3.2 General infrastructure..... | 38.6 | 44 |
| 3.2.1 Electricity output, kWh/cap..... | 6,164.2 | 31 |
| 3.2.2 Logistics performance*..... | 82.7 | 17 |
| 3.2.3 Gross capital formation, % GDP..... | 17.3 | 115 ○ |
| 3.3 Ecological sustainability..... | 54.5 | 17 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 10.3 | 22 |
| 3.3.2 Environmental performance*..... | 76.9 | 13 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 3.3 | 27 |
| 4 Market sophistication..... | 68.4 | 7 |
| 4.1 Credit..... | 67.9 | 5 ● |
| 4.1.1 Ease of getting credit*..... | 70.0 | 22 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 199.6 | 3 ● |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|-------------|-----------|
| 4.2 Investment..... | 52.5 | 22 |
| 4.2.1 Ease of protecting investors*..... | 67.5 | 17 |
| 4.2.2 Market capitalization, % GDP..... | 69.8 | 23 |
| 4.2.3 Total value of stocks traded, % GDP..... | 32.7 | 26 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.5 | 8 |
| 4.3 Trade & competition..... | 84.6 | 30 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition [†] | 72.6 | 43 |
| 5 Business sophistication..... | 49.7 | 17 |
| 5.1 Knowledge workers..... | 70.3 | 6 ● |
| 5.1.1 Knowledge-intensive employment, %..... | 45.5 | 10 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP..... | 2.0 | 8 |
| 5.1.4 GERD financed by business, %..... | 59.8 | 13 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 20.6 | 21 |
| 5.2 Innovation linkages..... | 40.3 | 42 |
| 5.2.1 University/industry research collaboration [†] | 65.0 | 19 |
| 5.2.2 State of cluster development [†] | 55.2 | 32 |
| 5.2.3 GERD financed by abroad, %..... | 7.2 | 55 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 31 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 1.1 | 15 |
| 5.3 Knowledge absorption..... | 38.5 | 46 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.0 | 30 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 6.2 | 79 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 2.0 | 16 |
| 5.3.4 FDI net inflows, % GDP..... | 0.5 | 123 ○ |
| 6 Knowledge & technology outputs..... | 46.1 | 16 |
| 6.1 Knowledge creation..... | 45.3 | 17 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 5.5 | 17 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 5.2 | 10 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 0.6 | 34 ○ |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 63.4 | 2 ● |
| 6.1.5 Citable documents H index..... | 476.0 | 14 |
| 6.2 Knowledge impact..... | 46.2 | 33 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.9 | 76 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 4.4 | 28 |
| 6.2.3 Computer software spending, % GDP..... | 0.6 | 12 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 6.3 | 55 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 44.3 | 10 |
| 6.3 Knowledge diffusion..... | 46.7 | 24 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 1.4 | 13 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 5.9 | 27 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.8 | 46 |
| 6.3.4 FDI net outflows, % GDP..... | 3.2 | 20 |
| 7 Creative outputs..... | 53.0 | 13 |
| 7.1 Intangible assets..... | 50.1 | 48 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 47.4 | 55 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 2.2 | 10 |
| 7.1.3 ICTs & business model creation [†] | 61.7 | 43 |
| 7.1.4 ICTs & organizational model creation [†] | 61.5 | 31 |
| 7.2 Creative goods & services..... | 40.2 | 16 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.7 | 29 |
| 7.2.2 National feature films/mn pop. 15–69..... | 17.4 | 10 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 61.5 | 7 |
| 7.2.4 Printing & publishing output manufactures, %..... | 1.4 | 53 ○ |
| 7.2.5 Creative goods exports, % total trade..... | 1.6 | 30 |
| 7.3 Online creativity..... | 71.7 | 8 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 55.1 | 17 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 100.0 | 1 ● |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 5,288.9 | 23 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 92.5 | 8 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓜ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Dominican Republic

Key indicators

| | |
|-----------------------|---------------------------------|
| Population (millions) | 10.5 |
| GDP (US\$ billions) | 64.1 |
| GDP per capita, PPP\$ | 10,325.5 |
| Income group | Upper-middle income |
| Region | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 30.6 | 89 |
| Innovation Output Sub-Index | 23.3 | 98 |
| Innovation Input Sub-Index | 37.9 | 88 |
| Innovation Efficiency Ratio | 0.6 | 108 |
| Global Innovation Index 2014 (out of 143) | 32.3 | 83 |

1 Institutions 53.3 93

| | | |
|--|------|-------|
| 1.1 Political environment | 48.4 | 74 |
| 1.1.1 Political stability* | 68.8 | 54 ● |
| 1.1.2 Government effectiveness* | 28.1 | 100 |
| 1.2 Regulatory environment | 51.6 | 109 |
| 1.2.1 Regulatory quality* | 45.0 | 80 |
| 1.2.2 Rule of law* | 33.5 | 93 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 26.2 | 114 |
| 1.3 Business environment | 59.9 | 102 |
| 1.3.1 Ease of starting a business* | 81.6 | 92 |
| 1.3.2 Ease of resolving insolvency* | 23.8 | 133 ○ |
| 1.3.3 Ease of paying taxes* | 74.2 | 62 |

2 Human capital & research 18.8 107

| | | |
|---|------|-------|
| 2.1 Education | 29.4 | 122 |
| 2.1.1 Expenditure on education, % GDP | 3.8 | 91 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 8.5 | 105 ○ |
| 2.1.3 School life expectancy, years | 13.1 | 77 |
| 2.1.4 PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary | 29.2 | 105 |
| 2.2 Tertiary education | 27.1 | 82 |
| 2.2.1 Tertiary enrolment, % gross | 46.4 | 57 ● |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, % | 3.5 | 50 ● |
| 2.3 Research & development (R&D) | 0.0 | 128 ○ |
| 2.3.1 Researchers, FTE/mn pop. | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3* | 0.0 | 73 ○ |

3 Infrastructure 35.8 84

| | | |
|---|---------|------|
| 3.1 Information & communication technologies (ICTs) | 35.0 | 95 |
| 3.1.1 ICT access* | 41.5 | 97 |
| 3.1.2 ICT use* | 26.5 | 78 |
| 3.1.3 Government's online service* | 38.6 | 85 |
| 3.1.4 E-participation* | 33.3 | 92 |
| 3.2 General infrastructure | 26.4 | 91 |
| 3.2.1 Electricity output, kWh/cap | 1,650.4 | 82 |
| 3.2.2 Logistics performance* | 35.7 | 66 |
| 3.2.3 Gross capital formation, % GDP | 22.4 | 61 ● |
| 3.3 Ecological sustainability | 45.9 | 41 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 13.3 | 9 ● |
| 3.3.2 Environmental performance* | 53.2 | 67 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 0.3 | 109 |

4 Market sophistication 49.6 57 ●

| | | |
|--|------|------|
| 4.1 Credit | 21.8 | 106 |
| 4.1.1 Ease of getting credit* | 45.0 | 80 |
| 4.1.2 Domestic credit to private sector, % GDP | 24.0 | 111 |
| 4.1.3 Microfinance gross loans, % GDP | 1.2 | 36 ● |

| | | |
|---|------|-----|
| 4.2 Investment | 54.2 | 17 |
| 4.2.1 Ease of protecting investors* | 54.2 | 75 |
| 4.2.2 Market capitalization, % GDP | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | n/a | n/a |

4.3 Trade & competition 72.7 87

| | | |
|--|------|----|
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 6.1 | 91 |
| 4.3.2 Intensity of local competition [†] | 66.6 | 69 |

5 Business sophistication 32.1 79

| | | |
|---|------|-------|
| 5.1 Knowledge workers | 46.9 | 42 |
| 5.1.1 Knowledge-intensive employment, % | 17.2 | 84 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 57.0 | 15 ● |
| 5.1.3 GERD performed by business, % of GDP | n/a | n/a |
| 5.1.4 GERD financed by business, % | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total | 12.5 | 50 |
| 5.2 Innovation linkages | 26.9 | 92 |
| 5.2.1 University/industry research collaboration [†] | 37.6 | 91 |
| 5.2.2 State of cluster development [†] | 44.7 | 77 |
| 5.2.3 GERD financed by abroad, % | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 74 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓔ] | 0.0 | 86 |
| 5.3 Knowledge absorption | 22.6 | 129 ○ |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 0.4 | 60 |
| 5.3.2 High-tech imports less re-imports, % total trade | 5.5 | 89 |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 0.4 | 111 ○ |
| 5.3.4 FDI net inflows, % GDP | 2.6 | 69 |

6 Knowledge & technology outputs 17.1 119

| | | |
|---|-------|-------|
| 6.1 Knowledge creation | 0.8 | 140 ○ |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | 0.1 | 103 ○ |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | 0.0 | 90 ○ |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | 0.0 | 59 ○ |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 0.4 | 138 ○ |
| 6.1.5 Citable documents H index | 43.0 | 122 ○ |
| 6.2 Knowledge impact | 28.8 | 108 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 0.2 | 93 |
| 6.2.2 New businesses/th pop. 15–64 | 1.0 | 67 |
| 6.2.3 Computer software spending, % GDP | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 1.6 | 103 |
| 6.2.5 High- & medium-high-tech manufactures, % | n/a | n/a |
| 6.3 Knowledge diffusion | 21.8 | 105 |
| 6.3.1 Royalty & license fees receipts, % total trade | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade | 1.1 | 61 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 1.3 | 65 |
| 6.3.4 FDI net outflows, % GDP | (0.6) | 118 ○ |

7 Creative outputs 29.4 83

| | | |
|---|---------|------|
| 7.1 Intangible assets | 46.5 | 63 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | 41.4 | 59 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 59.2 | 53 ● |
| 7.1.4 ICTs & organizational model creation [†] | 58.0 | 48 ● |
| 7.2 Creative goods & services | 20.5 | 64 |
| 7.2.1 Cultural & creative services exports, % total trade | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓔ] | 0.9 | 78 |
| 7.2.3 Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade | 1.2 | 36 ● |
| 7.3 Online creativity | 4.3 | 94 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 2.8 | 76 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 1.5 | 81 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 1,155.1 | 72 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------------------|
| Population (millions)..... | 16.0 |
| GDP (US\$ billions)..... | 100.8 |
| GDP per capita, PPP\$..... | 10,492.3 |
| Income group..... | Upper-middle income |
| Region..... | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 26.9 | 119 |
| Innovation Output Sub-Index..... | 18.1 | 124 |
| Innovation Input Sub-Index..... | 35.6 | 99 |
| Innovation Efficiency Ratio..... | 0.5 | 127 ○ |
| Global Innovation Index 2014 (out of 143)..... | 27.5 | 115 |

| | | |
|---|-------------|------------|
| 1 Institutions..... | 44.5 | 124 |
| 1.1 Political environment..... | 43.8 | 84 |
| 1.1.1 Political stability*..... | 59.3 | 78 |
| 1.1.2 Government effectiveness*..... | 28.3 | 98 |
| 1.2 Regulatory environment..... | 37.7 | 131 ○ |
| 1.2.1 Regulatory quality*..... | 22.7 | 126 ○ |
| 1.2.2 Rule of law*..... | 22.3 | 122 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 31.8 | 131 ○ |
| 1.3 Business environment..... | 52.2 | 131 ○ |
| 1.3.1 Ease of starting a business*..... | 65.3 | 129 ○ |
| 1.3.2 Ease of resolving insolvency*..... | 28.4 | 128 ○ |
| 1.3.3 Ease of paying taxes*..... | 62.8 | 105 |

| | | |
|--|-------------|-----------|
| 2 Human capital & research..... | 22.3 | 98 |
| 2.1 Education..... | 42.9 | 76 |
| 2.1.1 Expenditure on education, % GDP..... | 4.4 | 76 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 19.0 | 62 |
| 2.1.3 School life expectancy, years..... | 14.2 | 56 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 14.1 | 54 |
| 2.2 Tertiary education..... | 20.6 | 101 |
| 2.2.1 Tertiary enrolment, % gross..... | 40.5 | 66 |
| 2.2.2 Graduates in science & engineering, % [Ⓔ] | 12.8 | 91 ○ |
| 2.2.3 Tertiary inbound mobility, %..... | 0.6 | 90 |
| 2.3 Research & development (R&D)..... | 3.4 | 91 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 179.5 | 69 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.4 | 74 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |

| | | |
|--|-------------|-----------|
| 3 Infrastructure..... | 39.0 | 72 |
| 3.1 Information & communication technologies (ICTs)..... | 43.6 | 77 |
| 3.1.1 ICT access*..... | 51.6 | 76 |
| 3.1.2 ICT use*..... | 25.8 | 81 |
| 3.1.3 Government's online service*..... | 48.0 | 66 |
| 3.1.4 E-participation*..... | 49.0 | 64 |
| 3.2 General infrastructure..... | 30.9 | 67 |
| 3.2.1 Electricity output, kWh/cap..... | 1,475.0 | 88 |
| 3.2.2 Logistics performance*..... | 28.0 | 81 |
| 3.2.3 Gross capital formation, % GDP..... | 28.5 | 29 ● |
| 3.3 Ecological sustainability..... | 42.3 | 50 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 9.5 | 29 ● |
| 3.3.2 Environmental performance*..... | 58.5 | 50 ● |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 1.2 | 59 |

| | | |
|---|-------------|-----------|
| 4 Market sophistication..... | 47.7 | 66 |
| 4.1 Credit..... | 33.6 | 57 ● |
| 4.1.1 Ease of getting credit*..... | 45.0 | 80 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 26.7 | 105 |
| 4.1.3 Microfinance gross loans, % GDP..... | 4.0 | 14 ● |

| | | |
|---|------|-------|
| 4.2 Investment..... | 24.4 | 129 ○ |
| 4.2.1 Ease of protecting investors*..... | 46.7 | 102 |
| 4.2.2 Market capitalization, % GDP..... | 6.7 | 94 |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.2 | 96 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 85.2 | 27 ● |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 4.3 | 71 |
| 4.3.2 Intensity of local competition [†] | n/a | n/a |

| | | |
|---|-------------|------------|
| 5 Business sophistication..... | 24.7 | 123 |
| 5.1 Knowledge workers..... | 35.5 | 79 |
| 5.1.1 Knowledge-intensive employment, %..... | 14.4 | 96 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 65.9 | 4 ● |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 0.2 | 48 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 0.4 | 87 ○ |
| 5.1.5 Females employed w/advanced degrees, % total..... | 10.4 | 61 |
| 5.2 Innovation linkages..... | 5.1 | 139 ○ |
| 5.2.1 University/industry research collaboration [†] | n/a | n/a |
| 5.2.2 State of cluster development [†] | n/a | n/a |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 4.5 | 67 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 79 |
| 5.3 Knowledge absorption..... | 33.4 | 68 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.4 | 61 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 9.4 | 43 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP..... | 0.8 | 119 |

| | | |
|---|-------------|------------|
| 6 Knowledge & technology outputs..... | 13.4 | 127 |
| 6.1 Knowledge creation..... | 2.8 | 129 ○ |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP [Ⓔ] | 0.0 | 111 ○ |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.0 | 82 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP [Ⓔ] | 0.1 | 51 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 3.0 | 115 |
| 6.1.5 Citable documents H index..... | 92.0 | 76 |
| 6.2 Knowledge impact..... | 36.2 | 78 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 1.9 | 48 ● |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | 0.2 | 66 ○ |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 8.0 | 47 ● |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 14.0 | 69 |
| 6.3 Knowledge diffusion..... | 1.2 | 136 ○ |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.3 | 91 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | n/a | n/a |

| | | |
|---|-------------|------------|
| 7 Creative outputs..... | 22.8 | 109 |
| 7.1 Intangible assets..... | 35.2 | 115 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP [Ⓔ] | 63.9 | 34 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | n/a | n/a |
| 7.1.4 ICTs & organizational model creation [†] | n/a | n/a |
| 7.2 Creative goods & services..... | 15.1 | 82 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.4 | 37 |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 1.6 | 44 |
| 7.2.5 Creative goods exports, % total trade..... | 0.1 | 104 |
| 7.3 Online creativity..... | 5.8 | 89 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 2.5 | 79 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 1.5 | 80 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 1,804.1 | 58 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|----------------------------------|
| Population (millions) | 83.4 |
| GDP (US\$ billions) | 286.4 |
| GDP per capita, PPP\$ | 6,695.8 |
| Income group | Lower-middle income |
| Region | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 28.9 | 100 |
| Innovation Output Sub-Index | 23.4 | 96 |
| Innovation Input Sub-Index..... | 34.4 | 108 |
| Innovation Efficiency Ratio..... | 0.7 | 83 |
| Global Innovation Index 2014 (out of 143) | 30.0 | 99 |

| | | | | |
|----------|--|-------------|------------|---|
| 1 | Institutions..... | 39.5 | 131 | ○ |
| 1.1 | Political environment..... | 20.7 | 134 | ○ |
| 1.1.1 | Political stability*..... | 24.1 | 135 | ○ |
| 1.1.2 | Government effectiveness*..... | 17.3 | 123 | |
| 1.2 | Regulatory environment | 36.6 | 132 | ○ |
| 1.2.1 | Regulatory quality*..... | 29.3 | 116 | |
| 1.2.2 | Rule of law*..... | 31.6 | 98 | |
| 1.2.3 | Cost of redundancy dismissal, salary weeks..... | 36.9 | 133 | ○ |
| 1.3 | Business environment..... | 61.1 | 99 | |
| 1.3.1 | Ease of starting a business*..... | 88.1 | 61 | |
| 1.3.2 | Ease of resolving insolvency*..... | 36.2 | 110 | |
| 1.3.3 | Ease of paying taxes*..... | 58.8 | 115 | |
| 2 | Human capital & research..... | 27.9 | 72 | |
| 2.1 | Education..... | 50.7 | 50 | ● |
| 2.1.1 | Expenditure on education, % GDP [Ⓔ] | 3.8 | 92 | |
| 2.1.2 | Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a | |
| 2.1.3 | School life expectancy, years..... | 13.5 | 69 | |
| 2.1.4 | PISA scales in reading, maths, & science..... | n/a | n/a | |
| 2.1.5 | Pupil-teacher ratio, secondary [Ⓔ] | 12.1 | 41 | ● |
| 2.2 | Tertiary education..... | 16.5 | 110 | |
| 2.2.1 | Tertiary enrolment, % gross..... | 30.1 | 76 | |
| 2.2.2 | Graduates in science & engineering, %..... | n/a | n/a | |
| 2.2.3 | Tertiary inbound mobility, % [Ⓔ] | 1.9 | 68 | |
| 2.3 | Research & development (R&D)..... | 16.4 | 50 | ● |
| 2.3.1 | Researchers, FTE/mn pop..... | 466.0 | 60 | |
| 2.3.2 | Gross expenditure on R&D, % GDP..... | 0.7 | 51 | |
| 2.3.3 | QS university ranking, average score top 3*..... | 27.9 | 47 | ● |
| 3 | Infrastructure..... | 37.2 | 77 | |
| 3.1 | Information & communication technologies (ICTs)..... | 48.4 | 65 | |
| 3.1.1 | ICT access*..... | 50.9 | 78 | |
| 3.1.2 | ICT use*..... | 28.7 | 74 | |
| 3.1.3 | Government's online service*..... | 59.1 | 51 | ● |
| 3.1.4 | E-participation*..... | 54.9 | 54 | |
| 3.2 | General infrastructure..... | 19.7 | 119 | |
| 3.2.1 | Electricity output, kWh/cap..... | 2,036.2 | 78 | |
| 3.2.2 | Logistics performance*..... | 41.0 | 60 | |
| 3.2.3 | Gross capital formation, % GDP..... | 14.5 | 126 | ○ |
| 3.3 | Ecological sustainability..... | 43.5 | 49 | ● |
| 3.3.1 | GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 9.8 | 26 | ● |
| 3.3.2 | Environmental performance*..... | 61.1 | 47 | ● |
| 3.3.3 | ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.9 | 69 | |
| 4 | Market sophistication..... | 35.9 | 128 | ○ |
| 4.1 | Credit..... | 19.5 | 116 | |
| 4.1.1 | Ease of getting credit*..... | 50.0 | 65 | |
| 4.1.2 | Domestic credit to private sector, % GDP..... | 27.8 | 103 | |
| 4.1.3 | Microfinance gross loans, % GDP..... | 0.1 | 72 | |

| | | | | |
|-------|--|------|-----|---|
| 4.2 | Investment..... | 27.0 | 107 | |
| 4.2.1 | Ease of protecting investors*..... | 44.2 | 117 | |
| 4.2.2 | Market capitalization, % GDP..... | 22.1 | 65 | |
| 4.2.3 | Total value of stocks traded, % GDP..... | 7.7 | 44 | |
| 4.2.4 | Venture capital deals/tr PPP\$ GDP..... | n/a | n/a | |
| 4.3 | Trade & competition..... | 61.3 | 123 | |
| 4.3.1 | Applied tariff rate, weighted mean, % [Ⓔ] | 8.1 | 108 | |
| 4.3.2 | Intensity of local competition [†] | 50.8 | 126 | ○ |

| | | | | |
|----------|---|-------------|-----------|---|
| 5 | Business sophistication..... | 31.6 | 84 | |
| 5.1 | Knowledge workers..... | 37.2 | 71 | |
| 5.1.1 | Knowledge-intensive employment, %..... | 36.3 | 30 | ● |
| 5.1.2 | Firms offering formal training, % firms [Ⓔ] | 21.7 | 88 | |
| 5.1.3 | GERD performed by business, % of GDP..... | n/a | n/a | |
| 5.1.4 | GERD financed by business, %..... | n/a | n/a | |
| 5.1.5 | Females employed w/advanced degrees, % total..... | 5.5 | 75 | |
| 5.2 | Innovation linkages..... | 30.2 | 78 | |
| 5.2.1 | University/industry research collaboration [†] | 23.8 | 127 | ○ |
| 5.2.2 | State of cluster development [†] | 54.5 | 35 | ● |
| 5.2.3 | GERD financed by abroad, %..... | n/a | n/a | |
| 5.2.4 | JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 42 | |
| 5.2.5 | Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 106 | ○ |
| 5.3 | Knowledge absorption..... | 27.5 | 105 | |
| 5.3.1 | Royalty & license fees payments, % total trade [Ⓔ] | 0.6 | 50 | |
| 5.3.2 | High-tech imports less re-imports, % total trade..... | 6.5 | 72 | |
| 5.3.3 | Comm., computer & info. services imp., % total trade [Ⓔ] | 0.8 | 72 | |
| 5.3.4 | FDI net inflows, % GDP..... | 2.0 | 81 | |

| | | | | |
|----------|---|-------------|-----------|---|
| 6 | Knowledge & technology outputs..... | 21.7 | 97 | |
| 6.1 | Knowledge creation..... | 8.5 | 81 | |
| 6.1.1 | Domestic resident patent app/bn PPP\$ GDP..... | 0.7 | 69 | |
| 6.1.2 | PCT resident patent app/bn PPP\$ GDP..... | 0.1 | 78 | |
| 6.1.3 | Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a | |
| 6.1.4 | Scientific & technical articles/bn PPP\$ GDP..... | 9.2 | 69 | |
| 6.1.5 | Citable documents H index..... | 148.0 | 49 | ● |
| 6.2 | Knowledge impact..... | 30.4 | 102 | |
| 6.2.1 | Growth rate of PPP\$ GDP/worker, %..... | (0.1) | 101 | |
| 6.2.2 | New businesses/th pop. 15–64..... | n/a | n/a | |
| 6.2.3 | Computer software spending, % GDP..... | 0.2 | 65 | ○ |
| 6.2.4 | ISO 9001 quality certificates/bn PPP\$ GDP..... | 2.3 | 88 | |
| 6.2.5 | High- & medium-high-tech manufactures, % [Ⓔ] | 21.5 | 53 | |
| 6.3 | Knowledge diffusion..... | 26.3 | 77 | |
| 6.3.1 | Royalty & license fees receipts, % total trade [Ⓔ] | 0.3 | 29 | ● |
| 6.3.2 | High-tech exports less re-exports, % total trade..... | 0.1 | 103 | |
| 6.3.3 | Comm., computer & info. services exp., % total trade [Ⓔ] | 1.9 | 45 | ● |
| 6.3.4 | FDI net outflows, % GDP [Ⓔ] | 0.1 | 93 | |

| | | | | |
|----------|---|-------------|-----------|---|
| 7 | Creative outputs..... | 25.1 | 98 | |
| 7.1 | Intangible assets..... | 37.4 | 105 | |
| 7.1.1 | Domestic res trademark app/bn PPP\$ GDP..... | n/a | n/a | |
| 7.1.2 | Madrid trademark app. holders/bn PPP\$ GDP..... | 0.0 | 63 | ○ |
| 7.1.3 | ICTs & business model creation [†] | 46.1 | 104 | |
| 7.1.4 | ICTs & organizational model creation [†] | 47.1 | 93 | |
| 7.2 | Creative goods & services..... | 8.7 | 101 | |
| 7.2.1 | Cultural & creative services exports, % total trade..... | n/a | n/a | |
| 7.2.2 | National feature films/mn pop. 15–69..... | 0.6 | 88 | |
| 7.2.3 | Global ent. & media output/th pop. 15–69..... | 0.8 | 54 | ○ |
| 7.2.4 | Printing & publishing output manufactures, % [Ⓔ] | 0.6 | 86 | ○ |
| 7.2.5 | Creative goods exports, % total trade..... | 0.6 | 54 | |
| 7.3 | Online creativity..... | 16.8 | 69 | |
| 7.3.1 | Generic top-level domains (TLDs)/th pop. 15–69..... | 1.5 | 96 | |
| 7.3.2 | Country-code TLDs/th pop. 15–69..... | 0.0 | 130 | ○ |
| 7.3.3 | Wikipedia edits/pop. 15–69..... | 439.1 | 94 | |
| 7.3.4 | Video uploads on YouTube/pop. 15–69..... | 62.6 | 61 | |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------------------|
| Population (millions)..... | 6.4 |
| GDP (US\$ billions)..... | 25.3 |
| GDP per capita, PPP\$..... | 7,719.9 |
| Income group..... | Lower-middle income |
| Region..... | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 29.3 | 99 |
| Innovation Output Sub-Index..... | 22.4 | 104 |
| Innovation Input Sub-Index..... | 36.2 | 95 |
| Innovation Efficiency Ratio..... | 0.6 | 106 |
| Global Innovation Index 2014 (out of 143)..... | 29.1 | 103 |
| 1 Institutions..... | 55.5 | 86 |
| 1.1 Political environment..... | 50.5 | 69 |
| 1.1.1 Political stability*..... | 63.1 | 69 |
| 1.1.2 Government effectiveness*..... | 37.9 | 79 |
| 1.2 Regulatory environment..... | 56.7 | 97 |
| 1.2.1 Regulatory quality*..... | 56.0 | 60 |
| 1.2.2 Rule of law*..... | 29.7 | 104 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 22.9 | 105 |
| 1.3 Business environment..... | 59.4 | 107 |
| 1.3.1 Ease of starting a business*..... | 79.9 | 99 |
| 1.3.2 Ease of resolving insolvency*..... | 46.0 | 74 |
| 1.3.3 Ease of paying taxes*..... | 52.3 | 123 |
| 2 Human capital & research..... | 17.2 | 116 |
| 2.1 Education..... | 24.4 | 129 ○ |
| 2.1.1 Expenditure on education, % GDP..... | 3.4 | 101 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓢ] | 11.3 | 94 |
| 2.1.3 School life expectancy, years..... | 12.3 | 90 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 38.0 | 117 ○ |
| 2.2 Tertiary education..... | 26.9 | 83 |
| 2.2.1 Tertiary enrolment, % gross..... | 25.5 | 84 |
| 2.2.2 Graduates in science & engineering, %..... | 21.5 | 42 |
| 2.2.3 Tertiary inbound mobility, %..... | 0.4 | 97 |
| 2.3 Research & development (R&D)..... | 0.2 | 125 ○ |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓢ] | 0.0 | 117 ○ |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 32.4 | 92 |
| 3.1 Information & communication technologies (ICTs)..... | 43.7 | 76 |
| 3.1.1 ICT access*..... | 47.6 | 83 |
| 3.1.2 ICT use*..... | 12.7 | 106 |
| 3.1.3 Government's online service*..... | 53.5 | 59 |
| 3.1.4 E-participation*..... | 60.8 | 45 ● |
| 3.2 General infrastructure..... | 18.6 | 125 ○ |
| 3.2.1 Electricity output, kWh/cap..... | 931.1 | 93 |
| 3.2.2 Logistics performance*..... | 40.8 | 62 |
| 3.2.3 Gross capital formation, % GDP..... | 14.8 | 124 ○ |
| 3.3 Ecological sustainability..... | 35.0 | 80 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 9.5 | 29 ● |
| 3.3.2 Environmental performance*..... | 43.8 | 99 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.3 | 106 |
| 4 Market sophistication..... | 44.1 | 88 |
| 4.1 Credit..... | 27.0 | 82 |
| 4.1.1 Ease of getting credit*..... | 50.0 | 65 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 42.7 | 79 |
| 4.1.3 Microfinance gross loans, % GDP..... | 1.5 | 32 ● |

| | | |
|---|------|-------|
| 4.2 Investment..... | 27.8 | 106 |
| 4.2.1 Ease of protecting investors*..... | 41.7 | 123 ○ |
| 4.2.2 Market capitalization, % GDP..... | 45.1 | 43 |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.2 | 89 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 77.5 | 64 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 2.4 | 50 |
| 4.3.2 Intensity of local competition [†] | 63.4 | 86 |

5 Business sophistication..... 31.7 82

| | | |
|---|------|------|
| 5.1 Knowledge workers..... | 32.4 | 87 |
| 5.1.1 Knowledge-intensive employment, %..... | 12.1 | 99 |
| 5.1.2 Firms offering formal training, % firms [Ⓢ] | 61.0 | 10 ● |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, % [Ⓢ] | 2.8 | 81 ○ |
| 5.1.5 Females employed w/advanced degrees, % total..... | 0.0 | 87 ○ |
| 5.2 Innovation linkages..... | 31.8 | 65 |
| 5.2.1 University/industry research collaboration [†] | 46.8 | 51 |
| 5.2.2 State of cluster development [†] | 58.1 | 28 ● |
| 5.2.3 GERD financed by abroad, % [Ⓢ] | 9.2 | 45 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓢ] | 0.0 | 72 |
| 5.3 Knowledge absorption..... | 30.9 | 87 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.8 | 41 ● |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 9.7 | 34 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.6 | 82 |
| 5.3.4 FDI net inflows, % GDP..... | 0.8 | 117 |

6 Knowledge & technology outputs..... 12.2 133 ○

| | | |
|---|------|-------|
| 6.1 Knowledge creation..... | 1.4 | 139 ○ |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.1 | 73 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 0.9 | 136 ○ |
| 6.1.5 Citable documents H index..... | 36.0 | 130 ○ |
| 6.2 Knowledge impact..... | 5.7 | 130 ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | 0.5 | 90 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 4.0 | 69 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 29.4 | 61 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.3 | 27 ● |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 2.6 | 46 ● |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.7 | 49 |
| 6.3.4 FDI net outflows, % GDP..... | 0.2 | 79 |

7 Creative outputs..... 32.7 67

| | | |
|--|-------|-------|
| 7.1 Intangible assets..... | 56.3 | 21 ● |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 57.6 | 63 |
| 7.1.4 ICTs & organizational model creation [†] | 55.0 | 59 |
| 7.2 Creative goods & services..... | 14.7 | 83 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓢ] | 0.3 | 101 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 0.8 | 42 ● |
| 7.3 Online creativity..... | 3.5 | 99 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 2.8 | 77 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.8 | 91 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 921.3 | 79 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓢ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|-------------|
| Population (millions)..... | 1.3 |
| GDP (US\$ billions)..... | 26.0 |
| GDP per capita, PPP\$..... | 23,213.4 |
| Income group..... | High income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 52.8 | 23 |
| Innovation Output Sub-Index..... | 48.8 | 14 |
| Innovation Input Sub-Index..... | 56.8 | 26 |
| Innovation Efficiency Ratio..... | 0.9 | 17 |
| Global Innovation Index 2014 (out of 143)..... | 51.5 | 24 |

| | | |
|--|-------------|-------------|
| 1 Institutions..... | 80.8 | 22 |
| 1.1 Political environment..... | 75.0 | 33 |
| 1.1.1 Political stability*..... | 82.1 | 37 |
| 1.1.2 Government effectiveness*..... | 68.0 | 34 |
| 1.2 Regulatory environment..... | 86.3 | 21 |
| 1.2.1 Regulatory quality*..... | 85.9 | 18 |
| 1.2.2 Rule of law*..... | 78.6 | 24 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 12.9 | 49 |
| 1.3 Business environment..... | 81.0 | 23 |
| 1.3.1 Ease of starting a business*..... | 93.3 | 23 |
| 1.3.2 Ease of resolving insolvency*..... | 64.9 | 35 |
| 1.3.3 Ease of paying taxes*..... | 84.9 | 27 |
| 2 Human capital & research..... | 44.2 | 30 |
| 2.1 Education..... | 57.1 | 17 |
| 2.1.1 Expenditure on education, % GDP..... | 5.2 | 49 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 27.5 | 30 |
| 2.1.3 School life expectancy, years..... | 16.5 | 14 |
| 2.1.4 PISA scales in reading, maths, & science..... | 526.1 | 7 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 8.4 | 11 ● |
| 2.2 Tertiary education..... | 40.7 | 43 |
| 2.2.1 Tertiary enrolment, % gross..... | 76.7 | 16 |
| 2.2.2 Graduates in science & engineering, %..... | 22.1 | 37 |
| 2.2.3 Tertiary inbound mobility, %..... | 2.3 | 61 ○ |
| 2.3 Research & development (R&D)..... | 34.8 | 30 |
| 2.3.1 Researchers, FTE/mn pop..... | 3,423.6 | 25 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 1.8 | 20 |
| 2.3.3 QS university ranking, average score top 3*..... | 21.5 | 52 |
| 3 Infrastructure..... | 60.9 | 10 ● |
| 3.1 Information & communication technologies (ICTs)..... | 74.9 | 19 |
| 3.1.1 ICT access*..... | 78.2 | 25 |
| 3.1.2 ICT use*..... | 67.7 | 17 |
| 3.1.3 Government's online service*..... | 77.2 | 18 |
| 3.1.4 E-participation*..... | 76.5 | 22 |
| 3.2 General infrastructure..... | 50.6 | 16 |
| 3.2.1 Electricity output, kWh/cap..... | 9,918.7 | 13 |
| 3.2.2 Logistics performance*..... | 60.4 | 38 |
| 3.2.3 Gross capital formation, % GDP..... | 29.1 | 25 |
| 3.3 Ecological sustainability..... | 57.2 | 11 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 4.3 | 104 ○ |
| 3.3.2 Environmental performance*..... | 74.7 | 20 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 12.8 | 1 ● |
| 4 Market sophistication..... | 54.6 | 37 |
| 4.1 Credit..... | 46.7 | 30 |
| 4.1.1 Ease of getting credit*..... | 70.0 | 22 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 73.7 | 43 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|------|------|
| 4.2 Investment..... | 30.9 | 94 ○ |
| 4.2.1 Ease of protecting investors*..... | 58.3 | 54 |
| 4.2.2 Market capitalization, % GDP..... | 10.3 | 88 ○ |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.8 | 70 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.3 | 14 |
| 4.3 Trade & competition..... | 86.2 | 19 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition [†] | 75.8 | 27 |

| | | |
|---|-------------|-----------|
| 5 Business sophistication..... | 43.4 | 33 |
| 5.1 Knowledge workers..... | 54.0 | 31 |
| 5.1.1 Knowledge-intensive employment, %..... | 41.8 | 21 |
| 5.1.2 Firms offering formal training, % firms..... | 35.0 | 52 |
| 5.1.3 GERD performed by business, % of GDP..... | 0.8 | 24 |
| 5.1.4 GERD financed by business, %..... | 41.3 | 35 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 25.5 | 7 ● |
| 5.2 Innovation linkages..... | 31.3 | 70 |
| 5.2.1 University/industry research collaboration [†] | 55.9 | 33 |
| 5.2.2 State of cluster development [†] | 45.6 | 73 ○ |
| 5.2.3 GERD financed by abroad, %..... | 10.3 | 42 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 48 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.3 | 28 |
| 5.3 Knowledge absorption..... | 45.0 | 25 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.3 | 80 ○ |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 11.8 | 24 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 2.0 | 14 |
| 5.3.4 FDI net inflows, % GDP..... | 3.7 | 42 |

| | | |
|---|-------------|-----------|
| 6 Knowledge & technology outputs..... | 42.1 | 19 |
| 6.1 Knowledge creation..... | 31.9 | 32 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 0.7 | 68 ○ |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.8 | 31 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 2.8 | 12 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 48.5 | 9 ● |
| 6.1.5 Citable documents H index..... | 148.0 | 49 |
| 6.2 Knowledge impact..... | 55.7 | 9 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 1.0 | 71 ○ |
| 6.2.2 New businesses/th pop. 15–64 [Ⓔ] | 7.9 | 15 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 27.2 | 11 ● |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 38.2 | 23 |
| 6.3 Knowledge diffusion..... | 38.6 | 37 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.1 | 70 ○ |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 11.6 | 19 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 2.6 | 25 |
| 6.3.4 FDI net outflows, % GDP..... | 1.5 | 44 |

| | | |
|--|-------------|------------|
| 7 Creative outputs..... | 55.6 | 9 ● |
| 7.1 Intangible assets..... | 65.5 | 7 ● |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 81.0 | 20 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 2.3 | 9 |
| 7.1.3 ICTs & business model creation [†] | 78.6 | 3 ● |
| 7.1.4 ICTs & organizational model creation [†] | 78.4 | 2 ● |
| 7.2 Creative goods & services..... | 41.9 | 11 ● |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.8 | 20 |
| 7.2.2 National feature films/mn pop. 15–69..... | 19.6 | 8 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | 2.2 | 26 |
| 7.2.5 Creative goods exports, % total trade..... | 1.3 | 35 |
| 7.3 Online creativity..... | 49.5 | 22 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 10.8 | 43 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 36.9 | 22 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 7,671.3 | 11 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 93.4 | 7 ● |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|--------------------|
| Population (millions)..... | 96.5 |
| GDP (US\$ billions)..... | 52.3 |
| GDP per capita, PPP\$..... | 1,455.4 |
| Income group..... | Low income |
| Region..... | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|--------------|
| Global Innovation Index (out of 141)..... | 24.2 | 127 |
| Innovation Output Sub-Index..... | 20.3 | 111 |
| Innovation Input Sub-Index..... | 28.0 | 132 |
| Innovation Efficiency Ratio..... | 0.7 | 66 ● |
| Global Innovation Index 2014 (out of 143)..... | 25.4 | 126 |
| 1 Institutions..... | 46.5 | 117 |
| 1.1 Political environment..... | 28.5 | 124 |
| 1.1.1 Political stability*..... | 29.7 | 133 |
| 1.1.2 Government effectiveness*..... | 27.4 | 101 |
| 1.2 Regulatory environment..... | 51.1 | 111 |
| 1.2.1 Regulatory quality*..... | 17.6 | 134 |
| 1.2.2 Rule of law*..... | 31.1 | 100 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 19.1 | 87 |
| 1.3 Business environment..... | 59.8 | 103 |
| 1.3.1 Ease of starting a business*..... | 63.2 | 132 |
| 1.3.2 Ease of resolving insolvency*..... | 47.2 | 69 ● |
| 1.3.3 Ease of paying taxes*..... | 69.1 | 88 |
| 2 Human capital & research..... | 13.4 | 132 |
| 2.1 Education..... | 15.7 | 139 ○ |
| 2.1.1 Expenditure on education, % GDP [Ⓓ] | 4.7 | 66 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓓ] | 10.4 | 97 |
| 2.1.3 School life expectancy, years [Ⓓ] | 6.6 | 131 ○ |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 38.8 | 118 ○ |
| 2.2 Tertiary education..... | 19.4 | 103 |
| 2.2.1 Tertiary enrolment, % gross [Ⓓ] | 2.8 | 131 ○ |
| 2.2.2 Graduates in science & engineering, % [Ⓓ] | 15.2 | 82 |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 4.9 | 83 |
| 2.3.1 Researchers, FTE/mn pop..... | 46.1 | 92 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.6 | 54 ● |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 23.9 | 119 |
| 3.1 Information & communication technologies (ICTs)..... | 23.1 | 116 |
| 3.1.1 ICT access*..... | 18.7 | 135 ○ |
| 3.1.2 ICT use*..... | 2.4 | 129 |
| 3.1.3 Government's online service*..... | 45.7 | 71 ● |
| 3.1.4 E-participation*..... | 25.5 | 110 |
| 3.2 General infrastructure..... | 29.4 | 75 |
| 3.2.1 Electricity output, kWh/cap..... | 73.0 | 122 ○ |
| 3.2.2 Logistics performance*..... | 22.1 | 98 |
| 3.2.3 Gross capital formation, % GDP..... | 30.1 | 21 ● |
| 3.3 Ecological sustainability..... | 19.2 | 136 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 2.2 | 119 ○ |
| 3.3.2 Environmental performance*..... | 39.4 | 109 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.0 | 135 ○ |
| 4 Market sophistication..... | 31.9 | 137 ○ |
| 4.1 Credit..... | 6.6 | 136 |
| 4.1.1 Ease of getting credit*..... | 15.0 | 129 |
| 4.1.2 Domestic credit to private sector, % GDP [Ⓓ] | 17.7 | 120 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.0 | 74 |

| | | |
|---|------|-----|
| 4.2 Investment..... | 28.0 | 104 |
| 4.2.1 Ease of protecting investors*..... | 41.7 | 123 |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 64 |
| 4.3 Trade & competition..... | 61.2 | 124 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 10.3 | 123 |
| 4.3.2 Intensity of local competition [†] | 58.8 | 109 |

5 Business sophistication.....24.6 125

| | | |
|---|------|------|
| 5.1 Knowledge workers..... | 14.2 | 131 |
| 5.1.1 Knowledge-intensive employment, %..... | 3.8 | 112 |
| 5.1.2 Firms offering formal training, % firms [Ⓓ] | 30.0 | 66 |
| 5.1.3 GERD performed by business, % of GDP..... | 0.0 | 82 |
| 5.1.4 GERD financed by business, %..... | 0.7 | 86 |
| 5.1.5 Females employed w/advanced degrees, % total [Ⓓ] | 6.0 | 74 |
| 5.2 Innovation linkages..... | 22.5 | 114 |
| 5.2.1 University/industry research collaboration [†] | 41.0 | 75 |
| 5.2.2 State of cluster development [†] | 33.3 | 121 |
| 5.2.3 GERD financed by abroad, %..... | 2.1 | 80 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a |
| 5.3 Knowledge absorption..... | 37.0 | 53 ● |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓓ] | 0.0 | 114 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 9.7 | 36 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓓ] | 1.6 | 34 ● |
| 5.3.4 FDI net inflows, % GDP..... | 2.0 | 82 |

6 Knowledge & technology outputs.....17.3 118

| | | |
|---|------|-------|
| 6.1 Knowledge creation..... | 8.8 | 79 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 6.9 | 81 |
| 6.1.5 Citable documents H index..... | 82.0 | 86 |
| 6.2 Knowledge impact..... | 33.6 | 92 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 3.6 | 20 ● |
| 6.2.2 New businesses/th pop. 15–64 [Ⓓ] | 0.0 | 105 ○ |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 10.4 | 132 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓓ] | 10.9 | 76 |
| 6.3 Knowledge diffusion..... | 9.4 | 131 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓓ] | 0.0 | 99 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.1 | 112 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓓ] | 1.7 | 55 ● |
| 6.3.4 FDI net outflows, % GDP..... | n/a | n/a |

7 Creative outputs.....23.3 106

| | | |
|---|------|-------|
| 7.1 Intangible assets..... | 37.6 | 103 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 39.1 | 121 |
| 7.1.4 ICTs & organizational model creation [†] | 36.1 | 124 |
| 7.2 Creative goods & services..... | 18.1 | 73 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.0 | 82 |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓓ] | 2.7 | 13 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.1 | 106 |
| 7.3 Online creativity..... | 0.0 | 140 ○ |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.0 | 139 ○ |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.0 | 134 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 23.9 | 131 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓓ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|-----------------------------|
| Population (millions)..... | 0.9 |
| GDP (US\$ billions)..... | 4.2 |
| GDP per capita, PPP\$..... | 5,253.6 |
| Income group..... | Upper-middle income |
| Region..... | South East Asia and Oceania |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 27.3 | 115 |
| Innovation Output Sub-Index..... | 12.0 | 137 ○ |
| Innovation Input Sub-Index..... | 42.6 | 64 |
| Innovation Efficiency Ratio..... | 0.3 | 140 ○ |
| Global Innovation Index 2014 (out of 143)..... | 30.4 | 95 |

| | | |
|---|-------------|-----------|
| 1 Institutions..... | 54.4 | 88 |
| 1.1 Political environment..... | 39.5 | 102 |
| 1.1.1 Political stability*..... | 63.5 | 67 |
| 1.1.2 Government effectiveness*..... | 15.5 | 128 ○ |
| 1.2 Regulatory environment..... | 62.8 | 80 |
| 1.2.1 Regulatory quality*..... | 32.6 | 109 |
| 1.2.2 Rule of law*..... | 25.2 | 116 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 9.6 | 32 ● |
| 1.3 Business environment..... | 60.7 | 100 |
| 1.3.1 Ease of starting a business*..... | 67.8 | 127 ○ |
| 1.3.2 Ease of resolving insolvency*..... | 43.6 | 85 |
| 1.3.3 Ease of paying taxes*..... | 70.7 | 84 |

| | | |
|--|-------------|-----------|
| 2 Human capital & research..... | 30.6 | 61 |
| 2.1 Education..... | 35.1 | 100 |
| 2.1.1 Expenditure on education, % GDP..... | 4.2 | 81 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 5.8 | 110 ○ |
| 2.1.3 School life expectancy, years [Ⓐ] | 13.9 | 59 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 19.3 | 82 |
| 2.2 Tertiary education..... | 56.6 | 8 ● |
| 2.2.1 Tertiary enrolment, % gross [Ⓐ] | 16.1 | 98 |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, % [Ⓐ] | 32.9 | 1 ● |
| 2.3 Research & development (R&D)..... | 0.0 | 128 ○ |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP..... | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |

| | | |
|--|-------------|-----------|
| 3 Infrastructure..... | 32.9 | 90 |
| 3.1 Information & communication technologies (ICTs)..... | 38.8 | 85 |
| 3.1.1 ICT access*..... | 46.0 | 85 |
| 3.1.2 ICT use*..... | 30.8 | 67 |
| 3.1.3 Government's online service*..... | 39.4 | 82 |
| 3.1.4 E-participation*..... | 39.2 | 82 |
| 3.2 General infrastructure..... | 23.0 | 110 |
| 3.2.1 Electricity output, kWh/cap..... | n/a | n/a |
| 3.2.2 Logistics performance*..... | 19.6 | 103 |
| 3.2.3 Gross capital formation, % GDP..... | 19.6 | 94 |
| 3.3 Ecological sustainability..... | 36.9 | 75 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | n/a | n/a |
| 3.3.2 Environmental performance*..... | 53.1 | 68 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.6 | 76 |

| | | |
|---|-------------|--------------|
| 4 Market sophistication..... | 38.7 | 119 ○ |
| 4.1 Credit..... | 25.4 | 86 |
| 4.1.1 Ease of getting credit*..... | 50.0 | 65 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 81.4 | 38 ● |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.0 | 76 ○ |

| | | |
|--|------|-------|
| 4.2 Investment..... | 25.5 | 120 ○ |
| 4.2.1 Ease of protecting investors*..... | 47.5 | 97 |
| 4.2.2 Market capitalization, % GDP..... | 11.8 | 85 |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.2 | 94 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 65.2 | 117 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓐ] | 9.9 | 119 ○ |
| 4.3.2 Intensity of local competition [†] | n/a | n/a |

| | | |
|---|-------------|----------|
| 5 Business sophistication..... | 56.5 | 8 |
| 5.1 Knowledge workers..... | 51.6 | 34 |
| 5.1.1 Knowledge-intensive employment, % [Ⓐ] | 16.7 | 87 |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 61.0 | 10 ● |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | n/a | n/a |
| 5.2.1 University/industry research collaboration [†] | n/a | n/a |
| 5.2.2 State of cluster development [†] | n/a | n/a |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a |
| 5.3 Knowledge absorption..... | 61.3 | 5 ● |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.1 | 105 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 23.1 | 3 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓐ] | 2.0 | 12 ● |
| 5.3.4 FDI net inflows, % GDP..... | 6.8 | 20 ● |

| | | |
|---|-------------|--------------|
| 6 Knowledge & technology outputs..... | 13.4 | 128 ○ |
| 6.1 Knowledge creation..... | 14.7 | 61 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 17.3 | 43 ● |
| 6.1.5 Citable documents H index..... | 46.0 | 119 ○ |
| 6.2 Knowledge impact..... | 8.0 | 127 ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 2.9 | 84 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓐ] | 7.1 | 86 ○ |
| 6.3 Knowledge diffusion..... | 17.3 | 123 ○ |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓐ] | 0.0 | 103 ○ |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.1 | 109 ○ |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓐ] | 0.9 | 81 |
| 6.3.4 FDI net outflows, % GDP..... | 0.1 | 89 |

| | | |
|---|-------------|--------------|
| 7 Creative outputs..... | 10.6 | 137 ○ |
| 7.1 Intangible assets..... | n/a | n/a |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | n/a | n/a |
| 7.1.4 ICTs & organizational model creation [†] | n/a | n/a |
| 7.2 Creative goods & services..... | 14.6 | 84 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.0 | 68 |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓐ] | 1.7 | 61 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓐ] | 2.2 | 24 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.1 | 86 |
| 7.3 Online creativity..... | 6.7 | 87 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 3.3 | 69 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 2.7 | 67 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 1,885.4 | 56 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|-------------|
| Population (millions)..... | 5.4 |
| GDP (US\$ billions)..... | 271.2 |
| GDP per capita, PPP\$..... | 36,122.1 |
| Income group..... | High income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 60.0 | 6 |
| Innovation Output Sub-Index..... | 52.0 | 10 |
| Innovation Input Sub-Index..... | 67.9 | 3 ● |
| Innovation Efficiency Ratio..... | 0.8 | 41 |
| Global Innovation Index 2014 (out of 143)..... | 60.7 | 4 |
| 1 Institutions..... | 95.8 | 1 ● |
| 1.1 Political environment..... | 98.9 | 1 ● |
| 1.1.1 Political stability*..... | 97.8 | 3 ● |
| 1.1.2 Government effectiveness*..... | 100.0 | 1 ● |
| 1.2 Regulatory environment..... | 96.9 | 7 |
| 1.2.1 Regulatory quality*..... | 97.0 | 4 |
| 1.2.2 Rule of law*..... | 98.9 | 3 ● |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 10.1 | 35 |
| 1.3 Business environment..... | 91.8 | 2 ● |
| 1.3.1 Ease of starting a business*..... | 93.1 | 24 |
| 1.3.2 Ease of resolving insolvency*..... | 93.9 | 1 ● |
| 1.3.3 Ease of paying taxes*..... | 88.4 | 20 |
| 2 Human capital & research..... | 64.9 | 1 ● |
| 2.1 Education..... | 63.7 | 6 |
| 2.1.1 Expenditure on education, % GDP..... | 6.8 | 17 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 36.2 | 12 |
| 2.1.3 School life expectancy, years..... | 17.1 | 11 |
| 2.1.4 PISA scales in reading, maths, & science..... | 529.4 | 6 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 9.3 | 19 |
| 2.2 Tertiary education..... | 54.1 | 11 |
| 2.2.1 Tertiary enrolment, % gross..... | 93.7 | 4 |
| 2.2.2 Graduates in science & engineering, %..... | 27.6 | 14 |
| 2.2.3 Tertiary inbound mobility, %..... | 5.7 | 32 |
| 2.3 Research & development (R&D)..... | 76.9 | 5 |
| 2.3.1 Researchers, FTE/mn pop..... | 7223.3 | 3 ● |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 3.5 | 4 |
| 2.3.3 QS university ranking, average score top 3*..... | 61.8 | 17 |
| 3 Infrastructure..... | 58.5 | 16 |
| 3.1 Information & communication technologies (ICTs)..... | 76.7 | 17 |
| 3.1.1 ICT access*..... | 78.0 | 26 |
| 3.1.2 ICT use*..... | 80.9 | 4 |
| 3.1.3 Government's online service*..... | 77.2 | 18 |
| 3.1.4 E-participation*..... | 70.6 | 24 |
| 3.2 General infrastructure..... | 49.3 | 18 |
| 3.2.1 Electricity output, kWh/cap..... | 13035.8 | 9 |
| 3.2.2 Logistics performance*..... | 74.6 | 23 |
| 3.2.3 Gross capital formation, % GDP..... | 20.9 | 75 ○ |
| 3.3 Ecological sustainability..... | 49.5 | 29 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 5.2 | 94 ○ |
| 3.3.2 Environmental performance*..... | 75.7 | 18 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 6.5 | 16 |
| 4 Market sophistication..... | 61.5 | 19 |
| 4.1 Credit..... | 48.3 | 27 |
| 4.1.1 Ease of getting credit*..... | 65.0 | 34 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 98.1 | 31 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|------|-------|
| 4.2 Investment..... | 57.9 | 14 |
| 4.2.1 Ease of protecting investors*..... | 55.8 | 70 ○ |
| 4.2.2 Market capitalization, % GDP..... | 62.0 | 28 |
| 4.2.3 Total value of stocks traded, % GDP..... | 49.3 | 17 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 1.2 | 1 ● |
| 4.3 Trade & competition..... | 78.3 | 60 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition [†] | 60.0 | 104 ○ |

| | | |
|---|-------------|----------|
| 5 Business sophistication..... | 58.8 | 4 |
| 5.1 Knowledge workers..... | 74.8 | 3 ● |
| 5.1.1 Knowledge-intensive employment, %..... | 44.7 | 11 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP..... | 2.4 | 4 |
| 5.1.4 GERD financed by business, %..... | 60.8 | 9 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 25.3 | 8 |
| 5.2 Innovation linkages..... | 48.7 | 17 |
| 5.2.1 University/industry research collaboration [†] | 82.8 | 1 ● |
| 5.2.2 State of cluster development [†] | 67.7 | 12 |
| 5.2.3 GERD financed by abroad, %..... | 11.5 | 40 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 44 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 2.5 | 6 |
| 5.3 Knowledge absorption..... | 52.7 | 9 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.6 | 13 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 7.1 | 64 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 3.4 | 1 ● |
| 5.3.4 FDI net inflows, % GDP..... | -2.1 | 138 ○ |

| | | |
|---|-------------|-----------|
| 6 Knowledge & technology outputs..... | 51.9 | 11 |
| 6.1 Knowledge creation..... | 57.5 | 8 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 7.3 | 11 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 8.2 | 1 ● |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | 2.0 | 15 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 54.0 | 5 |
| 6.1.5 Citable documents H index..... | 407.0 | 18 |
| 6.2 Knowledge impact..... | 44.0 | 42 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.6 | 84 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 2.3 | 43 |
| 6.2.3 Computer software spending, % GDP..... | 0.6 | 19 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 13.0 | 29 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 41.0 | 21 |
| 6.3 Knowledge diffusion..... | 54.2 | 10 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 3.5 | 4 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 4.5 | 35 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 6.0 | 5 |
| 6.3.4 FDI net outflows, % GDP..... | -0.1 | 111 ○ |

| | | |
|--|-------------|-----------|
| 7 Creative outputs..... | 52.2 | 15 |
| 7.1 Intangible assets..... | 61.5 | 10 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 64.3 | 32 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 1.6 | 17 |
| 7.1.3 ICTs & business model creation [†] | 80.8 | 1 ● |
| 7.1.4 ICTs & organizational model creation [†] | 79.7 | 1 ● |
| 7.2 Creative goods & services..... | 28.0 | 45 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.3 | 43 ○ |
| 7.2.2 National feature films/mn pop. 15–69..... | 12.7 | 13 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 54.5 | 10 |
| 7.2.4 Printing & publishing output manufactures, %..... | 1.2 | 60 ○ |
| 7.2.5 Creative goods exports, % total trade..... | 0.7 | 46 |
| 7.3 Online creativity..... | 57.8 | 19 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 34.4 | 22 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 39.4 | 16 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 8836.0 | 7 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 92.0 | 11 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓜ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|-------------|
| Population (millions) | 64.6 |
| GDP (US\$ billions) | 2,846.9 |
| GDP per capita, PPP\$ | 36,537.5 |
| Income group | High income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-------------|
| Global Innovation Index (out of 141)..... | 53.6 | 21 |
| Innovation Output Sub-Index | 45.9 | 23 |
| Innovation Input Sub-Index..... | 61.3 | 17 |
| Innovation Efficiency Ratio..... | 0.7 | 51 |
| Global Innovation Index 2014 (out of 143) | 52.2 | 22 |
| 1 Institutions..... | 81.7 | 21 |
| 1.1 Political environment..... | 77.9 | 26 |
| 1.1.1 Political stability*..... | 74.6 | 48 |
| 1.1.2 Government effectiveness*..... | 81.1 | 20 |
| 1.2 Regulatory environment | 87.0 | 19 |
| 1.2.1 Regulatory quality*..... | 78.4 | 23 |
| 1.2.2 Rule of law*..... | 84.8 | 21 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 11.9 | 45 |
| 1.3 Business environment..... | 80.4 | 26 |
| 1.3.1 Ease of starting a business*..... | 93.0 | 25 |
| 1.3.2 Ease of resolving insolvency*..... | 75.9 | 20 |
| 1.3.3 Ease of paying taxes*..... | 72.1 | 75 ○ |
| 2 Human capital & research..... | 55.5 | 12 ● |
| 2.1 Education..... | 54.5 | 31 |
| 2.1.1 Expenditure on education, % GDP..... | 5.7 | 37 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 28.0 | 28 |
| 2.1.3 School life expectancy, years..... | 16.0 | 24 |
| 2.1.4 PISA scales in reading, maths, & science..... | 499.8 | 20 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 12.8 | 46 |
| 2.2 Tertiary education..... | 50.5 | 17 |
| 2.2.1 Tertiary enrolment, % gross..... | 58.3 | 42 |
| 2.2.2 Graduates in science & engineering, %..... | 25.4 | 23 |
| 2.2.3 Tertiary inbound mobility, %..... | 11.8 | 14 |
| 2.3 Research & development (R&D)..... | 61.4 | 12 ● |
| 2.3.1 Researchers, FTE/mn pop..... | 4124.6 | 18 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 2.3 | 14 |
| 2.3.3 QS university ranking, average score top 3*..... | 80.5 | 8 ● |
| 3 Infrastructure..... | 60.8 | 12 ● |
| 3.1 Information & communication technologies (ICTs)..... | 87.5 | 5 ● |
| 3.1.1 ICT access*..... | 86.5 | 12 ● |
| 3.1.2 ICT use*..... | 67.4 | 19 |
| 3.1.3 Government's online service*..... | 100.0 | 1 ● |
| 3.1.4 E-participation*..... | 96.1 | 4 ● |
| 3.2 General infrastructure..... | 47.8 | 20 |
| 3.2.1 Electricity output, kWh/cap..... | 8672.9 | 18 |
| 3.2.2 Logistics performance*..... | 86.0 | 13 ● |
| 3.2.3 Gross capital formation, % GDP..... | 22.1 | 67 ○ |
| 3.3 Ecological sustainability..... | 47.1 | 37 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 7.8 | 53 |
| 3.3.2 Environmental performance*..... | 71.1 | 27 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 3.1 | 33 |
| 4 Market sophistication..... | 59.0 | 25 |
| 4.1 Credit..... | 43.0 | 38 |
| 4.1.1 Ease of getting credit*..... | 50.0 | 65 ○ |
| 4.1.2 Domestic credit to private sector, % GDP..... | 111.3 | 27 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|-------------|-----------|
| 4.2 Investment..... | 48.1 | 32 |
| 4.2.1 Ease of protecting investors*..... | 67.5 | 17 |
| 4.2.2 Market capitalization, % GDP..... | 67.9 | 25 |
| 4.2.3 Total value of stocks traded, % GDP..... | 41.9 | 19 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.2 | 15 |
| 4.3 Trade & competition..... | 85.9 | 21 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition [†] | 75.1 | 29 |
| 5 Business sophistication..... | 49.3 | 19 |
| 5.1 Knowledge workers..... | 64.7 | 12 ● |
| 5.1.1 Knowledge-intensive employment, %..... | 44.4 | 13 ● |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP..... | 1.5 | 14 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 55.4 | 15 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 19.6 | 23 |
| 5.2 Innovation linkages..... | 38.4 | 50 |
| 5.2.1 University/industry research collaboration [†] | 59.7 | 28 |
| 5.2.2 State of cluster development [†] | 55.6 | 30 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 7.6 | 53 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 43 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 1.2 | 14 |
| 5.3 Knowledge absorption..... | 44.7 | 29 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.3 | 19 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 11.6 | 25 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.8 | 24 |
| 5.3.4 FDI net inflows, % GDP..... | 0.2 | 127 ○ |
| 6 Knowledge & technology outputs..... | 41.1 | 23 |
| 6.1 Knowledge creation..... | 33.9 | 29 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 5.8 | 15 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 3.2 | 15 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 0.1 | 56 ○ |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 25.7 | 32 |
| 6.1.5 Citable documents H index..... | 742.0 | 4 ● |
| 6.2 Knowledge impact..... | 44.4 | 39 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.2 | 95 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 2.9 | 38 |
| 6.2.3 Computer software spending, % GDP..... | 0.6 | 14 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 11.7 | 35 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 43.1 | 16 |
| 6.3 Knowledge diffusion..... | 44.9 | 25 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 1.4 | 12 ● |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 14.3 | 12 ● |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.9 | 44 |
| 6.3.4 FDI net outflows, % GDP..... | 0.0 | 109 ○ |
| 7 Creative outputs..... | 50.8 | 19 |
| 7.1 Intangible assets..... | 59.8 | 14 ● |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 121.0 | 7 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 1.5 | 21 |
| 7.1.3 ICTs & business model creation [†] | 65.5 | 30 |
| 7.1.4 ICTs & organizational model creation [†] | 58.5 | 46 |
| 7.2 Creative goods & services..... | 34.6 | 28 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 1.1 | 12 |
| 7.2.2 National feature films/mn pop. 15–69..... | 6.1 | 32 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 47.2 | 14 |
| 7.2.4 Printing & publishing output manufactures, %..... | 1.3 | 56 ○ |
| 7.2.5 Creative goods exports, % total trade..... | 1.7 | 27 |
| 7.3 Online creativity..... | 49.0 | 23 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 46.8 | 19 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 27.0 | 29 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 4814.5 | 27 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 86.5 | 21 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|--------------------|
| Population (millions) | 1.9 |
| GDP (US\$ billions) | 0.8 |
| GDP per capita, PPP\$ | 2,081.5 |
| Income group | Low income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|--------------|
| Global Innovation Index (out of 141)..... | 27.5 | 112 |
| Innovation Output Sub-Index | 24.0 | 94 |
| Innovation Input Sub-Index..... | 31.0 | 121 |
| Innovation Efficiency Ratio..... | 0.8 | 39 ● |
| Global Innovation Index 2014 (out of 143) | 29.0 | 104 |
| 1 Institutions..... | 47.2 | 114 |
| 1.1 Political environment..... | 42.5 | 89 |
| 1.1.1 Political stability*..... | 63.0 | 70 ● |
| 1.1.2 Government effectiveness*..... | 22.0 | 115 |
| 1.2 Regulatory environment | 49.7 | 114 |
| 1.2.1 Regulatory quality*..... | 38.0 | 101 |
| 1.2.2 Rule of law*..... | 32.0 | 97 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 26.0 | 112 |
| 1.3 Business environment..... | 49.4 | 134 ○ |
| 1.3.1 Ease of starting a business*..... | 68.4 | 126 |
| 1.3.2 Ease of resolving insolvency*..... | 41.5 | 95 |
| 1.3.3 Ease of paying taxes*..... | 38.4 | 136 ○ |
| 2 Human capital & research..... | 11.1 | 138 ○ |
| 2.1 Education | 21.2 | 133 ○ |
| 2.1.1 Expenditure on education, % GDP | 4.1 | 84 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓔ] | 13.1 | 90 |
| 2.1.3 School life expectancy, years [Ⓔ] | 8.8 | 123 ○ |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a |
| 2.2 Tertiary education..... | n/a | n/a |
| 2.2.1 Tertiary enrolment, % gross..... | n/a | n/a |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 1.1 | 114 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 33.8 | 100 ○ |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.1 | 101 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 23.4 | 122 |
| 3.1 Information & communication technologies (ICTs)..... | 20.3 | 122 |
| 3.1.1 ICT access*..... | 33.9 | 109 |
| 3.1.2 ICT use*..... | 5.1 | 122 |
| 3.1.3 Government's online service*..... | 20.5 | 120 |
| 3.1.4 E-participation*..... | 21.6 | 119 |
| 3.2 General infrastructure..... | 20.6 | 116 |
| 3.2.1 Electricity output, kWh/cap..... | n/a | n/a |
| 3.2.2 Logistics performance*..... | 4.5 | 127 ○ |
| 3.2.3 Gross capital formation, % GDP..... | 21.4 | 72 ● |
| 3.3 Ecological sustainability | 29.3 | 97 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | n/a | n/a |
| 3.3.2 Environmental performance*..... | 29.3 | 129 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | n/a | n/a |
| 4 Market sophistication | 36.0 | 126 |
| 4.1 Credit..... | 8.8 | 133 ○ |
| 4.1.1 Ease of getting credit*..... | 20.0 | 128 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 15.4 | 128 |
| 4.1.3 Microfinance gross loans, % GDP [Ⓔ] | 0.2 | 52 ● |

| | | |
|---|------|-------|
| 4.2 Investment | 39.2 | 52 |
| 4.2.1 Ease of protecting investors*..... | 39.2 | 129 ○ |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition | 60.1 | 128 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 12.5 | 130 ○ |
| 4.3.2 Intensity of local competition [†] | 64.2 | 84 |

5 Business sophistication **37.4** **53**

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 29.3 | 94 |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 25.6 | 74 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages | 34.3 | 62 |
| 5.2.1 University/industry research collaboration [†] | 38.9 | 84 |
| 5.2.2 State of cluster development [†] | 46.1 | 70 ● |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 15.9 | 28 ● |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a |
| 5.3 Knowledge absorption..... | 48.5 | 17 ● |
| 5.3.1 Royalty & license fees payments, % total trade..... | n/a | n/a |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 2.7 | 127 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 3.2 | 3 ● |
| 5.3.4 FDI net inflows, % GDP..... | 2.8 | 68 ● |

6 Knowledge & technology outputs **29.3** **51**

| | | |
|---|------|-------|
| 6.1 Knowledge creation..... | 24.7 | 39 ● |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | 1.0 | 28 ● |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 39.6 | 16 ● |
| 6.1.5 Citable documents H index..... | 85.0 | 84 |
| 6.2 Knowledge impact..... | 13.1 | 125 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.0 | 115 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 16.8 | 61 |
| 6.3 Knowledge diffusion..... | 50.0 | 15 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.0 | 122 ○ |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 6.0 | 1 ● |
| 6.3.4 FDI net outflows, % GDP..... | n/a | n/a |

7 Creative outputs **18.6** **122**

| | | |
|---|------|-------|
| 7.1 Intangible assets..... | 36.9 | 109 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 18.4 | 85 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 52.7 | 79 |
| 7.1.4 ICTs & organizational model creation [†] | 49.0 | 80 |
| 7.2 Creative goods & services..... | 0.3 | 137 ○ |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 0.1 | 98 ○ |
| 7.2.5 Creative goods exports, % total trade..... | 0.0 | 116 |
| 7.3 Online creativity..... | 0.4 | 121 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.1 | 131 ○ |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.6 | 99 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 49.7 | 121 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|----------------------------------|
| Population (millions)..... | 4.3 |
| GDP (US\$ billions)..... | 16.5 |
| GDP per capita, PPP\$..... | 6,569.9 |
| Income group..... | Lower-middle income |
| Region..... | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 33.8 | 73 |
| Innovation Output Sub-Index..... | 25.8 | 86 |
| Innovation Input Sub-Index..... | 41.8 | 67 |
| Innovation Efficiency Ratio..... | 0.6 | 107 |
| Global Innovation Index 2014 (out of 143)..... | 34.5 | 74 |

| | | |
|--|-------------|-----------|
| 1 Institutions..... | 68.2 | 51 |
| 1.1 Political environment..... | 54.2 | 60 |
| 1.1.1 Political stability*..... | 52.7 | 94 |
| 1.1.2 Government effectiveness*..... | 55.8 | 44 |
| 1.2 Regulatory environment..... | 78.0 | 34 |
| 1.2.1 Regulatory quality*..... | 67.4 | 40 |
| 1.2.2 Rule of law*..... | 47.0 | 62 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.6 | 20 ● |
| 1.3 Business environment..... | 72.3 | 57 |
| 1.3.1 Ease of starting a business*..... | 97.7 | 5 ● |
| 1.3.2 Ease of resolving insolvency*..... | 36.5 | 108 |
| 1.3.3 Ease of paying taxes*..... | 82.8 | 33 |
| 2 Human capital & research..... | 23.6 | 91 |
| 2.1 Education..... | 38.4 | 89 |
| 2.1.1 Expenditure on education, % GDP..... | 2.0 | 125 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓔ] | 15.5 | 83 |
| 2.1.3 School life expectancy, years..... | 13.8 | 62 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓔ] | 7.6 | 1 ● |
| 2.2 Tertiary education..... | 30.5 | 74 |
| 2.2.1 Tertiary enrolment, % gross..... | 33.1 | 73 |
| 2.2.2 Graduates in science & engineering, %..... | 20.7 | 51 |
| 2.2.3 Tertiary inbound mobility, %..... | 3.0 | 52 |
| 2.3 Research & development (R&D)..... | 2.0 | 102 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.2 | 94 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 36.6 | 79 |
| 3.1 Information & communication technologies (ICTs)..... | 51.1 | 55 |
| 3.1.1 ICT access*..... | 59.9 | 66 |
| 3.1.2 ICT use*..... | 25.8 | 81 |
| 3.1.3 Government's online service*..... | 59.8 | 49 |
| 3.1.4 E-participation*..... | 58.8 | 49 |
| 3.2 General infrastructure..... | 26.5 | 90 |
| 3.2.1 Electricity output, kWh/cap..... | 2159.2 | 75 |
| 3.2.2 Logistics performance*..... | 17.7 | 107 ○ |
| 3.2.3 Gross capital formation, % GDP..... | 25.9 | 40 |
| 3.3 Ecological sustainability..... | 32.1 | 90 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 7.2 | 61 |
| 3.3.2 Environmental performance*..... | 47.2 | 90 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.2 | 110 |
| 4 Market sophistication..... | 52.8 | 42 |
| 4.1 Credit..... | 52.8 | 20 ● |
| 4.1.1 Ease of getting credit*..... | 85.0 | 7 ● |
| 4.1.2 Domestic credit to private sector, % GDP..... | 39.8 | 84 |
| 4.1.3 Microfinance gross loans, % GDP..... | 5.2 | 7 ● |

| | | |
|---|-------------|------------|
| 4.2 Investment..... | 26.4 | 111 |
| 4.2.1 Ease of protecting investors*..... | 60.8 | 41 |
| 4.2.2 Market capitalization, % GDP..... | 6.0 | 98 ○ |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.0 | 105 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.1 | 37 |
| 4.3 Trade & competition..... | 79.3 | 56 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 0.7 | 3 ● |
| 4.3.2 Intensity of local competition [†] | 60.7 | 101 |
| 5 Business sophistication..... | 28.0 | 105 |
| 5.1 Knowledge workers..... | 27.1 | 100 |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 22.2 | 66 |
| 5.1.2 Firms offering formal training, % firms..... | 10.5 | 106 ○ |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | 14.5 | 40 |
| 5.2 Innovation linkages..... | 31.7 | 67 |
| 5.2.1 University/industry research collaboration [†] | 27.3 | 124 ○ |
| 5.2.2 State of cluster development [†] | 37.1 | 109 ○ |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 19 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.1 | 46 |
| 5.3 Knowledge absorption..... | 25.2 | 113 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.2 | 94 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 6.0 | 82 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.5 | 96 |
| 5.3.4 FDI net inflows, % GDP..... | 6.3 | 25 ● |
| 6 Knowledge & technology outputs..... | 26.6 | 67 |
| 6.1 Knowledge creation..... | 20.2 | 49 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 3.5 | 27 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.0 | 87 ○ |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 1.9 | 16 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 16.3 | 47 |
| 6.1.5 Citable documents H index..... | 90.0 | 80 |
| 6.2 Knowledge impact..... | 39.6 | 58 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 2.8 | 33 |
| 6.2.2 New businesses/th pop. 15–64..... | 4.9 | 22 ● |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 3.0 | 82 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 12.9 | 71 |
| 6.3 Knowledge diffusion..... | 20.1 | 112 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.0 | 75 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.3 | 90 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 0.7 | 87 |
| 6.3.4 FDI net outflows, % GDP..... | 0.7 | 57 |
| 7 Creative outputs..... | 25.0 | 99 |
| 7.1 Intangible assets..... | 36.2 | 110 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 51.3 | 48 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.6 | 39 |
| 7.1.3 ICTs & business model creation [†] | 48.9 | 98 |
| 7.1.4 ICTs & organizational model creation [†] | 43.1 | 104 |
| 7.2 Creative goods & services..... | 22.1 | 60 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.1 | 58 |
| 7.2.2 National feature films/mn pop. 15–69..... | 2.9 | 52 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | 3.5 | 8 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.0 | 108 ○ |
| 7.3 Online creativity..... | 5.4 | 91 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 1.8 | 93 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 2.8 | 66 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 1586.9 | 62 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|-------------|
| Population (millions) | 82.7 |
| GDP (US\$ billions) | 3,859.5 |
| GDP per capita, PPP\$ | 41,248.1 |
| Income group | High income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 57.1 | 12 |
| Innovation Output Sub-Index | 53.1 | 8 |
| Innovation Input Sub-Index..... | 61.0 | 18 |
| Innovation Efficiency Ratio..... | 0.9 | 13 |
| Global Innovation Index 2014 (out of 143) | 56.0 | 13 |
| 1 Institutions..... | 83.2 | 20 |
| 1.1 Political environment..... | 84.8 | 18 |
| 1.1.1 Political stability*..... | 87.1 | 24 |
| 1.1.2 Government effectiveness*..... | 82.4 | 16 |
| 1.2 Regulatory environment | 81.5 | 26 |
| 1.2.1 Regulatory quality*..... | 89.1 | 15 |
| 1.2.2 Rule of law*..... | 90.6 | 16 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 21.6 | 98 ○ |
| 1.3 Business environment..... | 83.4 | 19 |
| 1.3.1 Ease of starting a business*..... | 81.4 | 93 ○ |
| 1.3.2 Ease of resolving insolvency*..... | 91.8 | 3 ● |
| 1.3.3 Ease of paying taxes*..... | 77.0 | 56 |
| 2 Human capital & research..... | 56.6 | 10 |
| 2.1 Education | 53.5 | 37 |
| 2.1.1 Expenditure on education, % GDP | 5.0 | 58 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 24.1 | 43 |
| 2.1.3 School life expectancy, years..... | 16.5 | 15 |
| 2.1.4 PISA scales in reading, maths, & science..... | 515.1 | 13 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 12.7 | 44 |
| 2.2 Tertiary education..... | 48.2 | 22 |
| 2.2.1 Tertiary enrolment, % gross..... | 61.7 | 37 |
| 2.2.2 Graduates in science & engineering, % | 27.2 | 15 |
| 2.2.3 Tertiary inbound mobility, %..... | 7.0 | 25 |
| 2.3 Research & development (R&D)..... | 68.0 | 9 |
| 2.3.1 Researchers, FTE/mn pop..... | 4362.6 | 14 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 3.0 | 8 |
| 2.3.3 QS university ranking, average score top 3*..... | 80.2 | 9 |
| 3 Infrastructure..... | 56.7 | 18 |
| 3.1 Information & communication technologies (ICTs)..... | 72.9 | 22 |
| 3.1.1 ICT access*..... | 91.9 | 5 ● |
| 3.1.2 ICT use*..... | 62.1 | 24 |
| 3.1.3 Government's online service*..... | 66.9 | 34 |
| 3.1.4 E-participation*..... | 70.6 | 24 |
| 3.2 General infrastructure..... | 45.3 | 28 |
| 3.2.1 Electricity output, kWh/cap..... | 7660.9 | 24 |
| 3.2.2 Logistics performance*..... | 100.0 | 1 ● |
| 3.2.3 Gross capital formation, % GDP..... | 17.7 | 112 ○ |
| 3.3 Ecological sustainability | 52.1 | 23 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 9.2 | 36 |
| 3.3.2 Environmental performance*..... | 80.5 | 6 ● |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 2.2 | 44 |
| 4 Market sophistication | 59.2 | 22 |
| 4.1 Credit..... | 49.9 | 23 |
| 4.1.1 Ease of getting credit*..... | 70.0 | 22 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 93.1 | 33 |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a |

| | | |
|--|-------------|-----------|
| 4.2 Investment | 38.5 | 59 |
| 4.2.1 Ease of protecting investors*..... | 59.2 | 49 |
| 4.2.2 Market capitalization, % GDP..... | 42.1 | 48 |
| 4.2.3 Total value of stocks traded, % GDP..... | 34.7 | 24 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.2 | 16 |
| 4.3 Trade & competition | 89.2 | 7 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition†..... | 81.8 | 10 |
| 5 Business sophistication | 49.2 | 20 |
| 5.1 Knowledge workers..... | 59.4 | 24 |
| 5.1.1 Knowledge-intensive employment, %..... | 42.9 | 18 |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 35.4 | 51 |
| 5.1.3 GERD performed by business, % of GDP..... | 2.0 | 7 |
| 5.1.4 GERD financed by business, % [Ⓐ] | 66.1 | 4 ● |
| 5.1.5 Females employed w/advanced degrees, % total..... | 13.9 | 43 ○ |
| 5.2 Innovation linkages | 46.0 | 22 |
| 5.2.1 University/industry research collaboration† | 72.3 | 10 |
| 5.2.2 State of cluster development† | 74.9 | 2 ● |
| 5.2.3 GERD financed by abroad, % [Ⓐ] | 4.3 | 69 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 49 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 2.4 | 7 |
| 5.3 Knowledge absorption..... | 42.2 | 33 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.8 | 37 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 9.6 | 39 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 2.0 | 17 |
| 5.3.4 FDI net inflows, % GDP..... | 0.9 | 115 ○ |
| 6 Knowledge & technology outputs | 53.4 | 10 |
| 6.1 Knowledge creation..... | 64.7 | 5 ● |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 13.1 | 1 ● |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP | 4.8 | 11 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | 3.2 | 9 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 26.0 | 31 |
| 6.1.5 Citable documents H index..... | 815.0 | 3 ● |
| 6.2 Knowledge impact..... | 46.6 | 31 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.3 | 91 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 1.3 | 59 ○ |
| 6.2.3 Computer software spending, % GDP..... | 0.6 | 18 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 15.6 | 23 |
| 6.2.5 High- & medium-high-tech manufactures, % | 55.5 | 5 ● |
| 6.3 Knowledge diffusion..... | 49.0 | 20 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 1.1 | 15 |
| 6.3.2 High-tech exports less re-exports, % total trade | 12.0 | 17 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 2.2 | 35 |
| 6.3.4 FDI net outflows, % GDP | 2.2 | 32 |
| 7 Creative outputs | 52.8 | 14 |
| 7.1 Intangible assets..... | 55.2 | 29 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 66.3 | 30 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 1.7 | 16 |
| 7.1.3 ICTs & business model creation†..... | 69.3 | 19 |
| 7.1.4 ICTs & organizational model creation†..... | 66.6 | 21 |
| 7.2 Creative goods & services..... | 28.1 | 43 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.4 | 39 |
| 7.2.2 National feature films/mn pop. 15–69..... | 3.8 | 45 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 50.1 | 11 |
| 7.2.4 Printing & publishing output manufactures, %..... | 1.2 | 61 ○ |
| 7.2.5 Creative goods exports, % total trade..... | 1.8 | 25 |
| 7.3 Online creativity..... | 72.8 | 7 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 63.7 | 14 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 100.0 | 1 ● |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 5952.1 | 19 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 83.6 | 27 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------|
| Population (millions)..... | 26.4 |
| GDP (US\$ billions)..... | 38.6 |
| GDP per capita, PPP\$..... | 3,589.7 |
| Income group..... | Lower-middle income |
| Region..... | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 28.0 | 108 |
| Innovation Output Sub-Index..... | 22.9 | 102 |
| Innovation Input Sub-Index..... | 33.2 | 116 |
| Innovation Efficiency Ratio..... | 0.7 | 79 |
| Global Innovation Index 2014 (out of 143)..... | 30.3 | 96 |

1 Institutions.....48.3 109

| | | |
|---|------|-------|
| 1.1 Political environment..... | 51.9 | 63 |
| 1.1.1 Political stability*..... | 64.7 | 64 |
| 1.1.2 Government effectiveness*..... | 39.1 | 76 |
| 1.2 Regulatory environment..... | 33.7 | 135 ○ |
| 1.2.1 Regulatory quality*..... | 49.9 | 67 |
| 1.2.2 Rule of law*..... | 50.5 | 57 ● |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 49.8 | 135 ○ |
| 1.3 Business environment..... | 59.2 | 108 |
| 1.3.1 Ease of starting a business*..... | 83.7 | 78 |
| 1.3.2 Ease of resolving insolvency*..... | 22.5 | 135 ○ |
| 1.3.3 Ease of paying taxes*..... | 71.5 | 79 |

2 Human capital & research.....23.2 94

| | | |
|--|------|------|
| 2.1 Education..... | 47.0 | 59 ● |
| 2.1.1 Expenditure on education, % GDP..... | 8.1 | 6 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 25.7 | 36 ● |
| 2.1.3 School life expectancy, years..... | 11.5 | 98 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 17.5 | 76 |
| 2.2 Tertiary education..... | 18.7 | 105 |
| 2.2.1 Tertiary enrolment, % gross..... | 12.2 | 105 |
| 2.2.2 Graduates in science & engineering, %..... | 14.2 | 86 |
| 2.2.3 Tertiary inbound mobility, %..... | 3.1 | 51 |
| 2.3 Research & development (R&D)..... | 3.8 | 86 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 38.8 | 94 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.4 | 71 |
| 2.3.3 QS university ranking, average score top 3*..... | 2.3 | 72 |

3 Infrastructure.....28.4 107

| | | |
|--|-------|------|
| 3.1 Information & communication technologies (ICTs)..... | 33.3 | 97 |
| 3.1.1 ICT access*..... | 44.7 | 92 |
| 3.1.2 ICT use*..... | 17.6 | 94 |
| 3.1.3 Government's online service*..... | 31.5 | 98 |
| 3.1.4 E-participation*..... | 39.2 | 82 |
| 3.2 General infrastructure..... | 24.3 | 103 |
| 3.2.1 Electricity output, kWh/cap..... | 473.9 | 107 |
| 3.2.2 Logistics performance*..... | 23.8 | 95 |
| 3.2.3 Gross capital formation, % GDP..... | 24.6 | 48 ● |
| 3.3 Ecological sustainability..... | 27.6 | 108 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 8.1 | 51 ● |
| 3.3.2 Environmental performance*..... | 32.1 | 124 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.2 | 117 |

4 Market sophistication.....37.5 123

| | | |
|---|------|------|
| 4.1 Credit..... | 23.9 | 93 |
| 4.1.1 Ease of getting credit*..... | 65.0 | 34 ● |
| 4.1.2 Domestic credit to private sector, % GDP..... | 17.0 | 122 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.2 | 55 |

| | | |
|--|------|------|
| 4.2 Investment..... | 25.0 | 125 |
| 4.2.1 Ease of protecting investors*..... | 58.3 | 54 ● |
| 4.2.2 Market capitalization, % GDP..... | 8.3 | 93 |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.1 | 97 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 47 |
| 4.3 Trade & competition..... | 63.7 | 120 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 8.6 | 112 |
| 4.3.2 Intensity of local competition [†] | 57.4 | 113 |

5 Business sophistication.....28.7 100

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 20.6 | 121 |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 8.6 | 103 |
| 5.1.2 Firms offering formal training, % firms..... | 40.1 | 46 |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 0.0 | 87 ○ |
| 5.1.4 GERD financed by business, % [Ⓔ] | 0.1 | 90 ○ |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 30.8 | 73 |
| 5.2.1 University/industry research collaboration [†] | 41.0 | 74 |
| 5.2.2 State of cluster development [†] | 45.5 | 74 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 31.2 | 14 ● |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 77 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 108 ○ |
| 5.3 Knowledge absorption..... | 34.8 | 62 |
| 5.3.1 Royalty & license fees payments, % total trade..... | n/a | n/a |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 5.1 | 99 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP..... | 6.7 | 21 ● |

6 Knowledge & technology outputs.....25.0 76

| | | |
|---|------|-------|
| 6.1 Knowledge creation..... | 5.7 | 98 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP [Ⓔ] | 0.0 | 91 ○ |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 6.5 | 88 |
| 6.1.5 Citable documents H index..... | 82.0 | 86 |
| 6.2 Knowledge impact..... | 45.5 | 37 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 5.3 | 5 ● |
| 6.2.2 New businesses/th pop. 15–64..... | 0.9 | 72 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.5 | 127 ○ |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 23.7 | 95 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.3 | 87 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | 0.0 | 104 |

7 Creative outputs.....20.8 119

| | | |
|--|-------|-------|
| 7.1 Intangible assets..... | 37.0 | 107 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.0 | 66 ○ |
| 7.1.3 ICTs & business model creation [†] | 50.1 | 93 |
| 7.1.4 ICTs & organizational model creation [†] | 42.2 | 109 |
| 7.2 Creative goods & services..... | 2.4 | 124 ○ |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 0.1 | 96 |
| 7.3 Online creativity..... | 6.7 | 86 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.8 | 108 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.0 | 139 ○ |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 101.7 | 114 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 25.3 | 72 ○ |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|-------------|
| Population (millions) | 11.1 |
| GDP (US\$ billions) | 238.0 |
| GDP per capita, PPP\$ | 24,574.1 |
| Income group | High income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 40.3 | 45 |
| Innovation Output Sub-Index | 31.8 | 57 |
| Innovation Input Sub-Index..... | 48.8 | 38 |
| Innovation Efficiency Ratio..... | 0.7 | 98 |
| Global Innovation Index 2014 (out of 143) | 38.9 | 50 |

1 Institutions.....68.2 52

| | | |
|---|------|----|
| 1.1 Political environment..... | 56.4 | 55 |
| 1.1.1 Political stability*..... | 59.3 | 79 |
| 1.1.2 Government effectiveness*..... | 53.5 | 47 |
| 1.2 Regulatory environment | 73.1 | 45 |
| 1.2.1 Regulatory quality*..... | 64.2 | 42 |
| 1.2.2 Rule of law*..... | 59.3 | 47 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 15.9 | 71 |
| 1.3 Business environment..... | 75.0 | 47 |
| 1.3.1 Ease of starting a business*..... | 90.7 | 43 |
| 1.3.2 Ease of resolving insolvency*..... | 56.0 | 50 |
| 1.3.3 Ease of paying taxes*..... | 78.3 | 49 |

2 Human capital & research.....45.9 28

| | | |
|--|--------|------|
| 2.1 Education | 52.3 | 41 |
| 2.1.1 Expenditure on education, % GDP [Ⓐ] | 4.1 | 83 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓐ] | 21.5 | 51 |
| 2.1.3 School life expectancy, years..... | 17.6 | 8 ● |
| 2.1.4 PISA scales in reading, maths, & science..... | 465.6 | 39 |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓐ] | 7.9 | 5 ● |
| 2.2 Tertiary education..... | 58.8 | 6 ● |
| 2.2.1 Tertiary enrolment, % gross..... | 116.6 | 1 ● |
| 2.2.2 Graduates in science & engineering, % | 28.7 | 12 ● |
| 2.2.3 Tertiary inbound mobility, %..... | 4.4 | 40 |
| 2.3 Research & development (R&D)..... | 26.5 | 36 |
| 2.3.1 Researchers, FTE/mn pop..... | 2486.3 | 33 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.8 | 43 |
| 2.3.3 QS university ranking, average score top 3*..... | 31.4 | 44 |

3 Infrastructure.....47.9 42

| | | |
|--|--------|-------|
| 3.1 Information & communication technologies (ICTs)..... | 65.7 | 34 |
| 3.1.1 ICT access*..... | 75.3 | 34 |
| 3.1.2 ICT use*..... | 46.5 | 44 |
| 3.1.3 Government's online service*..... | 60.6 | 47 |
| 3.1.4 E-participation*..... | 80.4 | 17 ● |
| 3.2 General infrastructure..... | 26.1 | 94 |
| 3.2.1 Electricity output, kWh/cap..... | 5194.2 | 41 |
| 3.2.2 Logistics performance*..... | 53.1 | 42 |
| 3.2.3 Gross capital formation, % GDP..... | 13.8 | 133 ○ |
| 3.3 Ecological sustainability | 52.0 | 24 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 9.4 | 33 |
| 3.3.2 Environmental performance*..... | 73.3 | 23 ● |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 3.7 | 26 |

4 Market sophistication.....51.2 49

| | | |
|---|-------|------|
| 4.1 Credit..... | 44.9 | 33 |
| 4.1.1 Ease of getting credit*..... | 50.0 | 65 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 122.6 | 23 ● |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|------|-----|
| 4.2 Investment | 26.7 | 110 |
| 4.2.1 Ease of protecting investors*..... | 57.5 | 60 |
| 4.2.2 Market capitalization, % GDP..... | 17.9 | 75 |
| 4.2.3 Total value of stocks traded, % GDP..... | 5.9 | 46 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 49 |
| 4.3 Trade & competition | 82.1 | 41 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition [†] | 67.6 | 68 |

5 Business sophistication.....30.8 90

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 35.5 | 78 |
| 5.1.1 Knowledge-intensive employment, %..... | 32.3 | 42 |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 20.0 | 91 ○ |
| 5.1.3 GERD performed by business, % of GDP..... | 0.3 | 44 |
| 5.1.4 GERD financed by business, %..... | 32.1 | 45 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 15.8 | 34 |
| 5.2 Innovation linkages | 27.6 | 90 |
| 5.2.1 University/industry research collaboration [†] | 34.4 | 108 ○ |
| 5.2.2 State of cluster development [†] | 33.4 | 119 ○ |
| 5.2.3 GERD financed by abroad, %..... | 13.3 | 33 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 17 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 67 |
| 5.3 Knowledge absorption..... | 29.3 | 95 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.5 | 55 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 5.8 | 86 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.2 | 52 |
| 5.3.4 FDI net inflows, % GDP..... | 1.1 | 111 ○ |

6 Knowledge & technology outputs.....26.0 71

| | | |
|---|-------|-------|
| 6.1 Knowledge creation..... | 18.2 | 51 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 2.5 | 40 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.5 | 39 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | 0.1 | 55 ○ |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 34.0 | 22 ● |
| 6.1.5 Citable documents H index..... | 295.0 | 29 |
| 6.2 Knowledge impact..... | 37.7 | 66 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | -0.7 | 108 ○ |
| 6.2.2 New businesses/th pop. 15–64 [Ⓐ] | 0.8 | 79 |
| 6.2.3 Computer software spending, % GDP..... | 0.6 | 16 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 26.2 | 14 ● |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓐ] | 14.1 | 68 |
| 6.3 Knowledge diffusion..... | 22.1 | 103 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.1 | 60 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 1.4 | 56 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.6 | 57 |
| 6.3.4 FDI net outflows, % GDP..... | -0.3 | 115 ○ |

7 Creative outputs.....37.5 49

| | | |
|---|--------|-------|
| 7.1 Intangible assets..... | 35.4 | 114 ○ |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.4 | 45 |
| 7.1.3 ICTs & business model creation [†] | 43.5 | 110 ○ |
| 7.1.4 ICTs & organizational model creation [†] | 40.4 | 116 ○ |
| 7.2 Creative goods & services..... | 40.6 | 15 ● |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.1 | 63 |
| 7.2.2 National feature films/mn pop. 15–69..... | 8.8 | 20 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 15.7 | 28 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓐ] | 7.1 | 1 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.6 | 56 |
| 7.3 Online creativity..... | 38.6 | 35 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 13.8 | 38 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 22.4 | 31 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 4568.8 | 31 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 84.7 | 26 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------------------|
| Population (millions) | 15.9 |
| GDP (US\$ billions) | 60.4 |
| GDP per capita, PPP\$ | 5,415.4 |
| Income group..... | Lower-middle income |
| Region..... | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 28.8 | 101 |
| Innovation Output Sub-Index | 23.1 | 101 |
| Innovation Input Sub-Index..... | 34.6 | 107 |
| Innovation Efficiency Ratio..... | 0.7 | 89 |
| Global Innovation Index 2014 (out of 143) | 30.8 | 93 |

1 Institutions.....48.2 110

| | | |
|---|------|-------|
| 1.1 Political environment..... | 34.6 | 113 |
| 1.1.1 Political stability*..... | 47.0 | 105 |
| 1.1.2 Government effectiveness*..... | 22.1 | 114 |
| 1.2 Regulatory environment | 46.2 | 120 |
| 1.2.1 Regulatory quality*..... | 42.2 | 87 |
| 1.2.2 Rule of law*..... | 18.1 | 129 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 27.0 | 115 |
| 1.3 Business environment..... | 63.7 | 88 |
| 1.3.1 Ease of starting a business*..... | 83.7 | 79 |
| 1.3.2 Ease of resolving insolvency*..... | 27.4 | 130 ○ |
| 1.3.3 Ease of paying taxes*..... | 80.0 | 46 ● |

2 Human capital & research.....18.2 110

| | | |
|--|------|-------|
| 2.1 Education..... | 27.9 | 123 |
| 2.1.1 Expenditure on education, % GDP..... | 2.8 | 112 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 5.1 | 111 ○ |
| 2.1.3 School life expectancy, years [Ⓢ] | 10.6 | 110 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 13.7 | 49 |
| 2.2 Tertiary education..... | 26.3 | 84 |
| 2.2.1 Tertiary enrolment, % gross..... | 18.7 | 93 |
| 2.2.2 Graduates in science & engineering, % [Ⓢ] | 16.8 | 69 |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 0.3 | 122 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓢ] | 27.2 | 102 ○ |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓢ] | 0.0 | 114 ○ |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |

3 Infrastructure.....24.0 117

| | | |
|--|-------|-------|
| 3.1 Information & communication technologies (ICTs)..... | 21.9 | 120 |
| 3.1.1 ICT access*..... | 43.5 | 94 |
| 3.1.2 ICT use*..... | 9.6 | 112 |
| 3.1.3 Government's online service*..... | 15.0 | 128 |
| 3.1.4 E-participation*..... | 19.6 | 121 |
| 3.2 General infrastructure..... | 15.5 | 130 ○ |
| 3.2.1 Electricity output, kWh/cap..... | 624.1 | 103 |
| 3.2.2 Logistics performance*..... | 32.5 | 74 |
| 3.2.3 Gross capital formation, % GDP..... | 14.3 | 129 |
| 3.3 Ecological sustainability..... | 34.6 | 83 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 8.5 | 47 |
| 3.3.2 Environmental performance*..... | 48.1 | 87 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.1 | 122 |

4 Market sophistication.....48.3 62

| | | |
|---|------|------|
| 4.1 Credit..... | 31.2 | 66 |
| 4.1.1 Ease of getting credit*..... | 80.0 | 11 ● |
| 4.1.2 Domestic credit to private sector, % GDP..... | 32.6 | 92 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.4 | 49 |

| | | |
|--|------|-------|
| 4.2 Investment..... | 31.7 | 88 |
| 4.2.1 Ease of protecting investors*..... | 31.7 | 135 ○ |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |

| | | |
|---|------|------|
| 4.3 Trade & competition..... | 82.0 | 43 ● |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 2.7 | 55 |
| 4.3.2 Intensity of local competition [†] | 73.4 | 40 ● |

5 Business sophistication.....34.5 68

| | | |
|---|------|------|
| 5.1 Knowledge workers..... | 28.8 | 96 |
| 5.1.1 Knowledge-intensive employment, %..... | 10.8 | 100 |
| 5.1.2 Firms offering formal training, % firms [Ⓢ] | 51.9 | 22 ● |
| 5.1.3 GERD performed by business, % of GDP [Ⓢ] | 0.0 | 89 ○ |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | 3.5 | 80 |
| 5.2 Innovation linkages..... | 44.9 | 25 ● |
| 5.2.1 University/industry research collaboration [†] | 43.6 | 66 |
| 5.2.2 State of cluster development [†] | 49.1 | 54 |
| 5.2.3 GERD financed by abroad, % [Ⓢ] | 49.0 | 5 ● |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓢ] | 0.0 | 87 |
| 5.3 Knowledge absorption..... | 29.7 | 93 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.7 | 47 ● |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 9.3 | 44 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.5 | 93 |
| 5.3.4 FDI net inflows, % GDP..... | 2.5 | 71 |

6 Knowledge & technology outputs.....18.9 109

| | | |
|---|------|-------|
| 6.1 Knowledge creation..... | 1.9 | 136 ○ |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 0.0 | 108 ○ |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.0 | 97 ○ |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 0.2 | 46 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 1.0 | 134 ○ |
| 6.1.5 Citable documents H index..... | 58.0 | 109 |
| 6.2 Knowledge impact..... | 28.7 | 109 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.4 | 88 |
| 6.2.2 New businesses/th pop. 15–64..... | 0.5 | 87 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.8 | 94 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 26.1 | 79 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.1 | 54 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 1.4 | 58 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 2.3 | 33 ● |
| 6.3.4 FDI net outflows, % GDP..... | 0.1 | 87 |

7 Creative outputs.....27.2 89

| | | |
|--|-------|------|
| 7.1 Intangible assets..... | 48.9 | 53 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP [Ⓢ] | 39.3 | 64 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 63.4 | 38 ● |
| 7.1.4 ICTs & organizational model creation [†] | 62.2 | 28 ● |
| 7.2 Creative goods & services..... | 7.3 | 108 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.0 | 76 |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓢ] | 1.3 | 69 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 0.4 | 63 |
| 7.3 Online creativity..... | 3.9 | 96 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 5.4 | 57 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.7 | 94 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 774.9 | 87 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓢ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|--------------------|
| Population (millions) | 12.0 |
| GDP (US\$ billions) | 6.5 |
| GDP per capita, PPP\$ | 1,164.3 |
| Income group | Low income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|--------------|
| Global Innovation Index (out of 141)..... | 18.5 | 139 ○ |
| Innovation Output Sub-Index | 14.1 | 134 |
| Innovation Input Sub-Index..... | 22.9 | 140 ○ |
| Innovation Efficiency Ratio..... | 0.6 | 109 ● |
| Global Innovation Index 2014 (out of 143) | 20.2 | 139 |

1 Institutions.....39.3 132

| | | |
|--------------------------------------|------|-----|
| 1.1 Political environment..... | 19.8 | 136 |
| 1.1.1 Political stability*..... | 33.8 | 126 |
| 1.1.2 Government effectiveness*..... | 5.7 | 138 |

1.2 Regulatory environment.....57.7 95 ●

| | | |
|---|------|-------|
| 1.2.1 Regulatory quality*..... | 21.0 | 129 |
| 1.2.2 Rule of law*..... | 9.8 | 139 ○ |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.0 | 1 ● |

1.3 Business environment.....40.4 137

| | | |
|--|------|-------|
| 1.3.1 Ease of starting a business*..... | 55.4 | 136 |
| 1.3.2 Ease of resolving insolvency*..... | 37.6 | 106 ● |
| 1.3.3 Ease of paying taxes*..... | 28.3 | 139 ○ |

2 Human capital & research.....7.6 140 ○

| | | |
|--|------|-----|
| 2.1 Education..... | 16.9 | 138 |
| 2.1.1 Expenditure on education, % GDP..... | 2.5 | 119 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 9.9 | 101 |
| 2.1.3 School life expectancy, years..... | 8.7 | 124 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary ^{d)} | 33.1 | 113 |

2.2 Tertiary education.....5.9 132

| | | |
|--|-----|------|
| 2.2.1 Tertiary enrolment, % gross..... | 9.9 | 112 |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | 0.9 | 83 ● |

2.3 Research & development (R&D).....0.0 128 ○

| | | |
|--|-----|------|
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP..... | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |

3 Infrastructure.....12.5 141 ○

| | | |
|--|------|-------|
| 3.1 Information & communication technologies (ICTs)..... | 6.3 | 140 ○ |
| 3.1.1 ICT access*..... | 22.8 | 130 |
| 3.1.2 ICT use*..... | 0.5 | 137 ○ |
| 3.1.3 Government's online service*..... | 0.0 | 140 ○ |
| 3.1.4 E-participation*..... | 2.0 | 140 ○ |

3.2 General infrastructure.....12.0 137

| | | |
|---|------|-----|
| 3.2.1 Electricity output, kWh/cap..... | n/a | n/a |
| 3.2.2 Logistics performance*..... | 15.5 | 112 |
| 3.2.3 Gross capital formation, % GDP..... | 12.9 | 135 |

3.3 Ecological sustainability.....19.2 135

| | | |
|--|------|-----|
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | n/a | n/a |
| 3.3.2 Environmental performance*..... | 28.0 | 131 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.2 | 114 |

4 Market sophistication.....35.4 130

| | | |
|--|------|-------|
| 4.1 Credit..... | 11.5 | 130 |
| 4.1.1 Ease of getting credit*..... | 30.0 | 113 |
| 4.1.2 Domestic credit to private sector, % GDP ^{d)} | 9.1 | 137 ○ |
| 4.1.3 Microfinance gross loans, % GDP ^{d)} | 0.2 | 51 ● |

| | | |
|--|------|-----|
| 4.2 Investment..... | 39.2 | 52 |
| 4.2.1 Ease of protecting investors*..... | 39.2 | 129 |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |

4.3 Trade & competition.....55.7 134

| | | |
|---|------|-----|
| 4.3.1 Applied tariff rate, weighted mean, %..... | 11.9 | 129 |
| 4.3.2 Intensity of local competition [†] | 53.3 | 123 |

5 Business sophistication.....19.7 139 ○**5.1 Knowledge workers.....11.7 134**

| | | |
|---|------|-------|
| 5.1.1 Knowledge-intensive employment, % ^{d)} | 0.7 | 116 ○ |
| 5.1.2 Firms offering formal training, % firms ^{d)} | 21.1 | 89 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |

5.2 Innovation linkages.....25.3 98 ●

| | | |
|---|------|-------|
| 5.2.1 University/industry research collaboration [†] | 19.7 | 131 ○ |
| 5.2.2 State of cluster development [†] | 33.7 | 118 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP ^{d)} | 0.1 | 42 ● |

5.3 Knowledge absorption.....22.2 131

| | | |
|--|-----|------|
| 5.3.1 Royalty & license fees payments, % total trade ^{d)} | 0.0 | 115 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | n/a | n/a |
| 5.3.3 Comm., computer & info. services imp., % total trade ^{d)} | 0.5 | 95 ● |
| 5.3.4 FDI net inflows, % GDP..... | 0.4 | 124 |

6 Knowledge & technology outputs.....10.2 135**6.1 Knowledge creation.....3.7 118**

| | | |
|---|------|-------|
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 3.5 | 112 ● |
| 6.1.5 Citable documents H index..... | 37.0 | 129 |

6.2 Knowledge impact.....1.2 141 ○

| | | |
|---|-----|-----|
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | 0.2 | 96 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.4 | 128 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |

6.3 Knowledge diffusion.....25.8 81 ●

| | | |
|--|-----|------|
| 6.3.1 Royalty & license fees receipts, % total trade ^{d)} | 0.0 | 94 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | n/a | n/a |
| 6.3.3 Comm., computer & info. services exp., % total trade ^{d)} | 2.0 | 42 ● |
| 6.3.4 FDI net outflows, % GDP..... | 0.0 | 107 |

7 Creative outputs.....17.9 125**7.1 Intangible assets.....32.2 125**

| | | |
|---|------|-------|
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 35.9 | 129 |
| 7.1.4 ICTs & organizational model creation [†] | 28.6 | 131 ○ |

7.2 Creative goods & services.....7.1 110

| | | |
|--|-----|------|
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.2 | 53 ● |
| 7.2.2 National feature films/mn pop. 15–69 ^{d)} | 0.8 | 82 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | n/a | n/a |

7.3 Online creativity.....0.0 141 ○

| | | |
|---|-----|-------|
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.1 | 134 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.1 | 122 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 5.6 | 140 ○ |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

^{d)} indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------------------|
| Population (millions)..... | 0.8 |
| GDP (US\$ billions)..... | 3.0 |
| GDP per capita, PPP\$..... | 8,735.1 |
| Income group..... | Lower-middle income |
| Region..... | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 30.7 | 86 |
| Innovation Output Sub-Index..... | 24.3 | 93 |
| Innovation Input Sub-Index..... | 37.2 | 90 |
| Innovation Efficiency Ratio..... | 0.7 | 95 |
| Global Innovation Index 2014 (out of 143)..... | 32.5 | 80 |

| | | |
|--|-------------|--------------|
| 1 Institutions..... | 54.4 | 87 |
| 1.1 Political environment..... | 45.1 | 82 |
| 1.1.1 Political stability*..... | 53.2 | 93 |
| 1.1.2 Government effectiveness*..... | 37.0 | 81 |
| 1.2 Regulatory environment..... | 57.7 | 94 |
| 1.2.1 Regulatory quality*..... | 31.4 | 111 |
| 1.2.2 Rule of law*..... | 33.7 | 91 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 16.6 | 74 |
| 1.3 Business environment..... | 60.3 | 101 |
| 1.3.1 Ease of starting a business*..... | 83.6 | 80 |
| 1.3.2 Ease of resolving insolvency*..... | 28.5 | 127 ○ |
| 1.3.3 Ease of paying taxes*..... | 68.7 | 90 |
| 2 Human capital & research..... | 14.0 | 129 ○ |
| 2.1 Education..... | 27.0 | 125 |
| 2.1.1 Expenditure on education, % GDP..... | 3.2 | 106 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 9.8 | 102 ○ |
| 2.1.3 School life expectancy, years..... | 10.3 | 113 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 20.3 | 86 |
| 2.2 Tertiary education..... | 15.1 | 112 |
| 2.2.1 Tertiary enrolment, % gross..... | 12.9 | 104 |
| 2.2.2 Graduates in science & engineering, %..... | 13.4 | 90 ○ |
| 2.2.3 Tertiary inbound mobility, %..... | 0.4 | 98 |
| 2.3 Research & development (R&D)..... | 0.0 | 128 ○ |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP..... | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 25.0 | 115 |
| 3.1 Information & communication technologies (ICTs)..... | 27.9 | 106 |
| 3.1.1 ICT access*..... | 40.4 | 101 |
| 3.1.2 ICT use*..... | 13.6 | 105 |
| 3.1.3 Government's online service*..... | 24.4 | 113 |
| 3.1.4 E-participation*..... | 33.3 | 92 |
| 3.2 General infrastructure..... | 21.7 | 114 |
| 3.2.1 Electricity output, kWh/cap..... | n/a | n/a |
| 3.2.2 Logistics performance*..... | 15.2 | 114 |
| 3.2.3 Gross capital formation, % GDP..... | 19.7 | 90 |
| 3.3 Ecological sustainability..... | 25.4 | 119 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | n/a | n/a |
| 3.3.2 Environmental performance*..... | 38.1 | 114 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.0 | 138 ○ |
| 4 Market sophistication..... | 35.1 | 134 ○ |
| 4.1 Credit..... | 10.9 | 131 ○ |
| 4.1.1 Ease of getting credit*..... | 15.0 | 129 ○ |
| 4.1.2 Domestic credit to private sector, % GDP..... | 43.3 | 78 |
| 4.1.3 Microfinance gross loans, % GDP ^{d)} | 0.4 | 46 |

| | | |
|---|-------------|--------------|
| 4.2 Investment..... | 25.4 | 121 |
| 4.2.1 Ease of protecting investors*..... | 44.2 | 117 |
| 4.2.2 Market capitalization, % GDP..... | 21.4 | 67 |
| 4.2.3 Total value of stocks traded, % GDP ^{d)} | 0.0 | 104 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 69.2 | 98 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 6.5 | 97 |
| 4.3.2 Intensity of local competition [†] | 61.1 | 98 |
| 5 Business sophistication..... | 57.5 | 6 |
| 5.1 Knowledge workers..... | 78.6 | 1 |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms ^{d)} | 63.0 | 8 ● |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 47.5 | 18 |
| 5.2.1 University/industry research collaboration [†] | 45.9 | 56 ● |
| 5.2.2 State of cluster development [†] | 48.3 | 59 ● |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a |
| 5.3 Knowledge absorption..... | 46.4 | 22 ● |
| 5.3.1 Royalty & license fees payments, % total trade..... | 3.4 | 1 ● |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 3.6 | 117 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.7 | 27 ● |
| 5.3.4 FDI net inflows, % GDP..... | 6.5 | 22 ● |
| 6 Knowledge & technology outputs..... | 9.7 | 137 ○ |
| 6.1 Knowledge creation..... | 4.2 | 111 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 4.7 | 100 |
| 6.1.5 Citable documents H index..... | 28.0 | 134 ○ |
| 6.2 Knowledge impact..... | 10.9 | 126 ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 5.3 | 60 ● |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 13.9 | 130 ○ |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.3 | 28 ● |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.0 | 127 ○ |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 0.7 | 89 |
| 6.3.4 FDI net outflows, % GDP..... | n/a | n/a |
| 7 Creative outputs..... | 38.9 | 44 |
| 7.1 Intangible assets..... | 50.2 | 47 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 49.8 | 94 |
| 7.1.4 ICTs & organizational model creation [†] | 50.7 | 75 |
| 7.2 Creative goods & services..... | 53.0 | 2 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 ^{d)} | 22.9 | 7 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 1.7 | 26 ● |
| 7.3 Online creativity..... | 2.2 | 107 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 1.5 | 97 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 2.4 | 69 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 373.4 | 97 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

^{d)} indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------------------|
| Population (millions)..... | 8.3 |
| GDP (US\$ billions)..... | 19.5 |
| GDP per capita, PPP\$..... | 4,959.2 |
| Income group..... | Lower-middle income |
| Region..... | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 27.5 | 113 |
| Innovation Output Sub-Index..... | 20.0 | 116 |
| Innovation Input Sub-Index..... | 34.9 | 105 |
| Innovation Efficiency Ratio..... | 0.6 | 117 |
| Global Innovation Index 2014 (out of 143)..... | 26.7 | 118 |

| | | | |
|--|-------------|------------|---|
| 1 Institutions..... | 44.7 | 123 | ○ |
| 1.1 Political environment..... | 37.0 | 108 | |
| 1.1.1 Political stability*..... | 52.6 | 95 | |
| 1.1.2 Government effectiveness*..... | 21.3 | 116 | |
| 1.2 Regulatory environment..... | 42.2 | 126 | ○ |
| 1.2.1 Regulatory quality*..... | 42.5 | 86 | |
| 1.2.2 Rule of law*..... | 14.9 | 135 | ○ |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 30.3 | 127 | ○ |
| 1.3 Business environment..... | 54.9 | 117 | |
| 1.3.1 Ease of starting a business*..... | 74.8 | 111 | |
| 1.3.2 Ease of resolving insolvency*..... | 31.8 | 120 | ○ |
| 1.3.3 Ease of paying taxes*..... | 57.9 | 118 | |
| 2 Human capital & research..... | 19.0 | 106 | |
| 2.1 Education..... | 38.4 | 90 | |
| 2.1.1 Expenditure on education, % GDP..... | n/a | n/a | |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a | |
| 2.1.3 School life expectancy, years..... | 11.1 | 105 | |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a | |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a | |
| 2.2 Tertiary education..... | 18.2 | 106 | |
| 2.2.1 Tertiary enrolment, % gross..... | 21.1 | 89 | |
| 2.2.2 Graduates in science & engineering, %..... | 14.1 | 87 | ○ |
| 2.2.3 Tertiary inbound mobility, %..... | 0.9 | 84 | |
| 2.3 Research & development (R&D)..... | 0.3 | 121 | ○ |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a | |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.0 | 116 | ○ |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 | ○ |
| 3 Infrastructure..... | 28.9 | 102 | |
| 3.1 Information & communication technologies (ICTs)..... | 30.8 | 103 | |
| 3.1.1 ICT access*..... | 39.4 | 103 | |
| 3.1.2 ICT use*..... | 10.3 | 110 | |
| 3.1.3 Government's online service*..... | 40.2 | 80 | |
| 3.1.4 E-participation*..... | 33.3 | 92 | |
| 3.2 General infrastructure..... | 24.9 | 99 | |
| 3.2.1 Electricity output, kWh/cap..... | 956.3 | 92 | |
| 3.2.2 Logistics performance*..... | 22.8 | 97 | |
| 3.2.3 Gross capital formation, % GDP..... | 24.8 | 46 | ● |
| 3.3 Ecological sustainability..... | 30.9 | 93 | |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.2 | 87 | |
| 3.3.2 Environmental performance*..... | 48.9 | 86 | |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.4 | 93 | |
| 4 Market sophistication..... | 48.1 | 64 | |
| 4.1 Credit..... | 42.4 | 39 | ● |
| 4.1.1 Ease of getting credit*..... | 85.0 | 7 | ● |
| 4.1.2 Domestic credit to private sector, % GDP..... | 55.2 | 60 | |
| 4.1.3 Microfinance gross loans, % GDP..... | 2.1 | 26 | ● |

| | | | |
|--|------|-----|---|
| 4.2 Investment..... | 31.7 | 88 | |
| 4.2.1 Ease of protecting investors*..... | 31.7 | 135 | ○ |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a | |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a | |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a | |
| 4.3 Trade & competition..... | 70.4 | 93 | |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 6.5 | 96 | |
| 4.3.2 Intensity of local competition [†] | 63.4 | 85 | |

5 Business sophistication..... 34.0 72

| | | | |
|---|------|-----|---|
| 5.1 Knowledge workers..... | 31.7 | 88 | |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 12.8 | 98 | |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 35.8 | 49 | |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a | |
| 5.1.4 GERD financed by business, %..... | n/a | n/a | |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a | |
| 5.2 Innovation linkages..... | 42.5 | 31 | ● |
| 5.2.1 University/industry research collaboration [†] | 49.0 | 46 | ● |
| 5.2.2 State of cluster development [†] | 50.9 | 45 | ● |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a | |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 39 | ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a | |
| 5.3 Knowledge absorption..... | 27.8 | 104 | |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.4 | 67 | |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 6.2 | 78 | |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.7 | 80 | |
| 5.3.4 FDI net inflows, % GDP..... | 5.8 | 26 | ● |

6 Knowledge & technology outputs..... 14.7 123

| | | | |
|---|------|-----|---|
| 6.1 Knowledge creation..... | 2.2 | 135 | ○ |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 0.2 | 92 | |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a | |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | 0.2 | 45 | |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 0.9 | 135 | ○ |
| 6.1.5 Citable documents H index..... | 45.0 | 120 | ○ |
| 6.2 Knowledge impact..... | 13.8 | 124 | ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a | |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a | |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 52 | |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 3.9 | 71 | |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a | |
| 6.3 Knowledge diffusion..... | 28.0 | 66 | |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a | |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.4 | 84 | |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 2.3 | 30 | ● |
| 6.3.4 FDI net outflows, % GDP..... | 0.2 | 83 | |

7 Creative outputs..... 25.4 97

| | | | |
|--|-------|-----|---|
| 7.1 Intangible assets..... | 48.2 | 57 | ● |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 55.5 | 39 | ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a | |
| 7.1.3 ICTs & business model creation [†] | 56.7 | 67 | |
| 7.1.4 ICTs & organizational model creation [†] | 57.7 | 51 | ● |
| 7.2 Creative goods & services..... | 2.6 | 123 | ○ |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a | |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓔ] | 0.4 | 96 | ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a | |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a | |
| 7.2.5 Creative goods exports, % total trade [Ⓔ] | 0.1 | 91 | |
| 7.3 Online creativity..... | 2.3 | 106 | |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.7 | 110 | |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.6 | 100 | |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 777.8 | 86 | |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a | |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Hong Kong (China)

Key indicators

| | |
|----------------------------|-----------------------------|
| Population (millions)..... | 7.3 |
| GDP (US\$ billions)..... | 289.6 |
| GDP per capita, PPP\$..... | 55,026.0 |
| Income group..... | High income |
| Region..... | South East Asia and Oceania |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 57.2 | 11 |
| Innovation Output Sub-Index..... | 46.9 | 19 |
| Innovation Input Sub-Index..... | 67.6 | 4 |
| Innovation Efficiency Ratio..... | 0.7 | 76 |
| Global Innovation Index 2014 (out of 143)..... | 56.8 | 10 |

| | | | |
|----------|--|-------------|------------|
| 1 | Institutions..... | 91.4 | 8 |
| 1.1 | Political environment..... | 87.1 | 14 |
| 1.1.1 | Political stability*..... | 86.0 | 28 |
| 1.1.2 | Government effectiveness*..... | 88.3 | 10 |
| 1.2 | Regulatory environment..... | 96.9 | 6 |
| 1.2.1 | Regulatory quality*..... | 99.1 | 2 ● |
| 1.2.2 | Rule of law*..... | 88.7 | 17 |
| 1.2.3 | Cost of redundancy dismissal, salary weeks..... | 8.0 | 1 ● |
| 1.3 | Business environment..... | 90.0 | 6 |
| 1.3.1 | Ease of starting a business*..... | 96.4 | 8 |
| 1.3.2 | Ease of resolving insolvency*..... | 75.1 | 23 |
| 1.3.3 | Ease of paying taxes*..... | 98.5 | 4 |
| 2 | Human capital & research..... | 50.2 | 19 |
| 2.1 | Education..... | 45.1 | 68 |
| 2.1.1 | Expenditure on education, % GDP..... | 3.8 | 93 ○ |
| 2.1.2 | Gov't expenditure/pupil, secondary, % GDP/cap..... | 19.0 | 63 |
| 2.1.3 | School life expectancy, years..... | 15.6 | 30 |
| 2.1.4 | PISA scales in reading, maths, & science..... | 553.6 | 3 |
| 2.1.5 | Pupil-teacher ratio, secondary..... | n/a | n/a |
| 2.2 | Tertiary education..... | 59.6 | 5 |
| 2.2.1 | Tertiary enrolment, % gross..... | 66.8 | 29 |
| 2.2.2 | Graduates in science & engineering, % [Ⓔ] | 34.7 | 6 |
| 2.2.3 | Tertiary inbound mobility, %..... | 8.9 | 20 |
| 2.3 | Research & development (R&D)..... | 45.8 | 22 |
| 2.3.1 | Researchers, FTE/mn pop. [Ⓔ] | 2970.7 | 28 |
| 2.3.2 | Gross expenditure on R&D, % GDP [Ⓔ] | 0.7 | 48 |
| 2.3.3 | QS university ranking, average score top 3*..... | 84.7 | 6 |
| 3 | Infrastructure..... | 66.5 | 2 ● |
| 3.1 | Information & communication technologies (ICTs)..... | 83.0 | 9 |
| 3.1.1 | ICT access*..... | 92.4 | 4 |
| 3.1.2 | ICT use*..... | 73.6 | 13 |
| 3.1.3 | Government's online service*..... | n/a | n/a |
| 3.1.4 | E-participation*..... | n/a | n/a |
| 3.2 | General infrastructure..... | 45.1 | 29 |
| 3.2.1 | Electricity output, kWh/cap..... | 5423.9 | 39 |
| 3.2.2 | Logistics performance*..... | 84.9 | 15 |
| 3.2.3 | Gross capital formation, % GDP..... | 23.7 | 52 |
| 3.3 | Ecological sustainability..... | 71.3 | 1 ● |
| 3.3.1 | GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 21.7 | 1 ● |
| 3.3.2 | Environmental performance*..... | n/a | n/a |
| 3.3.3 | ISO 14001 environmental certificates/bn PPP\$ GDP..... | 1.8 | 51 |
| 4 | Market sophistication..... | 79.0 | 2 ● |
| 4.1 | Credit..... | 71.3 | 4 |
| 4.1.1 | Ease of getting credit*..... | 70.0 | 22 |
| 4.1.2 | Domestic credit to private sector, % GDP..... | 219.5 | 2 ● |
| 4.1.3 | Microfinance gross loans, % GDP..... | n/a | n/a |

| | | | |
|----------|---|-------------|-----------|
| 4.2 | Investment..... | 81.5 | 1 ● |
| 4.2.1 | Ease of protecting investors*..... | 80.8 | 2 ● |
| 4.2.2 | Market capitalization, % GDP..... | 421.9 | 1 ● |
| 4.2.3 | Total value of stocks traded, % GDP..... | 468.1 | 1 ● |
| 4.2.4 | Venture capital deals/tr PPP\$ GDP..... | 0.4 | 10 |
| 4.3 | Trade & competition..... | 84.3 | 32 |
| 4.3.1 | Applied tariff rate, weighted mean, %..... | n/a | n/a |
| 4.3.2 | Intensity of local competition [†] | 84.3 | 3 ● |
| 5 | Business sophistication..... | 51.0 | 15 |
| 5.1 | Knowledge workers..... | 47.3 | 40 |
| 5.1.1 | Knowledge-intensive employment, %..... | 37.3 | 28 |
| 5.1.2 | Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 | GERD performed by business, % of GDP [Ⓔ] | 0.3 | 42 |
| 5.1.4 | GERD financed by business, % [Ⓔ] | 49.7 | 20 |
| 5.1.5 | Females employed w/advanced degrees, % total..... | 12.2 | 54 ○ |
| 5.2 | Innovation linkages..... | 42.9 | 28 |
| 5.2.1 | University/industry research collaboration [†] | 59.8 | 27 |
| 5.2.2 | State of cluster development [†] | 66.7 | 14 |
| 5.2.3 | GERD financed by abroad, % [Ⓔ] | 4.7 | 65 ○ |
| 5.2.4 | JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 9 |
| 5.2.5 | Patent families 3+ offices/bn PPP\$ GDP..... | 0.3 | 30 |
| 5.3 | Knowledge absorption..... | 62.7 | 3 ● |
| 5.3.1 | Royalty & license fees payments, % total trade [Ⓔ] | 0.4 | 66 |
| 5.3.2 | High-tech imports less re-imports, % total trade..... | 41.5 | 1 ● |
| 5.3.3 | Comm., computer & info. services imp., % total trade [Ⓔ] | 0.5 | 90 ○ |
| 5.3.4 | FDI net inflows, % GDP..... | 28.0 | 1 ● |
| 6 | Knowledge & technology outputs..... | 37.9 | 31 |
| 6.1 | Knowledge creation..... | 16.0 | 55 |
| 6.1.1 | Domestic resident patent app/bn PPP\$ GDP..... | 0.6 | 72 ○ |
| 6.1.2 | PCT resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 | Domestic res utility model app/bn PPP\$ GDP..... | 0.8 | 31 |
| 6.1.4 | Scientific & technical articles/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.5 | Citable documents H index..... | 325.0 | 25 |
| 6.2 | Knowledge impact..... | 53.2 | 15 |
| 6.2.1 | Growth rate of PPP\$ GDP/worker, %..... | 3.3 | 26 |
| 6.2.2 | New businesses/th pop. 15–64..... | 28.1 | 1 ● |
| 6.2.3 | Computer software spending, % GDP..... | 0.4 | 24 |
| 6.2.4 | ISO 9001 quality certificates/bn PPP\$ GDP..... | 6.4 | 54 |
| 6.2.5 | High- & medium-high-tech manufactures, %..... | 19.4 | 59 ○ |
| 6.3 | Knowledge diffusion..... | 44.6 | 26 |
| 6.3.1 | Royalty & license fees receipts, % total trade [Ⓔ] | 0.1 | 56 |
| 6.3.2 | High-tech exports less re-exports, % total trade..... | 0.1 | 106 ○ |
| 6.3.3 | Comm., computer & info. services exp., % total trade [Ⓔ] | 0.5 | 93 ○ |
| 6.3.4 | FDI net outflows, % GDP..... | 33.4 | 1 ● |
| 7 | Creative outputs..... | 55.8 | 8 |
| 7.1 | Intangible assets..... | 57.3 | 18 |
| 7.1.1 | Domestic res trademark app/bn PPP\$ GDP..... | 67.1 | 28 |
| 7.1.2 | Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 | ICTs & business model creation [†] | 67.3 | 24 |
| 7.1.4 | ICTs & organizational model creation [†] | 67.6 | 20 |
| 7.2 | Creative goods & services..... | 42.1 | 10 |
| 7.2.1 | Cultural & creative services exports, % total trade..... | 0.2 | 54 ○ |
| 7.2.2 | National feature films/mn pop. 15–69..... | 7.4 | 26 |
| 7.2.3 | Global ent. & media output/th pop. 15–69..... | 41.6 | 18 |
| 7.2.4 | Printing & publishing output manufactures, % [Ⓔ] | 18.3 | 1 ● |
| 7.2.5 | Creative goods exports, % total trade..... | 0.2 | 74 ○ |
| 7.3 | Online creativity..... | 66.5 | 12 |
| 7.3.1 | Generic top-level domains (TLDs)/th pop. 15–69..... | 79.1 | 9 |
| 7.3.2 | Country-code TLDs/th pop. 15–69..... | 10.9 | 42 |
| 7.3.3 | Wikipedia edits/pop. 15–69..... | 11073.5 | 2 ● |
| 7.3.4 | Video uploads on YouTube/pop. 15–69..... | 94.1 | 5 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------|
| Population (millions)..... | 9.9 |
| GDP (US\$ billions)..... | 137.1 |
| GDP per capita, PPP\$..... | 20,817.4 |
| Income group..... | Upper-middle income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 43.0 | 35 |
| Innovation Output Sub-Index..... | 37.7 | 37 |
| Innovation Input Sub-Index..... | 48.2 | 42 |
| Innovation Efficiency Ratio..... | 0.8 | 35 |
| Global Innovation Index 2014 (out of 143)..... | 44.6 | 35 |
| 1 Institutions..... | 73.4 | 40 |
| 1.1 Political environment..... | 71.1 | 37 |
| 1.1.1 Political stability*..... | 83.4 | 35 |
| 1.1.2 Government effectiveness*..... | 58.8 | 42 |
| 1.2 Regulatory environment..... | 78.1 | 33 |
| 1.2.1 Regulatory quality*..... | 71.4 | 35 |
| 1.2.2 Rule of law*..... | 62.6 | 40 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 13.4 | 56 |
| 1.3 Business environment..... | 71.0 | 60 |
| 1.3.1 Ease of starting a business*..... | 90.0 | 48 |
| 1.3.2 Ease of resolving insolvency*..... | 49.8 | 61 |
| 1.3.3 Ease of paying taxes*..... | 73.3 | 70 |
| 2 Human capital & research..... | 37.7 | 43 |
| 2.1 Education..... | 49.8 | 53 |
| 2.1.1 Expenditure on education, % GDP..... | 4.7 | 68 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 20.9 | 54 |
| 2.1.3 School life expectancy, years..... | 15.4 | 35 |
| 2.1.4 PISA scales in reading, maths, & science..... | 486.6 | 30 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 10.0 | 29 |
| 2.2 Tertiary education..... | 33.5 | 63 |
| 2.2.1 Tertiary enrolment, % gross..... | 59.6 | 41 |
| 2.2.2 Graduates in science & engineering, %..... | 16.8 | 67 |
| 2.2.3 Tertiary inbound mobility, %..... | 4.6 | 37 |
| 2.3 Research & development (R&D)..... | 29.9 | 34 |
| 2.3.1 Researchers, FTE/mn pop..... | 2515.1 | 32 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 1.4 | 25 |
| 2.3.3 QS university ranking, average score top 3*..... | 25.3 | 49 |
| 3 Infrastructure..... | 47.2 | 43 |
| 3.1 Information & communication technologies (ICTs)..... | 55.2 | 47 |
| 3.1.1 ICT access*..... | 73.2 | 36 |
| 3.1.2 ICT use*..... | 46.7 | 43 |
| 3.1.3 Government's online service*..... | 55.9 | 53 |
| 3.1.4 E-participation*..... | 45.1 | 74 |
| 3.2 General infrastructure..... | 32.1 | 64 |
| 3.2.1 Electricity output, kWh/cap..... | 3065.2 | 61 |
| 3.2.2 Logistics performance*..... | 66.5 | 32 |
| 3.2.3 Gross capital formation, % GDP..... | 18.8 | 103 ○ |
| 3.3 Ecological sustainability..... | 54.4 | 18 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 7.5 | 57 |
| 3.3.2 Environmental performance*..... | 70.3 | 28 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 8.3 | 11 ● |
| 4 Market sophistication..... | 46.0 | 77 |
| 4.1 Credit..... | 30.2 | 73 |
| 4.1.1 Ease of getting credit*..... | 75.0 | 16 ● |
| 4.1.2 Domestic credit to private sector, % GDP..... | 50.8 | 65 |
| 4.1.3 Microfinance gross loans, % GDP ^{d)} | 0.0 | 89 ○ |

| | | |
|---|------|-------|
| 4.2 Investment..... | 23.3 | 132 ○ |
| 4.2.1 Ease of protecting investors*..... | 47.5 | 97 ○ |
| 4.2.2 Market capitalization, % GDP..... | 16.6 | 77 ○ |
| 4.2.3 Total value of stocks traded, % GDP..... | 8.6 | 42 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 42 |
| 4.3 Trade & competition..... | 84.6 | 31 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition [†] | 72.5 | 45 |

| | | |
|---|-------------|-----------|
| 5 Business sophistication..... | 36.8 | 57 |
| 5.1 Knowledge workers..... | 40.9 | 60 |
| 5.1.1 Knowledge-intensive employment, %..... | 35.6 | 34 |
| 5.1.2 Firms offering formal training, % firms..... | 15.7 | 99 ○ |
| 5.1.3 GERD performed by business, % of GDP..... | 1.0 | 22 |
| 5.1.4 GERD financed by business, %..... | 46.8 | 23 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 14.8 | 38 |
| 5.2 Innovation linkages..... | 29.3 | 83 |
| 5.2.1 University/industry research collaboration [†] | 54.6 | 34 |
| 5.2.2 State of cluster development [†] | 41.5 | 88 |
| 5.2.3 GERD financed by abroad, %..... | 16.6 | 26 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 69 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.1 | 38 |
| 5.3 Knowledge absorption..... | 40.3 | 40 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.1 | 24 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 13.8 | 18 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.0 | 59 |
| 5.3.4 FDI net inflows, % GDP..... | -0.6 | 132 ○ |

| | | |
|---|-------------|-----------|
| 6 Knowledge & technology outputs..... | 34.7 | 40 |
| 6.1 Knowledge creation..... | 21.4 | 45 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 2.7 | 35 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.6 | 32 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 1.0 | 27 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 26.4 | 29 |
| 6.1.5 Citable documents H index..... | 277.0 | 30 |
| 6.2 Knowledge impact..... | 48.4 | 24 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.2 | 94 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 4.8 | 23 |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 41 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 30.7 | 8 ● |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 48.7 | 8 ● |
| 6.3 Knowledge diffusion..... | 34.4 | 41 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 1.0 | 16 ● |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 14.3 | 11 ● |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.4 | 64 |
| 6.3.4 FDI net outflows, % GDP..... | -2.6 | 122 ○ |

| | | |
|--|-------------|-----------|
| 7 Creative outputs..... | 40.7 | 36 |
| 7.1 Intangible assets..... | 41.3 | 90 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 39.7 | 63 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 1.2 | 25 |
| 7.1.3 ICTs & business model creation [†] | 58.4 | 60 |
| 7.1.4 ICTs & organizational model creation [†] | 51.0 | 73 |
| 7.2 Creative goods & services..... | 40.7 | 14 ● |
| 7.2.1 Cultural & creative services exports, % total trade..... | 1.5 | 4 ● |
| 7.2.2 National feature films/mn pop. 15–69..... | 4.4 | 40 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 12.0 | 31 |
| 7.2.4 Printing & publishing output manufactures, %..... | 0.8 | 79 ○ |
| 7.2.5 Creative goods exports, % total trade..... | 6.2 | 7 ● |
| 7.3 Online creativity..... | 39.6 | 32 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 11.8 | 41 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 38.2 | 19 ● |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 2890.9 | 45 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 87.1 | 20 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

^{d)} indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|-------------|
| Population (millions)..... | 0.3 |
| GDP (US\$ billions)..... | 16.7 |
| GDP per capita, PPP\$..... | 42,585.0 |
| Income group..... | High income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 57.0 | 13 |
| Innovation Output Sub-Index..... | 56.6 | 6 ● |
| Innovation Input Sub-Index..... | 57.5 | 23 |
| Innovation Efficiency Ratio..... | 1.0 | 4 ● |
| Global Innovation Index 2014 (out of 143)..... | 54.1 | 19 |
| 1 Institutions..... | 87.8 | 13 |
| 1.1 Political environment..... | 88.4 | 12 |
| 1.1.1 Political stability*..... | 95.3 | 9 |
| 1.1.2 Government effectiveness*..... | 81.5 | 18 |
| 1.2 Regulatory environment..... | 90.0 | 17 |
| 1.2.1 Regulatory quality*..... | 76.9 | 26 |
| 1.2.2 Rule of law*..... | 91.4 | 15 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 10.1 | 35 |
| 1.3 Business environment..... | 84.9 | 16 |
| 1.3.1 Ease of starting a business*..... | 92.4 | 27 |
| 1.3.2 Ease of resolving insolvency*..... | 81.5 | 14 |
| 1.3.3 Ease of paying taxes*..... | 80.9 | 41 |
| 2 Human capital & research..... | 48.7 | 23 |
| 2.1 Education..... | 56.4 | 21 |
| 2.1.1 Expenditure on education, % GDP..... | 7.4 | 10 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 21.2 | 53 |
| 2.1.3 School life expectancy, years..... | 19.0 | 3 ● |
| 2.1.4 PISA scales in reading, maths, & science..... | 484.5 | 31 |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a |
| 2.2 Tertiary education..... | 41.2 | 41 |
| 2.2.1 Tertiary enrolment, % gross..... | 81.4 | 9 |
| 2.2.2 Graduates in science & engineering, %..... | 18.0 | 63 ○ |
| 2.2.3 Tertiary inbound mobility, %..... | 6.2 | 28 |
| 2.3 Research & development (R&D)..... | 48.7 | 19 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 7012.2 | 4 ● |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 2.6 | 12 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 51.8 | 29 |
| 3.1 Information & communication technologies (ICTs)..... | 69.9 | 27 |
| 3.1.1 ICT access*..... | 92.8 | 3 ● |
| 3.1.2 ICT use*..... | 76.5 | 9 |
| 3.1.3 Government's online service*..... | 61.4 | 43 |
| 3.1.4 E-participation*..... | 49.0 | 64 |
| 3.2 General infrastructure..... | 47.4 | 22 |
| 3.2.1 Electricity output, kWh/cap..... | 56612.5 | 1 ● |
| 3.2.2 Logistics performance*..... | 62.8 | 36 |
| 3.2.3 Gross capital formation, % GDP..... | 14.4 | 128 ○ |
| 3.3 Ecological sustainability..... | 38.0 | 69 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 2.1 | 121 ○ |
| 3.3.2 Environmental performance*..... | 76.5 | 14 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 2.8 | 37 |
| 4 Market sophistication..... | 52.7 | 43 |
| 4.1 Credit..... | 44.7 | 35 |
| 4.1.1 Ease of getting credit*..... | 60.0 | 48 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 91.5 | 34 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|-------------|------------|
| 4.2 Investment..... | 32.6 | 80 |
| 4.2.1 Ease of protecting investors*..... | 65.0 | 28 |
| 4.2.2 Market capitalization, % GDP..... | 19.9 | 69 ○ |
| 4.2.3 Total value of stocks traded, % GDP..... | 4.8 | 50 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.1 | 20 |
| 4.3 Trade & competition..... | 80.8 | 49 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 8 |
| 4.3.2 Intensity of local competition [†] | 64.9 | 77 |
| 5 Business sophistication..... | 46.4 | 25 |
| 5.1 Knowledge workers..... | 67.0 | 9 |
| 5.1.1 Knowledge-intensive employment, %..... | 49.3 | 5 ● |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 1.4 | 15 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 49.8 | 19 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 21.3 | 19 |
| 5.2 Innovation linkages..... | 35.3 | 60 |
| 5.2.1 University/industry research collaboration [†] | 60.3 | 24 |
| 5.2.2 State of cluster development [†] | 48.7 | 57 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 8.2 | 48 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.3 | 27 |
| 5.3 Knowledge absorption..... | 36.9 | 54 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 1.4 | 18 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 4.9 | 100 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 1.7 | 32 |
| 5.3.4 FDI net inflows, % GDP..... | 2.4 | 73 |
| 6 Knowledge & technology outputs..... | 40.7 | 24 |
| 6.1 Knowledge creation..... | 43.3 | 19 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 2.4 | 42 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 3.0 | 16 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 65.9 | 1 ● |
| 6.1.5 Citable documents H index..... | 181.0 | 39 |
| 6.2 Knowledge impact..... | 34.7 | 85 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | -0.2 | 103 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 8.2 | 13 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 4.6 | 67 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 7.1 | 85 ○ |
| 6.3 Knowledge diffusion..... | 44.2 | 27 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓔ] | 1.7 | 10 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 1.2 | 59 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 1.2 | 72 ○ |
| 6.3.4 FDI net outflows, % GDP..... | 4.1 | 14 |
| 7 Creative outputs..... | 72.4 | 1 ● |
| 7.1 Intangible assets..... | 69.4 | 2 ● |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 98.5 | 13 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 8.6 | 1 ● |
| 7.1.3 ICTs & business model creation [†] | 68.1 | 22 |
| 7.1.4 ICTs & organizational model creation [†] | 69.6 | 14 |
| 7.2 Creative goods & services..... | 53.5 | 1 ● |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.3 | 46 |
| 7.2.2 National feature films/mn pop. 15–69..... | 30.1 | 1 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 6.4 | 1 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.1 | 92 ○ |
| 7.3 Online creativity..... | 97.4 | 1 ● |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 100.0 | 1 ● |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 92.2 | 7 ● |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 13529.2 | 1 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------------|
| Population (millions) | 1,267.4 |
| GDP (US\$ billions) | 2,049.5 |
| GDP per capita, PPP\$ | 4,306.9 |
| Income group | Lower-middle income |
| Region | Central and Southern Asia |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|------------|
| Global Innovation Index (out of 141) | 31.7 | 81 |
| Innovation Output Sub-Index | 28.0 | 69 |
| Innovation Input Sub-Index..... | 35.5 | 100 |
| Innovation Efficiency Ratio..... | 0.8 | 31 ● |
| Global Innovation Index 2014 (out of 143) | 33.7 | 76 |
| 1 Institutions..... | 50.0 | 104 |
| 1.1 Political environment..... | 35.5 | 109 |
| 1.1.1 Political stability*..... | 34.8 | 124 ○ |
| 1.1.2 Government effectiveness*..... | 36.3 | 82 |
| 1.2 Regulatory environment | 62.4 | 81 |
| 1.2.1 Regulatory quality*..... | 35.2 | 107 |
| 1.2.2 Rule of law*..... | 45.0 | 63 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 15.7 | 70 |
| 1.3 Business environment..... | 52.2 | 130 ○ |
| 1.3.1 Ease of starting a business*..... | 68.4 | 125 ○ |
| 1.3.2 Ease of resolving insolvency*..... | 32.6 | 118 |
| 1.3.3 Ease of paying taxes*..... | 55.5 | 120 |
| 2 Human capital & research..... | 20.0 | 103 |
| 2.1 Education | 26.8 | 126 ○ |
| 2.1.1 Expenditure on education, % GDP | 3.8 | 90 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 15.5 | 82 |
| 2.1.3 School life expectancy, years [Ⓔ] | 11.7 | 95 |
| 2.1.4 PISA scales in reading, maths, & science [Ⓔ] | 336.0 | 62 ○ |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓔ] | 25.9 | 97 |
| 2.2 Tertiary education..... | 10.5 | 123 ○ |
| 2.2.1 Tertiary enrolment, % gross..... | 24.8 | 85 |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | 0.1 | 112 ○ |
| 2.3 Research & development (R&D)..... | 22.6 | 44 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 159.9 | 75 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.8 | 42 |
| 2.3.3 QS university ranking, average score top 3*..... | 47.0 | 28 ● |
| 3 Infrastructure..... | 34.6 | 87 |
| 3.1 Information & communication technologies (ICTs)..... | 38.6 | 86 |
| 3.1.1 ICT access*..... | 30.5 | 115 |
| 3.1.2 ICT use*..... | 6.8 | 117 |
| 3.1.3 Government's online service*..... | 54.3 | 57 |
| 3.1.4 E-participation*..... | 62.7 | 40 |
| 3.2 General infrastructure..... | 38.9 | 43 |
| 3.2.1 Electricity output, kWh/cap..... | 911.8 | 94 |
| 3.2.2 Logistics performance*..... | 46.9 | 52 |
| 3.2.3 Gross capital formation, % GDP..... | 32.2 | 14 ● |
| 3.3 Ecological sustainability | 26.3 | 117 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 7.0 | 65 |
| 3.3.2 Environmental performance*..... | 31.2 | 126 ○ |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.9 | 70 |
| 4 Market sophistication | 46.5 | 72 |
| 4.1 Credit..... | 28.1 | 80 |
| 4.1.1 Ease of getting credit*..... | 65.0 | 34 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 51.8 | 64 |
| 4.1.3 Microfinance gross loans, % GDP | 0.3 | 50 |

| | | |
|--|------|------|
| 4.2 Investment | 44.3 | 42 ● |
| 4.2.1 Ease of protecting investors*..... | 72.5 | 7 ● |
| 4.2.2 Market capitalization, % GDP..... | 68.0 | 24 ● |
| 4.2.3 Total value of stocks traded, % GDP..... | 33.5 | 25 ● |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.1 | 35 |
| 4.3 Trade & competition | 67.2 | 104 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 8.2 | 109 |
| 4.3.2 Intensity of local competition [†] | 63.1 | 88 |

5 Business sophistication **26.4** **116**

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 13.7 | 132 ○ |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 15.9 | 98 ○ |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 0.3 | 43 |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages | 37.3 | 52 |
| 5.2.1 University/industry research collaboration [†] | 47.8 | 48 |
| 5.2.2 State of cluster development [†] | 58.4 | 25 ● |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 51 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.1 | 52 |
| 5.3 Knowledge absorption..... | 28.1 | 99 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.8 | 42 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 6.7 | 70 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.7 | 74 |
| 5.3.4 FDI net inflows, % GDP..... | 1.5 | 98 |

6 Knowledge & technology outputs **30.1** **49**

| | | |
|---|-------|------|
| 6.1 Knowledge creation..... | 15.2 | 59 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 1.6 | 53 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.2 | 49 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 7.5 | 77 |
| 6.1.5 Citable documents H index..... | 341.0 | 23 ● |
| 6.2 Knowledge impact..... | 35.0 | 84 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 2.4 | 38 |
| 6.2.2 New businesses/th pop. 15–64..... | 0.1 | 99 ○ |
| 6.2.3 Computer software spending, % GDP..... | 0.2 | 68 ○ |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 6.0 | 57 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 32.5 | 32 |
| 6.3 Knowledge diffusion..... | 40.1 | 34 ● |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.1 | 57 |
| 6.3.2 High-tech exports less re-exports, % total trade | 3.5 | 39 ● |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 10.1 | 1 ● |
| 6.3.4 FDI net outflows, % GDP | 0.1 | 92 |

7 Creative outputs **25.9** **95**

| | | |
|---|-------|------|
| 7.1 Intangible assets..... | 37.9 | 101 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 27.0 | 75 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 51.7 | 84 |
| 7.1.4 ICTs & organizational model creation [†] | 48.1 | 86 |
| 7.2 Creative goods & services..... | 17.3 | 77 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.1 | 59 |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓔ] | 1.5 | 65 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 0.2 | 58 ○ |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 0.7 | 84 |
| 7.2.5 Creative goods exports, % total trade..... | 2.5 | 18 ● |
| 7.3 Online creativity..... | 10.3 | 78 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 1.2 | 104 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.7 | 92 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 264.6 | 102 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 37.3 | 68 ○ |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|-----------------------------|
| Population (millions)..... | 252.8 |
| GDP (US\$ billions)..... | 888.6 |
| GDP per capita, PPP\$..... | 5,499.0 |
| Income group..... | Lower-middle income |
| Region..... | South East Asia and Oceania |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 29.8 | 97 |
| Innovation Output Sub-Index..... | 25.8 | 85 |
| Innovation Input Sub-Index..... | 33.7 | 114 |
| Innovation Efficiency Ratio..... | 0.8 | 42 ● |
| Global Innovation Index 2014 (out of 143)..... | 31.8 | 87 |

1 Institutions.....39.8 130 ○

| | | |
|---|-------------|--------------|
| 1.1 Political environment..... | 43.4 | 86 |
| 1.1.1 Political stability*..... | 51.8 | 97 |
| 1.1.2 Government effectiveness*..... | 35.0 | 84 |
| 1.2 Regulatory environment..... | 19.6 | 138 ○ |
| 1.2.1 Regulatory quality*..... | 42.6 | 85 |
| 1.2.2 Rule of law*..... | 32.9 | 94 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 57.8 | 137 ○ |
| 1.3 Business environment..... | 56.4 | 114 |
| 1.3.1 Ease of starting a business*..... | 68.8 | 122 |
| 1.3.2 Ease of resolving insolvency*..... | 46.8 | 70 |
| 1.3.3 Ease of paying taxes*..... | 53.7 | 122 |

2 Human capital & research.....24.3 87

| | | |
|--|-------------|------------|
| 2.1 Education..... | 32.9 | 106 |
| 2.1.1 Expenditure on education, % GDP..... | 3.6 | 98 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 10.7 | 95 |
| 2.1.3 School life expectancy, years..... | 13.0 | 81 |
| 2.1.4 PISA scales in reading, maths, & science..... | 384.4 | 59 ○ |
| 2.1.5 Pupil-teacher ratio, secondary..... | 16.6 | 73 |
| 2.2 Tertiary education..... | 28.1 | 79 |
| 2.2.1 Tertiary enrolment, % gross..... | 31.5 | 74 |
| 2.2.2 Graduates in science & engineering, % [Ⓣ] | 21.7 | 40 |
| 2.2.3 Tertiary inbound mobility, %..... | 0.1 | 108 ○ |
| 2.3 Research & development (R&D)..... | 11.9 | 64 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓣ] | 89.9 | 84 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓣ] | 0.1 | 109 ○ |
| 2.3.3 QS university ranking, average score top 3*..... | 32.9 | 41 ● |

3 Infrastructure.....35.6 85

| | | |
|---|-------------|-------------|
| 3.1 Information & communication technologies (ICTs)..... | 31.7 | 100 |
| 3.1.1 ICT access*..... | 43.2 | 95 |
| 3.1.2 ICT use*..... | 18.0 | 93 |
| 3.1.3 Government's online service*..... | 36.2 | 90 |
| 3.1.4 E-participation*..... | 29.4 | 104 |
| 3.2 General infrastructure..... | 40.1 | 39 ● |
| 3.2.1 Electricity output, kWh/cap..... | 793.5 | 97 |
| 3.2.2 Logistics performance*..... | 47.0 | 51 |
| 3.2.3 Gross capital formation, % GDP..... | 33.4 | 13 ● |
| 3.3 Ecological sustainability..... | 35.0 | 81 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 9.1 | 38 ● |
| 3.3.2 Environmental performance*..... | 44.4 | 96 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.6 | 75 |

4 Market sophistication.....44.4 86

| | | |
|---|-------------|------------|
| 4.1 Credit..... | 20.4 | 115 |
| 4.1.1 Ease of getting credit*..... | 50.0 | 65 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 37.9 | 87 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.0 | 85 ○ |

| | | |
|--|-------------|-----------|
| 4.2 Investment..... | 31.7 | 86 |
| 4.2.1 Ease of protecting investors*..... | 60.8 | 41 |
| 4.2.2 Market capitalization, % GDP..... | 45.3 | 42 |
| 4.2.3 Total value of stocks traded, % GDP..... | 10.5 | 38 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 65 |
| 4.3 Trade & competition..... | 81.1 | 48 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓣ] | 2.6 | 52 |
| 4.3.2 Intensity of local competition [†] | 71.0 | 51 |

5 Business sophistication.....24.6 124

| | | |
|---|-------------|--------------|
| 5.1 Knowledge workers..... | 7.2 | 138 ○ |
| 5.1.1 Knowledge-intensive employment, %..... | 8.9 | 102 |
| 5.1.2 Firms offering formal training, % firms [Ⓣ] | 4.7 | 108 ○ |
| 5.1.3 GERD performed by business, % of GDP [Ⓣ] | 0.0 | 79 |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | 3.9 | 79 |
| 5.2 Innovation linkages..... | 35.8 | 58 |
| 5.2.1 University/industry research collaboration [†] | 59.1 | 29 ● |
| 5.2.2 State of cluster development [†] | 58.8 | 24 ● |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 84 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓣ] | 0.0 | 105 ○ |
| 5.3 Knowledge absorption..... | 30.9 | 86 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.8 | 40 ● |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 8.4 | 52 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.7 | 73 |
| 5.3.4 FDI net inflows, % GDP..... | 2.1 | 79 |

6 Knowledge & technology outputs.....20.9 100

| | | |
|---|-------------|------------|
| 6.1 Knowledge creation..... | 2.9 | 127 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 0.3 | 86 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.0 | 98 ○ |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 0.1 | 54 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 0.6 | 137 ○ |
| 6.1.5 Citable documents H index..... | 126.0 | 56 |
| 6.2 Knowledge impact..... | 37.6 | 67 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 3.6 | 21 ● |
| 6.2.2 New businesses/th pop. 15–64..... | 0.3 | 92 |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 44 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 3.1 | 79 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 30.9 | 36 |
| 6.3 Knowledge diffusion..... | 22.3 | 102 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.0 | 80 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 3.1 | 43 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 0.5 | 92 |
| 6.3.4 FDI net outflows, % GDP..... | 1.1 | 52 |

7 Creative outputs.....30.8 78

| | | |
|--|-------------|-----------|
| 7.1 Intangible assets..... | 45.2 | 68 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 18.1 | 87 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 65.3 | 32 ● |
| 7.1.4 ICTs & organizational model creation [†] | 61.3 | 33 ● |
| 7.2 Creative goods & services..... | 17.8 | 75 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓣ] | 0.5 | 95 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 1.8 | 50 |
| 7.2.4 Printing & publishing output manufactures, %..... | 0.9 | 75 |
| 7.2.5 Creative goods exports, % total trade..... | 1.9 | 22 ● |
| 7.3 Online creativity..... | 14.9 | 73 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 1.9 | 91 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.3 | 108 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 260.6 | 103 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 55.5 | 65 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓣ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------------|
| Population (millions)..... | 78.5 |
| GDP (US\$ billions)..... | 404.1 |
| GDP per capita, PPP\$..... | 12,478.2 |
| Income group..... | Upper-middle income |
| Region..... | Central and Southern Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 28.4 | 106 |
| Innovation Output Sub-Index..... | 22.0 | 105 |
| Innovation Input Sub-Index..... | 34.8 | 106 |
| Innovation Efficiency Ratio..... | 0.6 | 103 |
| Global Innovation Index 2014 (out of 143)..... | 26.1 | 120 |

1 Institutions.....44.3 126

| | | |
|---|------|-------|
| 1.1 Political environment..... | 27.7 | 125 |
| 1.1.1 Political stability*..... | 32.8 | 128 |
| 1.1.2 Government effectiveness*..... | 22.6 | 112 |
| 1.2 Regulatory environment..... | 42.4 | 125 |
| 1.2.1 Regulatory quality*..... | 7.9 | 137 ○ |
| 1.2.2 Rule of law*..... | 21.5 | 123 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 23.1 | 106 |
| 1.3 Business environment..... | 62.8 | 93 |
| 1.3.1 Ease of starting a business*..... | 89.4 | 53 ● |
| 1.3.2 Ease of resolving insolvency*..... | 32.4 | 119 |
| 1.3.3 Ease of paying taxes*..... | 66.8 | 98 |

2 Human capital & research.....37.1 46 ●

| | | |
|--|-------|-------|
| 2.1 Education..... | 35.6 | 97 |
| 2.1.1 Expenditure on education, % GDP..... | 3.7 | 95 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 15.9 | 80 |
| 2.1.3 School life expectancy, years..... | 15.1 | 41 ● |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a |
| 2.2 Tertiary education..... | 61.8 | 4 ● |
| 2.2.1 Tertiary enrolment, % gross..... | 55.2 | 48 ● |
| 2.2.2 Graduates in science & engineering, %..... | 47.2 | 1 ● |
| 2.2.3 Tertiary inbound mobility, %..... | 0.1 | 109 ○ |
| 2.3 Research & development (R&D)..... | 14.0 | 59 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 736.1 | 54 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.7 | 46 |
| 2.3.3 QS university ranking, average score top 3*..... | 15.6 | 56 |

3 Infrastructure.....39.9 68

| | | |
|--|--------|------|
| 3.1 Information & communication technologies (ICTs)..... | 34.0 | 96 |
| 3.1.1 ICT access*..... | 55.3 | 71 |
| 3.1.2 ICT use*..... | 14.4 | 103 |
| 3.1.3 Government's online service*..... | 37.0 | 87 |
| 3.1.4 E-participation*..... | 29.4 | 104 |
| 3.2 General infrastructure..... | 56.1 | 10 ● |
| 3.2.1 Electricity output, kWh/cap..... | 3327.3 | 55 |
| 3.2.2 Logistics performance*..... | n/a | n/a |
| 3.2.3 Gross capital formation, % GDP..... | 43.0 | 6 ● |
| 3.3 Ecological sustainability..... | 29.5 | 96 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 4.8 | 101 |
| 3.3.2 Environmental performance*..... | 51.1 | 74 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.5 | 78 |

4 Market sophistication.....29.9 139 ○

| | | |
|---|------|-------|
| 4.1 Credit..... | 23.8 | 95 |
| 4.1.1 Ease of getting credit*..... | 45.0 | 80 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 12.2 | 133 ○ |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|--|------|-------|
| 4.2 Investment..... | 26.0 | 116 |
| 4.2.1 Ease of protecting investors*..... | 41.7 | 123 |
| 4.2.2 Market capitalization, % GDP..... | 28.0 | 60 |
| 4.2.3 Total value of stocks traded, % GDP..... | 4.4 | 52 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 39.9 | 140 ○ |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 21.8 | 138 ○ |
| 4.3.2 Intensity of local competition [†] | 56.6 | 114 |

5 Business sophistication.....22.6 130

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 23.8 | 109 |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 16.0 | 90 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 0.1 | 64 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 30.9 | 48 |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 23.5 | 107 |
| 5.2.1 University/industry research collaboration [†] | 36.3 | 99 |
| 5.2.2 State of cluster development [†] | 40.4 | 94 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 89 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓔ] | 0.0 | 107 ○ |
| 5.3 Knowledge absorption..... | 20.3 | 137 ○ |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 0.2 | 90 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 4.0 | 111 |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 0.6 | 86 |
| 5.3.4 FDI net inflows, % GDP..... | 0.8 | 116 |

6 Knowledge & technology outputs.....22.5 90

| | | |
|---|-------|-------|
| 6.1 Knowledge creation..... | 37.7 | 24 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 8.9 | 8 ● |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 20.0 | 40 ● |
| 6.1.5 Citable documents H index..... | 158.0 | 44 ● |
| 6.2 Knowledge impact..... | 27.5 | 114 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | -2.8 | 114 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 55 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 2.0 | 93 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 35.5 | 28 ● |
| 6.3 Knowledge diffusion..... | 2.2 | 135 ○ |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓔ] | 0.0 | 92 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.5 | 75 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 0.2 | 114 ○ |
| 6.3.4 FDI net outflows, % GDP..... | n/a | n/a |

7 Creative outputs.....21.5 116

| | | |
|---|--------|------|
| 7.1 Intangible assets..... | 35.5 | 113 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.0 | 65 ○ |
| 7.1.3 ICTs & business model creation [†] | 46.0 | 105 |
| 7.1.4 ICTs & organizational model creation [†] | 42.5 | 108 |
| 7.2 Creative goods & services..... | 7.7 | 106 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | 1.5 | 67 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 0.2 | 97 ○ |
| 7.2.5 Creative goods exports, % total trade [Ⓔ] | 0.5 | 57 |
| 7.3 Online creativity..... | 7.3 | 85 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 2.1 | 86 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 4.4 | 56 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 2091.4 | 52 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|-------------|
| Population (millions) | 4.7 |
| GDP (US\$ billions) | 246.4 |
| GDP per capita, PPP\$ | 40,586.5 |
| Income group | High income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 59.1 | 8 |
| Innovation Output Sub-Index | 55.4 | 7 |
| Innovation Input Sub-Index | 62.9 | 14 |
| Innovation Efficiency Ratio | 0.9 | 12 |
| Global Innovation Index 2014 (out of 143) | 56.7 | 11 |
| 1 Institutions | 87.2 | 15 |
| 1.1 Political environment | 83.4 | 19 |
| 1.1.1 Political stability* | 85.9 | 29 |
| 1.1.2 Government effectiveness* | 81.0 | 21 |
| 1.2 Regulatory environment | 89.5 | 18 |
| 1.2.1 Regulatory quality* | 89.9 | 14 |
| 1.2.2 Rule of law* | 93.4 | 13 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 14.3 | 60 ○ |
| 1.3 Business environment | 88.7 | 8 |
| 1.3.1 Ease of starting a business* | 94.2 | 18 |
| 1.3.2 Ease of resolving insolvency* | 76.9 | 19 |
| 1.3.3 Ease of paying taxes* | 95.1 | 6 ● |
| 2 Human capital & research | 50.1 | 20 |
| 2.1 Education | 57.5 | 16 |
| 2.1.1 Expenditure on education, % GDP | 6.2 | 29 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 28.9 | 27 |
| 2.1.3 School life expectancy, years | 18.6 | 5 ● |
| 2.1.4 PISA scales in reading, maths, & science | 515.6 | 12 |
| 2.1.5 Pupil-teacher ratio, secondary | n/a | n/a |
| 2.2 Tertiary education | 45.0 | 30 |
| 2.2.1 Tertiary enrolment, % gross | 71.2 | 23 |
| 2.2.2 Graduates in science & engineering, % | 23.8 | 31 |
| 2.2.3 Tertiary inbound mobility, % | 5.8 | 31 |
| 2.3 Research & development (R&D) | 47.7 | 20 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 3438.0 | 24 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 1.7 | 23 |
| 2.3.3 QS university ranking, average score top 3* | 62.5 | 16 |
| 3 Infrastructure | 54.9 | 24 |
| 3.1 Information & communication technologies (ICTs) | 69.3 | 28 |
| 3.1.1 ICT access* | 82.4 | 19 |
| 3.1.2 ICT use* | 62.4 | 23 |
| 3.1.3 Government's online service* | 67.7 | 31 |
| 3.1.4 E-participation* | 64.7 | 33 |
| 3.2 General infrastructure | 37.9 | 49 |
| 3.2.1 Electricity output, kWh/cap | 5561.9 | 34 |
| 3.2.2 Logistics performance* | 87.0 | 11 |
| 3.2.3 Gross capital formation, % GDP | 16.4 | 118 ○ |
| 3.3 Ecological sustainability | 57.4 | 9 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 12.3 | 10 |
| 3.3.2 Environmental performance* | 74.7 | 19 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 3.3 | 28 |
| 4 Market sophistication | 64.0 | 13 |
| 4.1 Credit | 62.6 | 10 |
| 4.1.1 Ease of getting credit* | 70.0 | 22 |
| 4.1.2 Domestic credit to private sector, % GDP | 168.0 | 10 |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a |

| | | |
|---|-------------|------------|
| 4.2 Investment | 46.2 | 35 |
| 4.2.1 Ease of protecting investors* | 73.3 | 6 ● |
| 4.2.2 Market capitalization, % GDP | 49.1 | 40 |
| 4.2.3 Total value of stocks traded, % GDP | 5.5 | 47 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.4 | 9 |
| 4.3 Trade & competition | 83.1 | 37 |
| 4.3.1 Applied tariff rate, weighted mean, % | 1.0 | 9 |
| 4.3.2 Intensity of local competition [†] | 69.6 | 58 ○ |
| 5 Business sophistication | 58.4 | 5 ● |
| 5.1 Knowledge workers | 70.6 | 5 ● |
| 5.1.1 Knowledge-intensive employment, % | 40.5 | 23 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 73.2 | 3 ● |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 1.2 | 19 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 50.3 | 18 |
| 5.1.5 Females employed w/advanced degrees, % total | 24.7 | 9 |
| 5.2 Innovation linkages | 52.7 | 11 |
| 5.2.1 University/industry research collaboration [†] | 70.7 | 13 |
| 5.2.2 State of cluster development [†] | 63.3 | 17 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 21.4 | 18 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 6 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 0.6 | 22 |
| 5.3 Knowledge absorption | 51.8 | 11 |
| 5.3.1 Royalty & license fees payments, % total trade | 22.2 | 1 ● |
| 5.3.2 High-tech imports less re-imports, % total trade | 5.1 | 95 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade | 1.0 | 61 ○ |
| 5.3.4 FDI net inflows, % GDP | 22.9 | 4 ● |
| 6 Knowledge & technology outputs | 55.7 | 7 |
| 6.1 Knowledge creation | 28.5 | 35 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | 1.6 | 54 ○ |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | 1.9 | 25 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 31.4 | 25 |
| 6.1.5 Citable documents H index | 299.0 | 28 |
| 6.2 Knowledge impact | 53.9 | 12 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 1.0 | 72 ○ |
| 6.2.2 New businesses/th pop. 15–64 | 4.5 | 25 |
| 6.2.3 Computer software spending, % GDP | 0.7 | 4 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 11.2 | 37 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 57.4 | 3 ● |
| 6.3 Knowledge diffusion | 84.8 | 2 ● |
| 6.3.1 Royalty & license fees receipts, % total trade | 2.5 | 8 |
| 6.3.2 High-tech exports less re-exports, % total trade | 11.3 | 20 |
| 6.3.3 Comm., computer & info. services exp., % total trade | 25.1 | 1 ● |
| 6.3.4 FDI net outflows, % GDP | 16.2 | 1 ● |
| 7 Creative outputs | 55.0 | 12 |
| 7.1 Intangible assets | 61.0 | 11 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | 0.8 | 35 ○ |
| 7.1.3 ICTs & business model creation [†] | 72.4 | 16 |
| 7.1.4 ICTs & organizational model creation [†] | 70.4 | 13 |
| 7.2 Creative goods & services | 33.4 | 33 |
| 7.2.1 Cultural & creative services exports, % total trade | 0.2 | 51 ○ |
| 7.2.2 National feature films/mn pop. 15–69 | 10.4 | 17 |
| 7.2.3 Global ent. & media output/th pop. 15–69 | 43.0 | 17 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 1.6 | 40 |
| 7.2.5 Creative goods exports, % total trade | 2.4 | 19 |
| 7.3 Online creativity | 64.7 | 14 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 71.7 | 13 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 25.5 | 30 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 9744.5 | 3 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 89.8 | 14 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|----------------------------------|
| Population (millions)..... | 7.8 |
| GDP (US\$ billions)..... | 303.8 |
| GDP per capita, PPP\$..... | 35,658.7 |
| Income group..... | High income |
| Region..... | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 53.5 | 22 |
| Innovation Output Sub-Index..... | 48.6 | 16 |
| Innovation Input Sub-Index..... | 58.5 | 22 |
| Innovation Efficiency Ratio..... | 0.8 | 20 |
| Global Innovation Index 2014 (out of 143)..... | 55.5 | 15 |
| 1 Institutions..... | 67.9 | 54 |
| 1.1 Political environment..... | 55.7 | 56 |
| 1.1.1 Political stability*..... | 37.1 | 118 ○ |
| 1.1.2 Government effectiveness*..... | 74.3 | 27 |
| 1.2 Regulatory environment..... | 68.7 | 59 |
| 1.2.1 Regulatory quality*..... | 78.6 | 22 |
| 1.2.2 Rule of law*..... | 73.0 | 32 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 27.4 | 118 ○ |
| 1.3 Business environment..... | 79.2 | 32 |
| 1.3.1 Ease of starting a business*..... | 90.5 | 44 |
| 1.3.2 Ease of resolving insolvency*..... | 75.2 | 22 |
| 1.3.3 Ease of paying taxes*..... | 71.9 | 76 ○ |
| 2 Human capital & research..... | 55.9 | 11 |
| 2.1 Education..... | 50.3 | 51 |
| 2.1.1 Expenditure on education, % GDP..... | 5.6 | 38 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 15.5 | 84 ○ |
| 2.1.3 School life expectancy, years..... | 16.0 | 25 |
| 2.1.4 PISA scales in reading, maths, & science..... | 474.1 | 36 ○ |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓔ] | 9.8 | 27 |
| 2.2 Tertiary education..... | 31.5 | 72 |
| 2.2.1 Tertiary enrolment, % gross..... | 67.9 | 28 |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | 1.2 | 79 ○ |
| 2.3 Research & development (R&D)..... | 85.8 | 1 ● |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 8337.1 | 1 ● |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 4.2 | 1 ● |
| 2.3.3 QS university ranking, average score top 3*..... | 57.5 | 22 |
| 3 Infrastructure..... | 54.1 | 26 |
| 3.1 Information & communication technologies (ICTs)..... | 78.0 | 13 |
| 3.1.1 ICT access*..... | 83.1 | 16 |
| 3.1.2 ICT use*..... | 55.3 | 30 |
| 3.1.3 Government's online service*..... | 87.4 | 13 |
| 3.1.4 E-participation*..... | 86.3 | 12 |
| 3.2 General infrastructure..... | 36.4 | 52 |
| 3.2.1 Electricity output, kWh/cap..... | 7758.1 | 22 |
| 3.2.2 Logistics performance*..... | 56.1 | 39 |
| 3.2.3 Gross capital formation, % GDP..... | 19.5 | 96 ○ |
| 3.3 Ecological sustainability..... | 47.9 | 35 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 9.5 | 29 |
| 3.3.2 Environmental performance*..... | 65.8 | 38 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 2.9 | 35 |
| 4 Market sophistication..... | 60.5 | 21 |
| 4.1 Credit..... | 46.8 | 29 |
| 4.1.1 Ease of getting credit*..... | 65.0 | 34 |
| 4.1.2 Domestic credit to private sector, % GDP [Ⓔ] | 89.5 | 35 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|-------------|-----------|
| 4.2 Investment..... | 58.9 | 11 |
| 4.2.1 Ease of protecting investors*..... | 70.8 | 11 |
| 4.2.2 Market capitalization, % GDP..... | 57.7 | 32 |
| 4.2.3 Total value of stocks traded, % GDP..... | 26.2 | 28 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.8 | 3 ● |
| 4.3 Trade & competition..... | 75.9 | 75 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 0.7 | 4 ● |
| 4.3.2 Intensity of local competition [†] | 54.0 | 120 ○ |
| 5 Business sophistication..... | 54.1 | 11 |
| 5.1 Knowledge workers..... | 61.1 | 21 |
| 5.1.1 Knowledge-intensive employment, %..... | 46.5 | 8 |
| 5.1.2 Firms offering formal training, % firms..... | 18.6 | 93 ○ |
| 5.1.3 GERD performed by business, % of GDP..... | 3.5 | 1 ● |
| 5.1.4 GERD financed by business, % [Ⓔ] | 35.6 | 43 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 28.4 | 3 ● |
| 5.2 Innovation linkages..... | 64.9 | 1 ● |
| 5.2.1 University/industry research collaboration [†] | 75.1 | 7 |
| 5.2.2 State of cluster development [†] | 58.3 | 26 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 48.8 | 6 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 14 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 3.0 | 5 ● |
| 5.3 Knowledge absorption..... | 36.5 | 56 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 0.5 | 53 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 9.4 | 42 |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 1.2 | 48 |
| 5.3.4 FDI net inflows, % GDP..... | 4.1 | 37 |
| 6 Knowledge & technology outputs..... | 53.6 | 9 |
| 6.1 Knowledge creation..... | 56.5 | 9 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 4.7 | 22 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 5.9 | 8 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 46.4 | 11 |
| 6.1.5 Citable documents H index..... | 456.0 | 15 |
| 6.2 Knowledge impact..... | 47.1 | 30 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 1.7 | 53 |
| 6.2.2 New businesses/th pop. 15–64..... | 3.0 | 37 |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 39 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 34.8 | 5 ● |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 30.8 | 37 |
| 6.3 Knowledge diffusion..... | 57.2 | 9 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓔ] | 1.1 | 14 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 12.6 | 15 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 4.9 | 6 ● |
| 6.3.4 FDI net outflows, % GDP..... | 1.6 | 40 |
| 7 Creative outputs..... | 43.6 | 29 |
| 7.1 Intangible assets..... | 42.4 | 86 ○ |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 12.8 | 93 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 1.0 | 30 |
| 7.1.3 ICTs & business model creation [†] | 68.1 | 21 |
| 7.1.4 ICTs & organizational model creation [†] | 62.4 | 27 |
| 7.2 Creative goods & services..... | 39.1 | 20 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.9 | 16 |
| 7.2.2 National feature films/mn pop. 15–69..... | 11.0 | 15 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 27.8 | 23 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 2.5 | 18 |
| 7.2.5 Creative goods exports, % total trade..... | 1.7 | 28 |
| 7.3 Online creativity..... | 50.3 | 21 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 28.0 | 25 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 19.1 | 36 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 7906.3 | 8 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 95.5 | 2 ● |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|-------------|
| Population (millions) | 61.1 |
| GDP (US\$ billions) | 2,148.0 |
| GDP per capita, PPP\$ | 30,803.0 |
| Income group | High income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-------------|
| Global Innovation Index (out of 141)..... | 46.4 | 31 |
| Innovation Output Sub-Index | 39.4 | 32 |
| Innovation Input Sub-Index..... | 53.4 | 29 |
| Innovation Efficiency Ratio..... | 0.7 | 57 |
| Global Innovation Index 2014 (out of 143) | 45.7 | 31 |
| 1 Institutions..... | 73.8 | 38 |
| 1.1 Political environment..... | 65.2 | 48 |
| 1.1.1 Political stability*..... | 76.8 | 43 |
| 1.1.2 Government effectiveness*..... | 53.6 | 46 |
| 1.2 Regulatory environment | 81.4 | 27 |
| 1.2.1 Regulatory quality*..... | 68.3 | 38 |
| 1.2.2 Rule of law*..... | 57.1 | 50 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.0 | 1 ● |
| 1.3 Business environment..... | 74.9 | 49 |
| 1.3.1 Ease of starting a business*..... | 91.2 | 40 |
| 1.3.2 Ease of resolving insolvency*..... | 71.3 | 27 |
| 1.3.3 Ease of paying taxes*..... | 62.1 | 108 ○ |
| 2 Human capital & research..... | 41.3 | 33 |
| 2.1 Education | 51.0 | 48 |
| 2.1.1 Expenditure on education, % GDP | 4.3 | 78 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 23.4 | 46 |
| 2.1.3 School life expectancy, years..... | 16.0 | 23 |
| 2.1.4 PISA scales in reading, maths, & science..... | 489.5 | 28 |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓔ] | 10.1 | 30 |
| 2.2 Tertiary education..... | 37.3 | 54 |
| 2.2.1 Tertiary enrolment, % gross..... | 62.5 | 34 |
| 2.2.2 Graduates in science & engineering, % | 20.2 | 56 |
| 2.2.3 Tertiary inbound mobility, %..... | 4.0 | 44 |
| 2.3 Research & development (R&D)..... | 35.6 | 29 |
| 2.3.1 Researchers, FTE/mn pop..... | 1934.3 | 35 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 1.3 | 27 |
| 2.3.3 QS university ranking, average score top 3*..... | 53.2 | 24 |
| 3 Infrastructure..... | 57.6 | 17 ● |
| 3.1 Information & communication technologies (ICTs)..... | 70.8 | 24 |
| 3.1.1 ICT access*..... | 76.2 | 33 |
| 3.1.2 ICT use*..... | 53.8 | 32 |
| 3.1.3 Government's online service*..... | 74.8 | 23 |
| 3.1.4 E-participation*..... | 78.4 | 19 ● |
| 3.2 General infrastructure..... | 35.6 | 55 |
| 3.2.1 Electricity output, kWh/cap..... | 4685.4 | 45 |
| 3.2.2 Logistics performance*..... | 78.0 | 19 ● |
| 3.2.3 Gross capital formation, % GDP..... | 17.4 | 114 ○ |
| 3.3 Ecological sustainability | 66.4 | 4 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 10.2 | 24 |
| 3.3.2 Environmental performance*..... | 74.4 | 22 ● |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 11.7 | 4 ● |
| 4 Market sophistication | 53.6 | 39 |
| 4.1 Credit..... | 41.5 | 42 |
| 4.1.1 Ease of getting credit*..... | 45.0 | 80 ○ |
| 4.1.2 Domestic credit to private sector, % GDP..... | 117.0 | 25 |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a |

| | | |
|---|-------------|-------------|
| 4.2 Investment | 36.2 | 63 |
| 4.2.1 Ease of protecting investors*..... | 66.7 | 21 |
| 4.2.2 Market capitalization, % GDP..... | 23.0 | 64 |
| 4.2.3 Total value of stocks traded, % GDP..... | 36.3 | 22 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 43 |
| 4.3 Trade & competition | 83.2 | 36 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition [†] | 69.8 | 56 |
| 5 Business sophistication | 40.6 | 39 |
| 5.1 Knowledge workers..... | 45.6 | 44 |
| 5.1.1 Knowledge-intensive employment, %..... | 35.1 | 36 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP..... | 0.7 | 28 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 44.3 | 30 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 10.6 | 58 ○ |
| 5.2 Innovation linkages | 38.7 | 47 |
| 5.2.1 University/industry research collaboration [†] | 45.5 | 57 |
| 5.2.2 State of cluster development [†] | 76.6 | 1 ● |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 9.5 | 43 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 62 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.5 | 24 |
| 5.3 Knowledge absorption..... | 37.5 | 50 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.0 | 32 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 7.2 | 62 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.7 | 28 |
| 5.3.4 FDI net inflows, % GDP..... | 0.6 | 120 ○ |
| 6 Knowledge & technology outputs | 41.2 | 22 ● |
| 6.1 Knowledge creation..... | 32.6 | 31 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 3.9 | 26 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 1.4 | 28 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 1.2 | 22 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 27.3 | 28 |
| 6.1.5 Citable documents H index..... | 654.0 | 7 ● |
| 6.2 Knowledge impact..... | 54.4 | 10 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.0 | 99 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 1.9 | 48 |
| 6.2.3 Computer software spending, % GDP..... | 0.6 | 11 ● |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 76.4 | 1 ● |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 37.6 | 25 |
| 6.3 Knowledge diffusion..... | 36.6 | 39 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.6 | 20 |
| 6.3.2 High-tech exports less re-exports, % total trade | 5.3 | 31 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.5 | 58 |
| 6.3.4 FDI net outflows, % GDP | 1.3 | 47 |
| 7 Creative outputs | 37.6 | 47 |
| 7.1 Intangible assets..... | 37.8 | 102 ○ |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 50.3 | 49 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 1.3 | 24 |
| 7.1.3 ICTs & business model creation [†] | 49.2 | 96 ○ |
| 7.1.4 ICTs & organizational model creation [†] | 40.5 | 115 ○ |
| 7.2 Creative goods & services..... | 27.4 | 46 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.3 | 42 |
| 7.2.2 National feature films/mn pop. 15–69..... | 3.9 | 44 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 29.8 | 22 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 1.5 | 50 |
| 7.2.5 Creative goods exports, % total trade..... | 2.2 | 21 |
| 7.3 Online creativity..... | 47.4 | 25 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 25.8 | 27 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 27.1 | 28 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 7569.6 | 13 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 80.9 | 33 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------------------|
| Population (millions) | 2.8 |
| GDP (US\$ billions) | 13.8 |
| GDP per capita, PPP\$ | 9,255.5 |
| Income group | Upper-middle income |
| Region | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 29.9 | 96 |
| Innovation Output Sub-Index | 21.0 | 110 ○ |
| Innovation Input Sub-Index..... | 38.9 | 85 |
| Innovation Efficiency Ratio..... | 0.5 | 121 ○ |
| Global Innovation Index 2014 (out of 143) | 32.4 | 82 |
| 1 Institutions..... | 63.5 | 59 |
| 1.1 Political environment..... | 54.7 | 58 |
| 1.1.1 Political stability*..... | 68.5 | 55 |
| 1.1.2 Government effectiveness*..... | 41.0 | 69 |
| 1.2 Regulatory environment | 66.8 | 68 |
| 1.2.1 Regulatory quality*..... | 53.8 | 63 |
| 1.2.2 Rule of law*..... | 37.3 | 83 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 14.0 | 58 |
| 1.3 Business environment..... | 68.8 | 69 |
| 1.3.1 Ease of starting a business*..... | 94.1 | 19 ● |
| 1.3.2 Ease of resolving insolvency*..... | 53.3 | 57 |
| 1.3.3 Ease of paying taxes*..... | 59.0 | 113 ○ |
| 2 Human capital & research..... | 23.5 | 92 |
| 2.1 Education | 46.4 | 62 |
| 2.1.1 Expenditure on education, % GDP | 6.3 | 25 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 29.4 | 25 ● |
| 2.1.3 School life expectancy, years..... | 12.4 | 86 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 16.2 | 71 |
| 2.2 Tertiary education..... | 24.1 | 90 |
| 2.2.1 Tertiary enrolment, % gross..... | 28.7 | 78 |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 0.0 | 128 ○ |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP..... | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 29.6 | 99 |
| 3.1 Information & communication technologies (ICTs)..... | 30.8 | 104 |
| 3.1.1 ICT access*..... | 45.8 | 86 |
| 3.1.2 ICT use*..... | 26.2 | 79 |
| 3.1.3 Government's online service*..... | 31.5 | 98 |
| 3.1.4 E-participation*..... | 19.6 | 121 ○ |
| 3.2 General infrastructure..... | 21.9 | 113 ○ |
| 3.2.1 Electricity output, kWh/cap..... | 1578.2 | 84 |
| 3.2.2 Logistics performance*..... | 34.8 | 67 |
| 3.2.3 Gross capital formation, % GDP..... | 18.5 | 107 ○ |
| 3.3 Ecological sustainability | 36.0 | 78 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.8 | 73 |
| 3.3.2 Environmental performance*..... | 58.3 | 52 ● |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.5 | 86 |
| 4 Market sophistication | 46.3 | 74 |
| 4.1 Credit..... | 30.1 | 74 |
| 4.1.1 Ease of getting credit*..... | 80.0 | 11 ● |
| 4.1.2 Domestic credit to private sector, % GDP..... | 29.6 | 100 |
| 4.1.3 Microfinance gross loans, % GDP | 0.2 | 60 |

| | | |
|---|-------------|--------------|
| 4.2 Investment | 35.2 | 67 |
| 4.2.1 Ease of protecting investors*..... | 56.7 | 67 |
| 4.2.2 Market capitalization, % GDP..... | 43.2 | 47 |
| 4.2.3 Total value of stocks traded, % GDP..... | 1.4 | 61 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition | 73.7 | 82 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 7.5 | 104 |
| 4.3.2 Intensity of local competition [†] | 73.5 | 37 ● |
| 5 Business sophistication | 31.8 | 80 |
| 5.1 Knowledge workers..... | 31.4 | 89 |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 20.1 | 72 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 25.9 | 72 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages | 36.0 | 56 |
| 5.2.1 University/industry research collaboration [†] | 46.6 | 54 |
| 5.2.2 State of cluster development [†] | 44.4 | 79 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 57 |
| 5.3 Knowledge absorption..... | 28.0 | 101 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.0 | 29 ● |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 3.6 | 115 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.9 | 62 |
| 5.3.4 FDI net inflows, % GDP..... | 4.0 | 38 ● |
| 6 Knowledge & technology outputs | 16.4 | 120 ○ |
| 6.1 Knowledge creation..... | 6.9 | 88 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 0.9 | 66 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 5.6 | 93 |
| 6.1.5 Citable documents H index..... | 64.0 | 100 |
| 6.2 Knowledge impact..... | 24.7 | 120 ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | -1.1 | 112 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 1.1 | 64 |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 28 ● |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.1 | 112 ○ |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 17.5 | 121 ○ |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.1 | 59 |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.1 | 115 ○ |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 0.8 | 83 |
| 6.3.4 FDI net outflows, % GDP | -0.6 | 117 ○ |
| 7 Creative outputs | 25.6 | 96 |
| 7.1 Intangible assets..... | 48.7 | 54 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 76.2 | 23 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 51.2 | 86 |
| 7.1.4 ICTs & organizational model creation [†] | 52.8 | 65 |
| 7.2 Creative goods & services..... | 1.6 | 128 ○ |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 0.0 | 107 ○ |
| 7.3 Online creativity..... | 3.1 | 102 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 2.3 | 85 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 1.4 | 83 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 779.8 | 85 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|-----------------------------|
| Population (millions) | 127.0 |
| GDP (US\$ billions) | 4,616.3 |
| GDP per capita, PPP\$ | 38,052.7 |
| Income group | High income |
| Region | South East Asia and Oceania |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 54.0 | 19 |
| Innovation Output Sub-Index | 44.1 | 26 |
| Innovation Input Sub-Index | 63.8 | 12 |
| Innovation Efficiency Ratio | 0.7 | 78 |
| Global Innovation Index 2014 (out of 143) | 52.4 | 21 |

1 Institutions 86.5 17

| | | |
|--|------|------|
| 1.1 Political environment | 86.5 | 16 |
| 1.1.1 Political stability* | 88.4 | 19 |
| 1.1.2 Government effectiveness* | 84.5 | 13 |
| 1.2 Regulatory environment | 90.6 | 16 |
| 1.2.1 Regulatory quality* | 77.2 | 25 |
| 1.2.2 Rule of law* | 85.1 | 19 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 8.0 | 1 ● |
| 1.3 Business environment | 82.4 | 21 |
| 1.3.1 Ease of starting a business* | 86.2 | 69 |
| 1.3.2 Ease of resolving insolvency* | 93.7 | 2 ● |
| 1.3.3 Ease of paying taxes* | 67.2 | 96 ○ |

2 Human capital & research 55.0 13

| | | |
|---|--------|------|
| 2.1 Education | 51.6 | 43 |
| 2.1.1 Expenditure on education, % GDP | 3.8 | 88 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 25.8 | 35 |
| 2.1.3 School life expectancy, years | 15.3 | 36 |
| 2.1.4 PISA scales in reading, maths, & science | 540.4 | 5 |
| 2.1.5 Pupil-teacher ratio, secondary | 11.7 | 40 |
| 2.2 Tertiary education | 37.0 | 55 |
| 2.2.1 Tertiary enrolment, % gross | 61.5 | 39 |
| 2.2.2 Graduates in science & engineering, % | 20.3 | 54 |
| 2.2.3 Tertiary inbound mobility, % | 3.9 | 47 |
| 2.3 Research & development (R&D) | 76.3 | 6 ● |
| 2.3.1 Researchers, FTE/mn pop. | 5194.8 | 9 |
| 2.3.2 Gross expenditure on R&D, % GDP | 3.5 | 3 ● |
| 2.3.3 QS university ranking, average score top 3* | 83.7 | 7 |

3 Infrastructure 63.1 5 ●

| | | |
|---|--------|-----|
| 3.1 Information & communication technologies (ICTs) | 88.1 | 4 ● |
| 3.1.1 ICT access* | 84.0 | 14 |
| 3.1.2 ICT use* | 78.0 | 7 |
| 3.1.3 Government's online service* | 94.5 | 4 ● |
| 3.1.4 E-participation* | 96.1 | 4 ● |
| 3.2 General infrastructure | 48.2 | 19 |
| 3.2.1 Electricity output, kWh/cap | 8257.7 | 20 |
| 3.2.2 Logistics performance* | 89.4 | 10 |
| 3.2.3 Gross capital formation, % GDP | 22.2 | 65 |
| 3.3 Ecological sustainability | 52.8 | 19 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 8.9 | 42 |
| 3.3.2 Environmental performance* | 72.4 | 26 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 5.1 | 19 |

4 Market sophistication 64.3 12

| | | |
|--|-------|-----|
| 4.1 Credit | 56.0 | 16 |
| 4.1.1 Ease of getting credit* | 50.0 | 65 |
| 4.1.2 Domestic credit to private sector, % GDP | 188.3 | 5 ● |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a |

| | | |
|---|------|----|
| 4.2 Investment | 44.1 | 43 |
| 4.2.1 Ease of protecting investors* | 62.5 | 34 |
| 4.2.2 Market capitalization, % GDP | 61.8 | 30 |
| 4.2.3 Total value of stocks traded, % GDP | 60.5 | 14 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.1 | 33 |

| | | |
|---|------|-----|
| 4.3 Trade & competition | 92.7 | 3 ● |
| 4.3.1 Applied tariff rate, weighted mean, % | 1.2 | 37 |
| 4.3.2 Intensity of local competition [†] | 89.5 | 1 ● |

5 Business sophistication 50.4 16

| | | |
|--|------|-----|
| 5.1 Knowledge workers | 62.8 | 16 |
| 5.1.1 Knowledge-intensive employment, % | 24.3 | 62 |
| 5.1.2 Firms offering formal training, % firms | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP | 2.7 | 3 ● |
| 5.1.4 GERD financed by business, % | 75.5 | 2 ● |
| 5.1.5 Females employed w/advanced degrees, % total | 19.3 | 24 |

5.2 Innovation linkages 46.6 21

| | | |
|---|------|------|
| 5.2.1 University/industry research collaboration [†] | 66.7 | 15 |
| 5.2.2 State of cluster development [†] | 71.4 | 7 |
| 5.2.3 GERD financed by abroad, % | 0.5 | 95 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 38 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 5.2 | 2 ● |

5.3 Knowledge absorption 41.8 34

| | | |
|--|------|-------|
| 5.3.1 Royalty & license fees payments, % total trade | 2.0 | 8 |
| 5.3.2 High-tech imports less re-imports, % total trade | 14.0 | 17 |
| 5.3.3 Comm., computer & info. services imp., % total trade | 0.7 | 77 ○ |
| 5.3.4 FDI net inflows, % GDP | 0.1 | 128 ○ |

6 Knowledge & technology outputs 48.6 14

| | | |
|--|-------|-----|
| 6.1 Knowledge creation | 56.3 | 10 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | 58.0 | 1 ● |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | 8.9 | 1 ● |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | 1.3 | 21 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 15.6 | 49 |
| 6.1.5 Citable documents H index | 694.0 | 6 ● |

6.2 Knowledge impact 39.4 59

| | | |
|---|------|------|
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 1.5 | 60 |
| 6.2.2 New businesses/th pop. 15–64 | 1.2 | 62 ○ |
| 6.2.3 Computer software spending, % GDP | 0.3 | 38 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 9.8 | 42 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 43.6 | 13 |

6.3 Knowledge diffusion 50.0 14

| | | |
|--|------|-------|
| 6.3.1 Royalty & license fees receipts, % total trade | 3.5 | 5 ● |
| 6.3.2 High-tech exports less re-exports, % total trade | 12.4 | 16 |
| 6.3.3 Comm., computer & info. services exp., % total trade | 0.3 | 105 ○ |
| 6.3.4 FDI net outflows, % GDP | 2.8 | 23 |

7 Creative outputs 39.6 43

| | | |
|---|------|------|
| 7.1 Intangible assets | 44.8 | 73 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | 33.8 | 67 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | 0.4 | 42 ○ |
| 7.1.3 ICTs & business model creation [†] | 73.1 | 14 |
| 7.1.4 ICTs & organizational model creation [†] | 60.6 | 37 |

7.2 Creative goods & services 35.9 24

| | | |
|---|------|------|
| 7.2.1 Cultural & creative services exports, % total trade | 0.0 | 71 ○ |
| 7.2.2 National feature films/mn pop. 15–69 | 6.7 | 30 |
| 7.2.3 Global ent. & media output/th pop. 15–69 | 65.5 | 6 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 2.3 | 23 |
| 7.2.5 Creative goods exports, % total trade | 2.4 | 20 |

7.3 Online creativity 33.1 42

| | | |
|--|--------|----|
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 18.5 | 33 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 6.7 | 48 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 3292.1 | 40 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 82.7 | 28 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|----------------------------------|
| Population (millions)..... | 7.5 |
| GDP (US\$ billions)..... | 35.8 |
| GDP per capita, PPP\$..... | 6,281.5 |
| Income group..... | Upper-middle income |
| Region..... | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 33.8 | 75 |
| Innovation Output Sub-Index..... | 28.3 | 67 |
| Innovation Input Sub-Index..... | 39.3 | 80 |
| Innovation Efficiency Ratio..... | 0.7 | 68 |
| Global Innovation Index 2014 (out of 143)..... | 36.2 | 64 |

1 Institutions.....62.2 65

| | | |
|---|------|-------|
| 1.1 Political environment..... | 43.6 | 85 |
| 1.1.1 Political stability*..... | 48.9 | 102 |
| 1.1.2 Government effectiveness*..... | 38.4 | 78 |
| 1.2 Regulatory environment..... | 77.2 | 36 ● |
| 1.2.1 Regulatory quality*..... | 50.9 | 66 |
| 1.2.2 Rule of law*..... | 57.9 | 49 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.0 | 1 ● |
| 1.3 Business environment..... | 65.7 | 80 |
| 1.3.1 Ease of starting a business*..... | 85.6 | 72 |
| 1.3.2 Ease of resolving insolvency*..... | 30.2 | 123 ○ |
| 1.3.3 Ease of paying taxes*..... | 81.2 | 40 ● |

2 Human capital & research.....26.3 81

| | | |
|--|-------|-------|
| 2.1 Education..... | 31.7 | 111 ○ |
| 2.1.1 Expenditure on education, % GDP..... | n/a | n/a |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 15.1 | 86 ○ |
| 2.1.3 School life expectancy, years..... | 13.5 | 70 |
| 2.1.4 PISA scales in reading, maths, & science..... | 398.0 | 54 ○ |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a |
| 2.2 Tertiary education..... | 34.7 | 60 |
| 2.2.1 Tertiary enrolment, % gross..... | 46.6 | 56 |
| 2.2.2 Graduates in science & engineering, % [ⓐ] | 16.1 | 74 |
| 2.2.3 Tertiary inbound mobility, %..... | 9.1 | 17 ● |
| 2.3 Research & development (R&D)..... | 12.4 | 61 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP [ⓐ] | 0.4 | 67 |
| 2.3.3 QS university ranking, average score top 3*..... | 14.7 | 58 |

3 Infrastructure.....36.4 81

| | | |
|--|--------|----|
| 3.1 Information & communication technologies (ICTs)..... | 44.0 | 75 |
| 3.1.1 ICT access*..... | 54.7 | 73 |
| 3.1.2 ICT use*..... | 22.2 | 88 |
| 3.1.3 Government's online service*..... | 52.0 | 62 |
| 3.1.4 E-participation*..... | 47.1 | 70 |
| 3.2 General infrastructure..... | 27.1 | 86 |
| 3.2.1 Electricity output, kWh/cap..... | 2625.9 | 68 |
| 3.2.2 Logistics performance*..... | 36.4 | 65 |
| 3.2.3 Gross capital formation, % GDP..... | 21.7 | 70 |
| 3.3 Ecological sustainability..... | 38.1 | 68 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 8.4 | 48 |
| 3.3.2 Environmental performance*..... | 55.8 | 55 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.5 | 80 |

4 Market sophistication.....38.8 118 ○

| | | |
|---|------|-------|
| 4.1 Credit..... | 9.0 | 132 ○ |
| 4.1.1 Ease of getting credit*..... | 0.0 | 140 ○ |
| 4.1.2 Domestic credit to private sector, % GDP..... | 72.3 | 44 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.4 | 48 |

| | | |
|--|------|-------|
| 4.2 Investment..... | 31.6 | 91 |
| 4.2.1 Ease of protecting investors*..... | 41.7 | 123 ○ |
| 4.2.2 Market capitalization, % GDP..... | 87.0 | 18 ● |
| 4.2.3 Total value of stocks traded, % GDP..... | 9.0 | 41 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.1 | 24 |
| 4.3 Trade & competition..... | 75.9 | 73 |
| 4.3.1 Applied tariff rate, weighted mean, % [ⓐ] | 5.2 | 85 |
| 4.3.2 Intensity of local competition [†] | 69.9 | 55 |

5 Business sophistication.....32.8 76

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 23.5 | 111 ○ |
| 5.1.1 Knowledge-intensive employment, % [ⓐ] | 28.2 | 48 |
| 5.1.2 Firms offering formal training, % firms..... | 3.4 | 109 ○ |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 41.3 | 36 ● |
| 5.2.1 University/industry research collaboration [†] | 47.1 | 50 |
| 5.2.2 State of cluster development [†] | 58.1 | 27 ● |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 24 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 59 |
| 5.3 Knowledge absorption..... | 33.5 | 67 |
| 5.3.1 Royalty & license fees payments, % total trade..... | n/a | n/a |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 5.1 | 96 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP..... | 5.3 | 30 ● |

6 Knowledge & technology outputs.....24.0 83

| | | |
|---|------|------|
| 6.1 Knowledge creation..... | 11.4 | 65 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 0.5 | 75 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 14.9 | 51 |
| 6.1.5 Citable documents H index..... | 92.0 | 76 |
| 6.2 Knowledge impact..... | 36.5 | 75 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 3.4 | 25 ● |
| 6.2.2 New businesses/th pop. 15–64..... | 1.0 | 68 |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 43 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 3.5 | 72 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 24.5 | 47 |
| 6.3 Knowledge diffusion..... | 24.1 | 91 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.4 | 78 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | 0.0 | 95 ○ |

7 Creative outputs.....32.5 69

| | | |
|--|--------|-------|
| 7.1 Intangible assets..... | 46.6 | 62 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 27.8 | 73 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 63.2 | 39 ● |
| 7.1.4 ICTs & organizational model creation [†] | 62.0 | 29 ● |
| 7.2 Creative goods & services..... | 17.5 | 76 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 1.4 | 52 ○ |
| 7.2.4 Printing & publishing output manufactures, %..... | 1.5 | 49 |
| 7.2.5 Creative goods exports, % total trade..... | 0.8 | 45 |
| 7.3 Online creativity..... | 19.5 | 66 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 7.6 | 50 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.4 | 107 ○ |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 1037.9 | 73 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 62.6 | 61 ○ |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------------|
| Population (millions) | 16.6 |
| GDP (US\$ billions) | 212.3 |
| GDP per capita, PPP\$ | 15,219.4 |
| Income group | Upper-middle income |
| Region | Central and Southern Asia |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 31.2 | 82 |
| Innovation Output Sub-Index | 21.5 | 107 |
| Innovation Input Sub-Index | 41.0 | 75 |
| Innovation Efficiency Ratio | 0.5 | 124 ○ |
| Global Innovation Index 2014 (out of 143) | 32.8 | 79 |

1 Institutions 61.4 67

| | | |
|--|------|------|
| 1.1 Political environment | 40.8 | 98 |
| 1.1.1 Political stability* | 54.7 | 88 |
| 1.1.2 Government effectiveness* | 26.9 | 102 |
| 1.2 Regulatory environment | 66.3 | 71 |
| 1.2.1 Regulatory quality* | 37.6 | 103 |
| 1.2.2 Rule of law* | 29.9 | 102 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 8.6 | 20 ● |
| 1.3 Business environment | 77.2 | 35 ● |
| 1.3.1 Ease of starting a business* | 90.2 | 46 |
| 1.3.2 Ease of resolving insolvency* | 51.5 | 60 |
| 1.3.3 Ease of paying taxes* | 90.0 | 16 ● |

2 Human capital & research 29.6 66

| | | |
|---|-------|------|
| 2.1 Education | 50.9 | 49 |
| 2.1.1 Expenditure on education, % GDP [Ⓞ] | 3.1 | 108 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | n/a | n/a |
| 2.1.3 School life expectancy, years | 15.0 | 43 |
| 2.1.4 PISA scales in reading, maths, & science | 416.4 | 48 |
| 2.1.5 Pupil-teacher ratio, secondary | 8.6 | 13 ● |
| 2.2 Tertiary education | 21.8 | 99 |
| 2.2.1 Tertiary enrolment, % gross | 44.5 | 60 |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, % | 1.4 | 77 |
| 2.3 Research & development (R&D) | 16.1 | 52 |
| 2.3.1 Researchers, FTE/mn pop. | 763.5 | 51 |
| 2.3.2 Gross expenditure on R&D, % GDP | 0.2 | 92 |
| 2.3.3 QS university ranking, average score top 3* | 35.1 | 38 |

3 Infrastructure 43.3 54

| | | |
|---|--------|-------|
| 3.1 Information & communication technologies (ICTs) | 65.7 | 33 ● |
| 3.1.1 ICT access* | 68.4 | 49 |
| 3.1.2 ICT use* | 43.3 | 52 |
| 3.1.3 Government's online service* | 74.8 | 23 ● |
| 3.1.4 E-participation* | 76.5 | 22 ● |
| 3.2 General infrastructure | 35.8 | 54 |
| 3.2.1 Electricity output, kWh/cap | 5432.2 | 38 |
| 3.2.2 Logistics performance* | 27.5 | 83 |
| 3.2.3 Gross capital formation, % GDP | 28.4 | 31 ● |
| 3.3 Ecological sustainability | 28.3 | 104 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 4.3 | 105 ○ |
| 3.3.2 Environmental performance* | 51.1 | 75 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 0.4 | 91 |

4 Market sophistication 43.4 96

| | | |
|--|------|-----|
| 4.1 Credit | 20.9 | 108 |
| 4.1.1 Ease of getting credit* | 50.0 | 65 |
| 4.1.2 Domestic credit to private sector, % GDP | 35.6 | 90 |
| 4.1.3 Microfinance gross loans, % GDP | 0.2 | 57 |

| | | |
|---|------|------|
| 4.2 Investment | 34.8 | 71 |
| 4.2.1 Ease of protecting investors* | 65.8 | 25 ● |
| 4.2.2 Market capitalization, % GDP | 11.5 | 87 |
| 4.2.3 Total value of stocks traded, % GDP | 0.5 | 77 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | n/a | n/a |
| 4.3 Trade & competition | 74.5 | 79 |
| 4.3.1 Applied tariff rate, weighted mean, % | 3.0 | 57 |
| 4.3.2 Intensity of local competition [†] | 59.3 | 107 |

5 Business sophistication 27.2 110

| | | |
|---|------|-------|
| 5.1 Knowledge workers | 38.0 | 68 |
| 5.1.1 Knowledge-intensive employment, % | 32.3 | 41 |
| 5.1.2 Firms offering formal training, % firms | 28.4 | 67 |
| 5.1.3 GERD performed by business, % of GDP | 0.1 | 69 |
| 5.1.4 GERD financed by business, % | 28.9 | 52 |
| 5.1.5 Females employed w/advanced degrees, % total | 17.6 | 29 |
| 5.2 Innovation linkages | 18.8 | 128 ○ |
| 5.2.1 University/industry research collaboration [†] | 38.2 | 85 |
| 5.2.2 State of cluster development [†] | 36.2 | 112 |
| 5.2.3 GERD financed by abroad, % | 0.8 | 92 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓞ] | 0.0 | 98 ○ |
| 5.3 Knowledge absorption | 24.9 | 115 |
| 5.3.1 Royalty & license fees payments, % total trade | 0.2 | 86 |
| 5.3.2 High-tech imports less re-imports, % total trade | 6.8 | 69 |
| 5.3.3 Comm., computer & info. services imp., % total trade | 0.4 | 101 |
| 5.3.4 FDI net inflows, % GDP | 4.3 | 36 ● |

6 Knowledge & technology outputs 21.9 96

| | | |
|---|------|-------|
| 6.1 Knowledge creation | 8.7 | 80 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | 4.6 | 24 ● |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | 0.0 | 80 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | 0.3 | 42 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 1.6 | 130 ○ |
| 6.1.5 Citable documents H index | 59.0 | 107 |
| 6.2 Knowledge impact | 36.6 | 70 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 4.2 | 13 ● |
| 6.2.2 New businesses/th pop. 15–64 | 1.7 | 51 |
| 6.2.3 Computer software spending, % GDP | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 1.3 | 108 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓞ] | 6.8 | 87 ○ |
| 6.3 Knowledge diffusion | 20.4 | 109 |
| 6.3.1 Royalty & license fees receipts, % total trade | 0.0 | 111 ○ |
| 6.3.2 High-tech exports less re-exports, % total trade | 4.1 | 36 |
| 6.3.3 Comm., computer & info. services exp., % total trade | 0.2 | 111 ○ |
| 6.3.4 FDI net outflows, % GDP | 0.8 | 55 |

7 Creative outputs 21.1 117

| | | |
|---|-------|-------|
| 7.1 Intangible assets | 33.5 | 121 ○ |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | 17.8 | 90 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | 0.1 | 55 |
| 7.1.3 ICTs & business model creation [†] | 54.4 | 72 |
| 7.1.4 ICTs & organizational model creation [†] | 52.8 | 63 |
| 7.2 Creative goods & services | 13.6 | 86 |
| 7.2.1 Cultural & creative services exports, % total trade | 0.0 | 81 ○ |
| 7.2.2 National feature films/mn pop. 15–69 | 3.0 | 51 |
| 7.2.3 Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓞ] | 1.7 | 36 |
| 7.2.5 Creative goods exports, % total trade | 0.3 | 70 |
| 7.3 Online creativity | 3.9 | 97 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 0.4 | 119 ○ |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 4.4 | 55 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 919.7 | 80 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓞ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|--------------------|
| Population (millions) | 45.5 |
| GDP (US\$ billions) | 60.8 |
| GDP per capita, PPP\$ | 1,903.4 |
| Income group | Low income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 30.2 | 92 |
| Innovation Output Sub-Index | 26.6 | 78 |
| Innovation Input Sub-Index..... | 33.7 | 113 |
| Innovation Efficiency Ratio..... | 0.8 | 30 ● |
| Global Innovation Index 2014 (out of 143) | 31.9 | 85 |
| 1 Institutions..... | 52.7 | 96 |
| 1.1 Political environment..... | 32.0 | 118 |
| 1.1.1 Political stability*..... | 35.8 | 121 |
| 1.1.2 Government effectiveness*..... | 28.2 | 99 |
| 1.2 Regulatory environment | 66.6 | 70 |
| 1.2.1 Regulatory quality*..... | 38.4 | 99 |
| 1.2.2 Rule of law*..... | 27.8 | 107 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.0 | 1 ● |
| 1.3 Business environment..... | 59.6 | 106 |
| 1.3.1 Ease of starting a business*..... | 74.0 | 115 |
| 1.3.2 Ease of resolving insolvency*..... | 33.3 | 116 |
| 1.3.3 Ease of paying taxes*..... | 71.5 | 80 |
| 2 Human capital & research..... | 14.7 | 125 |
| 2.1 Education | 31.2 | 115 |
| 2.1.1 Expenditure on education, % GDP [Ⓢ] | 6.6 | 19 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓢ] | 21.2 | 52 |
| 2.1.3 School life expectancy, years [Ⓢ] | 11.0 | 106 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 41.1 | 119 ○ |
| 2.2 Tertiary education..... | 2.8 | 135 ○ |
| 2.2.1 Tertiary enrolment, % gross [Ⓢ] | 4.0 | 128 ○ |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 10.1 | 69 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓢ] | 227.5 | 67 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓢ] | 1.0 | 35 |
| 2.3.3 QS university ranking, average score top 3*..... | 4.9 | 69 |
| 3 Infrastructure..... | 27.2 | 110 |
| 3.1 Information & communication technologies (ICTs)..... | 38.6 | 87 |
| 3.1.1 ICT access*..... | 32.9 | 110 |
| 3.1.2 ICT use*..... | 14.1 | 104 |
| 3.1.3 Government's online service*..... | 42.5 | 77 |
| 3.1.4 E-participation*..... | 64.7 | 33 |
| 3.2 General infrastructure..... | 20.9 | 115 |
| 3.2.1 Electricity output, kWh/cap..... | 192.0 | 116 ○ |
| 3.2.2 Logistics performance*..... | 33.2 | 71 |
| 3.2.3 Gross capital formation, % GDP..... | 19.6 | 95 |
| 3.3 Ecological sustainability | 22.1 | 127 ○ |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 4.0 | 110 ○ |
| 3.3.2 Environmental performance*..... | 37.0 | 117 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.4 | 89 |
| 4 Market sophistication | 42.9 | 98 |
| 4.1 Credit..... | 33.4 | 59 |
| 4.1.1 Ease of getting credit*..... | 35.0 | 102 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 31.6 | 95 |
| 4.1.3 Microfinance gross loans, % GDP..... | 4.7 | 12 ● |

| | | |
|---|-------------|-----------|
| 4.2 Investment | 25.0 | 124 |
| 4.2.1 Ease of protecting investors*..... | 45.8 | 107 |
| 4.2.2 Market capitalization, % GDP..... | 29.4 | 57 |
| 4.2.3 Total value of stocks traded, % GDP..... | 2.0 | 60 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.1 | 23 |
| 4.3 Trade & competition | 70.4 | 94 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 10.5 | 124 |
| 4.3.2 Intensity of local competition [†] | 77.6 | 19 ● |
| 5 Business sophistication | 31.2 | 86 |
| 5.1 Knowledge workers..... | 26.6 | 101 |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms..... | 40.6 | 45 |
| 5.1.3 GERD performed by business, % of GDP [Ⓢ] | 0.1 | 61 |
| 5.1.4 GERD financed by business, % [Ⓢ] | 4.3 | 76 |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages | 41.3 | 37 ● |
| 5.2.1 University/industry research collaboration [†] | 53.6 | 35 ● |
| 5.2.2 State of cluster development [†] | 53.3 | 38 |
| 5.2.3 GERD financed by abroad, % [Ⓢ] | 47.1 | 9 ● |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 72 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓢ] | 0.0 | 84 |
| 5.3 Knowledge absorption..... | 25.8 | 110 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓢ] | 0.2 | 83 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 10.9 | 27 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓢ] | 0.1 | 122 ○ |
| 5.3.4 FDI net inflows, % GDP..... | 1.2 | 107 |
| 6 Knowledge & technology outputs | 24.2 | 82 |
| 6.1 Knowledge creation..... | 10.0 | 69 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 1.0 | 60 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.1 | 68 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | 0.6 | 35 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 11.5 | 64 |
| 6.1.5 Citable documents H index..... | 149.0 | 48 |
| 6.2 Knowledge impact..... | 31.2 | 100 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 3.1 | 27 ● |
| 6.2.2 New businesses/th pop. 15–64 [Ⓢ] | 0.8 | 77 |
| 6.2.3 Computer software spending, % GDP..... | 0.2 | 67 ○ |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 4.8 | 65 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 7.7 | 84 |
| 6.3 Knowledge diffusion..... | 31.3 | 52 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓢ] | 0.2 | 33 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.6 | 74 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓢ] | 3.4 | 15 ● |
| 6.3.4 FDI net outflows, % GDP [Ⓢ] | 0.0 | 98 |
| 7 Creative outputs | 29.1 | 85 |
| 7.1 Intangible assets..... | 48.2 | 58 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.0 | 64 ○ |
| 7.1.3 ICTs & business model creation [†] | 63.9 | 37 ● |
| 7.1.4 ICTs & organizational model creation [†] | 56.3 | 55 |
| 7.2 Creative goods & services..... | 12.1 | 91 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.0 | 87 ○ |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 1.3 | 53 ○ |
| 7.2.4 Printing & publishing output manufactures, %..... | 1.8 | 34 |
| 7.2.5 Creative goods exports, % total trade..... | 0.3 | 71 |
| 7.3 Online creativity..... | 8.0 | 83 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 1.3 | 103 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.7 | 93 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 107.0 | 113 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 29.2 | 71 ○ |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓢ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Korea, Republic of

Key indicators

| | |
|-----------------------------|-----------------------------|
| Population (millions) | 49.5 |
| GDP (US\$ billions) | 1,416.9 |
| GDP per capita, PPP\$ | 34,795.4 |
| Income group | High income |
| Region | South East Asia and Oceania |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|------------|
| Global Innovation Index (out of 141) | 56.3 | 14 |
| Innovation Output Sub-Index | 50.1 | 11 |
| Innovation Input Sub-Index | 62.4 | 15 |
| Innovation Efficiency Ratio | 0.8 | 27 |
| Global Innovation Index 2014 (out of 143) | 55.3 | 16 |
| 1 Institutions | 76.1 | 33 |
| 1.1 Political environment | 70.9 | 38 |
| 1.1.1 Political stability* | 70.0 | 52 |
| 1.1.2 Government effectiveness* | 71.7 | 30 |
| 1.2 Regulatory environment | 67.4 | 66 |
| 1.2.1 Regulatory quality* | 73.9 | 30 |
| 1.2.2 Rule of law* | 72.6 | 33 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 27.4 | 118 ○ |
| 1.3 Business environment | 90.2 | 4 ● |
| 1.3.1 Ease of starting a business* | 94.4 | 16 |
| 1.3.2 Ease of resolving insolvency* | 90.1 | 5 ● |
| 1.3.3 Ease of paying taxes* | 86.1 | 24 |
| 2 Human capital & research | 64.8 | 2 ● |
| 2.1 Education | 53.9 | 35 |
| 2.1.1 Expenditure on education, % GDP | 4.9 | 64 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 23.0 | 47 |
| 2.1.3 School life expectancy, years | 16.9 | 12 |
| 2.1.4 PISA scales in reading, maths, & science | 542.4 | 4 |
| 2.1.5 Pupil-teacher ratio, secondary | 15.9 | 68 |
| 2.2 Tertiary education | 54.8 | 10 |
| 2.2.1 Tertiary enrolment, % gross | 98.4 | 2 ● |
| 2.2.2 Graduates in science & engineering, % | 31.1 | 8 |
| 2.2.3 Tertiary inbound mobility, % | 1.8 | 71 ○ |
| 2.3 Research & development (R&D) | 85.7 | 2 ● |
| 2.3.1 Researchers, FTE/mn pop. | 6533.2 | 5 |
| 2.3.2 Gross expenditure on R&D, % GDP | 4.2 | 2 ● |
| 2.3.3 QS university ranking, average score top 3* | 79.8 | 10 |
| 3 Infrastructure | 62.4 | 8 |
| 3.1 Information & communication technologies (ICTs) | 92.4 | 1 ● |
| 3.1.1 ICT access* | 89.4 | 8 |
| 3.1.2 ICT use* | 82.6 | 3 ● |
| 3.1.3 Government's online service* | 97.6 | 3 ● |
| 3.1.4 E-participation* | 100.0 | 1 ● |
| 3.2 General infrastructure | 55.5 | 12 |
| 3.2.1 Electricity output, kWh/cap | 10643.9 | 11 |
| 3.2.2 Logistics performance* | 76.8 | 20 |
| 3.2.3 Gross capital formation, % GDP | 28.9 | 27 |
| 3.3 Ecological sustainability | 39.4 | 61 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 5.5 | 93 ○ |
| 3.3.2 Environmental performance* | 63.8 | 42 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 2.8 | 36 |
| 4 Market sophistication | 63.3 | 16 |
| 4.1 Credit | 54.5 | 17 |
| 4.1.1 Ease of getting credit* | 65.0 | 34 |
| 4.1.2 Domestic credit to private sector, % GDP | 135.0 | 18 |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a |

| | | |
|---|-------------|------------|
| 4.2 Investment | 59.9 | 9 |
| 4.2.1 Ease of protecting investors* | 66.7 | 21 |
| 4.2.2 Market capitalization, % GDP | 96.5 | 15 |
| 4.2.3 Total value of stocks traded, % GDP | 123.8 | 1 ● |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.1 | 38 |
| 4.3 Trade & competition | 75.5 | 76 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 8.7 | 115 ○ |
| 4.3.2 Intensity of local competition [†] | 81.5 | 11 |
| 5 Business sophistication | 45.2 | 30 |
| 5.1 Knowledge workers | 59.9 | 22 |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 21.3 | 67 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 39.5 | 47 |
| 5.1.3 GERD performed by business, % of GDP | 3.3 | 2 ● |
| 5.1.4 GERD financed by business, % | 75.7 | 1 ● |
| 5.1.5 Females employed w/advanced degrees, % total | n/a | n/a |
| 5.2 Innovation linkages | 40.1 | 44 |
| 5.2.1 University/industry research collaboration [†] | 60.3 | 25 |
| 5.2.2 State of cluster development [†] | 55.8 | 29 |
| 5.2.3 GERD financed by abroad, % | 0.3 | 96 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 41 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 4.4 | 3 ● |
| 5.3 Knowledge absorption | 35.6 | 61 |
| 5.3.1 Royalty & license fees payments, % total trade | 1.5 | 17 |
| 5.3.2 High-tech imports less re-imports, % total trade | 12.7 | 21 |
| 5.3.3 Comm., computer & info. services imp., % total trade | 0.4 | 108 ○ |
| 5.3.4 FDI net inflows, % GDP | 0.9 | 114 ○ |
| 6 Knowledge & technology outputs | 56.7 | 5 ● |
| 6.1 Knowledge creation | 78.6 | 1 ● |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | 94.3 | 1 ● |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | 7.4 | 7 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | 6.2 | 6 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 29.8 | 26 |
| 6.1.5 Citable documents H index | 375.0 | 19 |
| 6.2 Knowledge impact | 42.4 | 47 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 1.7 | 50 |
| 6.2.2 New businesses/th pop. 15–64 | 2.0 | 46 |
| 6.2.3 Computer software spending, % GDP | 0.3 | 32 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 6.7 | 53 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 53.4 | 6 |
| 6.3 Knowledge diffusion | 49.1 | 19 |
| 6.3.1 Royalty & license fees receipts, % total trade | 0.6 | 21 |
| 6.3.2 High-tech exports less re-exports, % total trade | 22.1 | 5 |
| 6.3.3 Comm., computer & info. services exp., % total trade | 0.3 | 106 ○ |
| 6.3.4 FDI net outflows, % GDP | 2.2 | 31 |
| 7 Creative outputs | 43.6 | 28 |
| 7.1 Intangible assets | 56.8 | 19 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | 93.1 | 16 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | 0.4 | 44 ○ |
| 7.1.3 ICTs & business model creation [†] | 74.6 | 12 |
| 7.1.4 ICTs & organizational model creation [†] | 67.7 | 19 |
| 7.2 Creative goods & services | 26.0 | 49 |
| 7.2.1 Cultural & creative services exports, % total trade | 0.3 | 41 |
| 7.2.2 National feature films/mn pop. 15–69 | 5.5 | 36 |
| 7.2.3 Global ent. & media output/th pop. 15–69 | 36.8 | 19 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 0.5 | 90 ○ |
| 7.2.5 Creative goods exports, % total trade | 2.6 | 15 |
| 7.3 Online creativity | 34.7 | 41 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 9.5 | 46 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 10.2 | 44 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 4407.7 | 33 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 86.5 | 21 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|----------------------------------|
| Population (millions)..... | 3.5 |
| GDP (US\$ billions)..... | 172.4 |
| GDP per capita, PPP\$..... | 40,222.7 |
| Income group..... | High income |
| Region..... | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 33.2 | 77 |
| Innovation Output Sub-Index..... | 28.0 | 70 |
| Innovation Input Sub-Index..... | 38.4 | 87 |
| Innovation Efficiency Ratio..... | 0.7 | 65 |
| Global Innovation Index 2014 (out of 143)..... | 35.2 | 69 |

| | | |
|---|-------------|-----------|
| 1 Institutions..... | 58.7 | 76 |
| 1.1 Political environment..... | 53.5 | 62 |
| 1.1.1 Political stability*..... | 67.7 | 58 |
| 1.1.2 Government effectiveness*..... | 39.4 | 73 |
| 1.2 Regulatory environment..... | 56.0 | 99 |
| 1.2.1 Regulatory quality*..... | 45.5 | 77 |
| 1.2.2 Rule of law*..... | 57.9 | 48 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 28.1 | 124 ○ |
| 1.3 Business environment..... | 66.6 | 79 |
| 1.3.1 Ease of starting a business*..... | 71.3 | 120 |
| 1.3.2 Ease of resolving insolvency*..... | 36.0 | 111 |
| 1.3.3 Ease of paying taxes*..... | 92.5 | 11 ● |
| 2 Human capital & research..... | 24.1 | 89 |
| 2.1 Education..... | 45.6 | 65 |
| 2.1.1 Expenditure on education, % GDP [Ⓐ] | 3.8 | 94 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 20.9 | 55 |
| 2.1.3 School life expectancy, years [Ⓐ] | 14.6 | 46 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓐ] | 8.2 | 8 ● |
| 2.2 Tertiary education..... | 23.9 | 91 |
| 2.2.1 Tertiary enrolment, % gross..... | 28.5 | 79 |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 2.8 | 96 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓐ] | 135.1 | 80 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓐ] | 0.1 | 107 ○ |
| 2.3.3 QS university ranking, average score top 3*..... | 5.0 | 68 |
| 3 Infrastructure..... | 43.6 | 51 |
| 3.1 Information & communication technologies (ICTs)..... | 50.3 | 56 |
| 3.1.1 ICT access*..... | n/a | n/a |
| 3.1.2 ICT use*..... | n/a | n/a |
| 3.1.3 Government's online service*..... | 57.5 | 52 |
| 3.1.4 E-participation*..... | 43.1 | 76 |
| 3.2 General infrastructure..... | 42.1 | 37 ● |
| 3.2.1 Electricity output, kWh/cap..... | 19278.5 | 1 ● |
| 3.2.2 Logistics performance*..... | 43.4 | 54 |
| 3.2.3 Gross capital formation, % GDP..... | 13.9 | 132 ○ |
| 3.3 Ecological sustainability..... | 38.5 | 65 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 7.0 | 63 |
| 3.3.2 Environmental performance*..... | 63.9 | 41 ● |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.3 | 98 |
| 4 Market sophistication..... | 43.7 | 93 |
| 4.1 Credit..... | 26.1 | 85 |
| 4.1.1 Ease of getting credit*..... | 35.0 | 102 |
| 4.1.2 Domestic credit to private sector, % GDP [Ⓐ] | 55.8 | 58 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|------|------|
| 4.2 Investment..... | 33.4 | 76 |
| 4.2.1 Ease of protecting investors*..... | 60.8 | 41 ● |
| 4.2.2 Market capitalization, % GDP..... | 55.8 | 33 ● |
| 4.2.3 Total value of stocks traded, % GDP..... | 13.2 | 34 ● |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 71 ○ |
| 4.3 Trade & competition..... | 71.6 | 91 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 4.4 | 74 |
| 4.3.2 Intensity of local competition [†] | 58.5 | 110 |

| | | |
|---|-------------|------------|
| 5 Business sophistication..... | 22.1 | 132 |
| 5.1 Knowledge workers..... | 21.1 | 119 |
| 5.1.1 Knowledge-intensive employment, % [Ⓐ] | 18.7 | 79 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | 1.4 | 83 ○ |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 22.8 | 112 |
| 5.2.1 University/industry research collaboration [†] | 35.1 | 105 |
| 5.2.2 State of cluster development [†] | 44.5 | 78 |
| 5.2.3 GERD financed by abroad, % [Ⓐ] | 1.2 | 87 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 29 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 99 |
| 5.3 Knowledge absorption..... | 22.3 | 130 ○ |
| 5.3.1 Royalty & license fees payments, % total trade..... | n/a | n/a |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 3.8 | 114 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.5 | 92 |
| 5.3.4 FDI net inflows, % GDP [Ⓐ] | 1.6 | 96 |

| | | |
|---|-------------|-----------|
| 6 Knowledge & technology outputs..... | 27.0 | 63 |
| 6.1 Knowledge creation..... | 5.9 | 97 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 2.4 | 123 |
| 6.1.5 Citable documents H index..... | 92.0 | 76 |
| 6.2 Knowledge impact..... | 25.4 | 119 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | -1.1 | 113 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 42 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.7 | 101 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 10.5 | 77 |
| 6.3 Knowledge diffusion..... | 49.8 | 17 ● |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.1 | 105 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | 5.5 | 8 ● |

| | | |
|--|-------------|-----------|
| 7 Creative outputs..... | 28.9 | 86 |
| 7.1 Intangible assets..... | 39.3 | 94 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 39.0 | 122 ○ |
| 7.1.4 ICTs & organizational model creation [†] | 39.6 | 118 ○ |
| 7.2 Creative goods & services..... | 11.9 | 94 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 19.8 | 26 |
| 7.2.4 Printing & publishing output manufactures, %..... | 0.6 | 85 |
| 7.2.5 Creative goods exports, % total trade..... | 0.4 | 66 |
| 7.3 Online creativity..... | 25.1 | 52 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 11.0 | 42 ● |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.6 | 97 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 1452.2 | 68 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 78.0 | 40 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------------|
| Population (millions)..... | 5.6 |
| GDP (US\$ billions)..... | 7.4 |
| GDP per capita, PPP\$..... | 2,740.3 |
| Income group..... | Lower-middle income |
| Region..... | Central and Southern Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 28.0 | 109 |
| Innovation Output Sub-Index..... | 19.4 | 118 |
| Innovation Input Sub-Index..... | 36.6 | 94 |
| Innovation Efficiency Ratio..... | 0.5 | 122 |
| Global Innovation Index 2014 (out of 143)..... | 27.8 | 112 |

1 Institutions.....49.4 105

| | | |
|---|------|-----|
| 1.1 Political environment..... | 32.2 | 117 |
| 1.1.1 Political stability*..... | 41.6 | 113 |
| 1.1.2 Government effectiveness*..... | 22.7 | 111 |
| 1.2 Regulatory environment..... | 54.9 | 103 |
| 1.2.1 Regulatory quality*..... | 39.1 | 94 |
| 1.2.2 Rule of law*..... | 17.3 | 130 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 17.3 | 78 |
| 1.3 Business environment..... | 61.3 | 98 |
| 1.3.1 Ease of starting a business*..... | 96.4 | 9 |
| 1.3.2 Ease of resolving insolvency*..... | 24.4 | 132 |
| 1.3.3 Ease of paying taxes*..... | 63.2 | 104 |

2 Human capital & research.....28.7 70

| | | |
|--|------|-----|
| 2.1 Education..... | 55.5 | 27 |
| 2.1.1 Expenditure on education, % GDP..... | 6.8 | 16 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years [Ⓐ] | 12.5 | 84 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓐ] | 15.2 | 65 |
| 2.2 Tertiary education..... | 28.9 | 77 |
| 2.2.1 Tertiary enrolment, % gross..... | 47.6 | 54 |
| 2.2.2 Graduates in science & engineering, %..... | 15.6 | 79 |
| 2.2.3 Tertiary inbound mobility, %..... | 4.0 | 45 |
| 2.3 Research & development (R&D)..... | 1.7 | 107 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓐ] | 0.2 | 98 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 |

3 Infrastructure.....26.0 114

| | | |
|--|---------|-----|
| 3.1 Information & communication technologies (ICTs)..... | 31.3 | 102 |
| 3.1.1 ICT access*..... | 40.5 | 100 |
| 3.1.2 ICT use*..... | 15.9 | 101 |
| 3.1.3 Government's online service*..... | 27.6 | 111 |
| 3.1.4 E-participation*..... | 41.2 | 79 |
| 3.2 General infrastructure..... | 24.7 | 101 |
| 3.2.1 Electricity output, kWh/cap..... | 2,703.7 | 67 |
| 3.2.2 Logistics performance*..... | 2.5 | 129 |
| 3.2.3 Gross capital formation, % GDP..... | 27.2 | 35 |
| 3.3 Ecological sustainability..... | 22.0 | 128 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 3.4 | 113 |
| 3.3.2 Environmental performance*..... | 40.6 | 105 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.1 | 132 |

4 Market sophistication.....49.8 56

| | | |
|---|------|-----|
| 4.1 Credit..... | 41.8 | 41 |
| 4.1.1 Ease of getting credit*..... | 65.0 | 34 |
| 4.1.2 Domestic credit to private sector, % GDP [Ⓐ] | 15.1 | 129 |
| 4.1.3 Microfinance gross loans, % GDP..... | 4.8 | 10 |

| | | |
|---|------|-----|
| 4.2 Investment..... | 31.6 | 92 |
| 4.2.1 Ease of protecting investors*..... | 62.5 | 34 |
| 4.2.2 Market capitalization, % GDP..... | 2.5 | 106 |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.1 | 100 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 75.9 | 74 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 2.4 | 50 |
| 4.3.2 Intensity of local competition [†] | 60.1 | 103 |

5 Business sophistication.....28.9 99

| | | |
|---|------|-----|
| 5.1 Knowledge workers..... | 42.8 | 51 |
| 5.1.1 Knowledge-intensive employment, %..... | 17.3 | 83 |
| 5.1.2 Firms offering formal training, % firms..... | 63.5 | 7 |
| 5.1.3 GERD performed by business, % of GDP [Ⓐ] | 0.0 | 74 |
| 5.1.4 GERD financed by business, % [Ⓐ] | 38.6 | 39 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 10.8 | 57 |
| 5.2 Innovation linkages..... | 17.5 | 131 |
| 5.2.1 University/industry research collaboration [†] | 26.2 | 125 |
| 5.2.2 State of cluster development [†] | 32.6 | 124 |
| 5.2.3 GERD financed by abroad, % [Ⓐ] | 0.9 | 90 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓐ] | 0.1 | 48 |
| 5.3 Knowledge absorption..... | 26.5 | 108 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓐ] | 0.2 | 93 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 5.3 | 93 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.4 | 100 |
| 5.3.4 FDI net inflows, % GDP..... | 10.5 | 11 |

6 Knowledge & technology outputs.....23.2 88

| | | |
|---|------|-----|
| 6.1 Knowledge creation..... | 11.5 | 64 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 6.1 | 14 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.1 | 76 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 0.4 | 38 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 4.4 | 104 |
| 6.1.5 Citable documents H index..... | 35.0 | 131 |
| 6.2 Knowledge impact..... | 40.7 | 53 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 6.5 | 2 |
| 6.2.2 New businesses/th pop. 15–64..... | 0.9 | 69 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.3 | 135 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓐ] | 3.3 | 93 |
| 6.3 Knowledge diffusion..... | 17.4 | 122 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓐ] | 0.1 | 68 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.1 | 98 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 0.4 | 97 |
| 6.3.4 FDI net outflows, % GDP..... | 0.0 | 106 |

7 Creative outputs.....15.5 132

| | | |
|---|-------|-----|
| 7.1 Intangible assets..... | 26.9 | 131 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 17.9 | 89 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.2 | 52 |
| 7.1.3 ICTs & business model creation [†] | 43.9 | 116 |
| 7.1.4 ICTs & organizational model creation [†] | 39.6 | 117 |
| 7.2 Creative goods & services..... | 7.1 | 109 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | 0.5 | 93 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓐ] | 1.0 | 73 |
| 7.2.5 Creative goods exports, % total trade..... | 0.1 | 102 |
| 7.3 Online creativity..... | 1.1 | 112 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.3 | 122 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.6 | 98 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 332.1 | 99 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|-------------|
| Population (millions)..... | 2.0 |
| GDP (US\$ billions)..... | 32.0 |
| GDP per capita, PPP\$..... | 20,204.4 |
| Income group..... | High income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 45.5 | 33 |
| Innovation Output Sub-Index..... | 40.6 | 30 |
| Innovation Input Sub-Index..... | 50.4 | 34 |
| Innovation Efficiency Ratio..... | 0.8 | 26 |
| Global Innovation Index 2014 (out of 143)..... | 44.8 | 34 |

| | | |
|--|-------------|-----------|
| 1 Institutions..... | 77.7 | 31 |
| 1.1 Political environment..... | 71.8 | 36 |
| 1.1.1 Political stability*..... | 78.3 | 41 |
| 1.1.2 Government effectiveness*..... | 65.2 | 35 |
| 1.2 Regulatory environment..... | 80.7 | 28 |
| 1.2.1 Regulatory quality*..... | 75.1 | 29 |
| 1.2.2 Rule of law*..... | 67.5 | 37 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 13.0 | 50 |
| 1.3 Business environment..... | 80.6 | 25 |
| 1.3.1 Ease of starting a business*..... | 92.1 | 31 |
| 1.3.2 Ease of resolving insolvency*..... | 63.4 | 38 |
| 1.3.3 Ease of paying taxes*..... | 86.2 | 23 |
| 2 Human capital & research..... | 33.1 | 54 |
| 2.1 Education..... | 52.6 | 38 |
| 2.1.1 Expenditure on education, % GDP..... | 4.9 | 62 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 25.8 | 34 |
| 2.1.3 School life expectancy, years..... | 15.2 | 38 |
| 2.1.4 PISA scales in reading, maths, & science..... | 493.8 | 24 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 7.9 | 6 ● |
| 2.2 Tertiary education..... | 34.9 | 58 |
| 2.2.1 Tertiary enrolment, % gross..... | 65.1 | 30 |
| 2.2.2 Graduates in science & engineering, %..... | 18.8 | 62 ○ |
| 2.2.3 Tertiary inbound mobility, %..... | 2.8 | 57 |
| 2.3 Research & development (R&D)..... | 11.7 | 65 |
| 2.3.1 Researchers, FTE/mn pop..... | 1768.0 | 38 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.6 | 55 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 50.6 | 31 |
| 3.1 Information & communication technologies (ICTs)..... | 68.2 | 30 |
| 3.1.1 ICT access*..... | 72.9 | 38 |
| 3.1.2 ICT use*..... | 59.1 | 28 |
| 3.1.3 Government's online service*..... | 70.1 | 28 |
| 3.1.4 E-participation*..... | 70.6 | 24 |
| 3.2 General infrastructure..... | 35.3 | 56 |
| 3.2.1 Electricity output, kWh/cap..... | 3038.4 | 62 |
| 3.2.2 Logistics performance*..... | 63.3 | 35 |
| 3.2.3 Gross capital formation, % GDP..... | 22.5 | 58 |
| 3.3 Ecological sustainability..... | 48.4 | 33 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 7.2 | 61 |
| 3.3.2 Environmental performance*..... | 64.1 | 39 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 6.4 | 18 ● |
| 4 Market sophistication..... | 52.4 | 44 |
| 4.1 Credit..... | 44.5 | 36 |
| 4.1.1 Ease of getting credit*..... | 70.0 | 22 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 60.7 | 55 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|--|------|-------|
| 4.2 Investment..... | 26.0 | 117 ○ |
| 4.2.1 Ease of protecting investors*..... | 60.0 | 47 |
| 4.2.2 Market capitalization, % GDP..... | 3.9 | 104 ○ |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.1 | 98 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.1 | 36 |
| 4.3 Trade & competition..... | 86.7 | 17 ● |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition†..... | 76.8 | 21 |

| | | |
|--|-------------|-----------|
| 5 Business sophistication..... | 38.2 | 46 |
| 5.1 Knowledge workers..... | 41.6 | 58 |
| 5.1.1 Knowledge-intensive employment, %..... | 39.2 | 25 |
| 5.1.2 Firms offering formal training, % firms..... | 25.2 | 77 ○ |
| 5.1.3 GERD performed by business, % of GDP..... | 0.2 | 52 |
| 5.1.4 GERD financed by business, %..... | 21.8 | 58 ○ |
| 5.1.5 Females employed w/advanced degrees, % total..... | 23.0 | 13 ● |
| 5.2 Innovation linkages..... | 40.4 | 41 |
| 5.2.1 University/industry research collaboration†..... | 44.5 | 61 |
| 5.2.2 State of cluster development†..... | 41.7 | 87 ○ |
| 5.2.3 GERD financed by abroad, %..... | 51.6 | 4 ● |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 54 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓞ] | 0.1 | 43 |
| 5.3 Knowledge absorption..... | 32.7 | 70 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.3 | 79 ○ |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 7.6 | 57 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.3 | 44 |
| 5.3.4 FDI net inflows, % GDP..... | 2.8 | 66 |

| | | |
|---|-------------|-----------|
| 6 Knowledge & technology outputs..... | 34.9 | 38 |
| 6.1 Knowledge creation..... | 18.0 | 52 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 4.8 | 21 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.6 | 35 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 12.8 | 60 |
| 6.1.5 Citable documents H index..... | 94.0 | 75 |
| 6.2 Knowledge impact..... | 53.6 | 13 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 2.0 | 44 |
| 6.2.2 New businesses/th pop. 15–64..... | 11.6 | 9 ● |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 19.9 | 20 ● |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 14.1 | 67 ○ |
| 6.3 Knowledge diffusion..... | 33.0 | 46 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.1 | 51 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 5.8 | 28 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 2.1 | 37 |
| 6.3.4 FDI net outflows, % GDP..... | 1.3 | 46 |

| | | |
|--|-------------|-----------|
| 7 Creative outputs..... | 46.3 | 24 |
| 7.1 Intangible assets..... | 50.3 | 46 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 53.0 | 43 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 2.3 | 8 ● |
| 7.1.3 ICTs & business model creation†..... | 58.6 | 59 |
| 7.1.4 ICTs & organizational model creation†..... | 60.8 | 35 |
| 7.2 Creative goods & services..... | 45.5 | 6 ● |
| 7.2.1 Cultural & creative services exports, % total trade..... | 1.2 | 9 ● |
| 7.2.2 National feature films/mn pop. 15–69..... | 6.8 | 28 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | 2.3 | 21 |
| 7.2.5 Creative goods exports, % total trade..... | 3.1 | 13 ● |
| 7.3 Online creativity..... | 39.2 | 34 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 9.9 | 45 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 32.1 | 25 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 3087.0 | 44 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 92.2 | 10 ● |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓞ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|----------------------------------|
| Population (millions)..... | 5.0 |
| GDP (US\$ billions)..... | 49.9 |
| GDP per capita, PPP\$ | 15,077.6 |
| Income group..... | Upper-middle income |
| Region..... | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 33.8 | 74 |
| Innovation Output Sub-Index | 27.1 | 76 |
| Innovation Input Sub-Index..... | 40.5 | 77 |
| Innovation Efficiency Ratio..... | 0.7 | 87 |
| Global Innovation Index 2014 (out of 143) | 33.6 | 77 |

1 Institutions.....53.1 95

| | | | |
|---|------|-----|---|
| 1.1 Political environment..... | 26.5 | 127 | ○ |
| 1.1.1 Political stability*..... | 22.2 | 137 | ○ |
| 1.1.2 Government effectiveness*..... | 30.8 | 90 | |
| 1.2 Regulatory environment | 67.5 | 65 | |
| 1.2.1 Regulatory quality*..... | 45.5 | 78 | |
| 1.2.2 Rule of law*..... | 27.0 | 111 | |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.7 | 24 | ● |
| 1.3 Business environment..... | 65.4 | 82 | |
| 1.3.1 Ease of starting a business*..... | 80.8 | 97 | |
| 1.3.2 Ease of resolving insolvency*..... | 33.0 | 117 | ○ |
| 1.3.3 Ease of paying taxes*..... | 82.4 | 35 | |

2 Human capital & research.....38.1 42

| | | | |
|--|------|-----|---|
| 2.1 Education..... | 35.7 | 96 | |
| 2.1.1 Expenditure on education, % GDP | 2.6 | 117 | ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 5.1 | 112 | ○ |
| 2.1.3 School life expectancy, years..... | 13.8 | 64 | |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a | |
| 2.1.5 Pupil-teacher ratio, secondary..... | 8.2 | 9 | ● |
| 2.2 Tertiary education..... | 47.0 | 25 | ● |
| 2.2.1 Tertiary enrolment, % gross..... | 47.9 | 53 | |
| 2.2.2 Graduates in science & engineering, % [Ⓔ] | 23.3 | 32 | |
| 2.2.3 Tertiary inbound mobility, %..... | 12.8 | 13 | ● |
| 2.3 Research & development (R&D)..... | 31.5 | 32 | |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a | |
| 2.3.2 Gross expenditure on R&D, % GDP..... | n/a | n/a | |
| 2.3.3 QS university ranking, average score top 3*..... | 31.5 | 43 | |

3 Infrastructure.....36.5 80

| | | | |
|--|--------|-----|--|
| 3.1 Information & communication technologies (ICTs)..... | 43.2 | 78 | |
| 3.1.1 ICT access*..... | 64.5 | 58 | |
| 3.1.2 ICT use*..... | 43.3 | 52 | |
| 3.1.3 Government's online service*..... | 35.4 | 91 | |
| 3.1.4 E-participation*..... | 29.4 | 104 | |
| 3.2 General infrastructure..... | 29.2 | 76 | |
| 3.2.1 Electricity output, kWh/cap..... | 3346.7 | 54 | |
| 3.2.2 Logistics performance*..... | 28.8 | 80 | |
| 3.2.3 Gross capital formation, % GDP..... | 24.5 | 49 | |
| 3.3 Ecological sustainability..... | 37.0 | 74 | |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 9.1 | 40 | |
| 3.3.2 Environmental performance*..... | 50.2 | 81 | |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.4 | 87 | |

4 Market sophistication.....42.4 100

| | | | |
|---|------|-----|---|
| 4.1 Credit..... | 22.8 | 101 | |
| 4.1.1 Ease of getting credit*..... | 35.0 | 102 | |
| 4.1.2 Domestic credit to private sector, % GDP..... | 98.6 | 30 | ● |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.1 | 63 | |

| | | | |
|--|------|-----|---|
| 4.2 Investment..... | 25.1 | 123 | ○ |
| 4.2.1 Ease of protecting investors*..... | 49.2 | 93 | |
| 4.2.2 Market capitalization, % GDP..... | 23.8 | 63 | |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.9 | 66 | |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.1 | 27 | |
| 4.3 Trade & competition..... | 79.2 | 58 | |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 4.8 | 80 | |
| 4.3.2 Intensity of local competition [†] | 75.3 | 28 | ● |

5 Business sophistication.....32.6 77

| | | | |
|---|------|-----|---|
| 5.1 Knowledge workers..... | 42.0 | 55 | |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 31.9 | 43 | |
| 5.1.2 Firms offering formal training, % firms..... | 26.6 | 71 | |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a | |
| 5.1.4 GERD financed by business, %..... | n/a | n/a | |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a | |
| 5.2 Innovation linkages..... | 30.1 | 79 | |
| 5.2.1 University/industry research collaboration [†] | 31.4 | 115 | ○ |
| 5.2.2 State of cluster development [†] | 37.9 | 104 | |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a | |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 21 | ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓔ] | 0.0 | 65 | |
| 5.3 Knowledge absorption..... | 25.7 | 111 | |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 0.1 | 107 | ○ |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 2.8 | 126 | ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 1.1 | 56 | |
| 5.3.4 FDI net inflows, % GDP..... | 6.4 | 24 | ● |

6 Knowledge & technology outputs.....22.4 93

| | | | |
|---|-------|-----|---|
| 6.1 Knowledge creation..... | 15.0 | 60 | |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | n/a | n/a | |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | n/a | n/a | |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a | |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 13.1 | 59 | |
| 6.1.5 Citable documents H index..... | 109.0 | 67 | |
| 6.2 Knowledge impact..... | 25.8 | 118 | ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a | |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a | |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a | |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 9.8 | 43 | |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 22.0 | 51 | |
| 6.3 Knowledge diffusion..... | 26.3 | 76 | |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓔ] | 0.0 | 95 | ○ |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.1 | 100 | |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 1.3 | 66 | |
| 6.3.4 FDI net outflows, % GDP..... | 2.7 | 25 | ● |

7 Creative outputs.....31.8 73

| | | | |
|---|-------|-----|---|
| 7.1 Intangible assets..... | 34.4 | 117 | ○ |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | n/a | n/a | |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a | |
| 7.1.3 ICTs & business model creation [†] | 37.7 | 127 | ○ |
| 7.1.4 ICTs & organizational model creation [†] | 31.1 | 130 | ○ |
| 7.2 Creative goods & services..... | 37.9 | 21 | ● |
| 7.2.1 Cultural & creative services exports, % total trade..... | 1.3 | 8 | ● |
| 7.2.2 National feature films/mn pop. 15–69..... | 4.2 | 41 | |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 2.9 | 48 | |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 4.2 | 7 | ● |
| 7.2.5 Creative goods exports, % total trade [Ⓔ] | 0.7 | 50 | |
| 7.3 Online creativity..... | 20.7 | 64 | |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 9.0 | 47 | |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.4 | 106 | |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 876.3 | 81 | |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 67.1 | 59 | |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------|---------------------|
| Population (millions) | 2.1 |
| GDP (US\$ billions) | 2.2 |
| GDP per capita, PPP\$ | 2,410.9 |
| Income group | Lower-middle income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-------------|
| Global Innovation Index (out of 141) | 27.0 | 118 |
| Innovation Output Sub-Index | 18.0 | 125 |
| Innovation Input Sub-Index | 35.9 | 97 |
| Innovation Efficiency Ratio | 0.5 | 128 |
| Global Innovation Index 2014 (out of 143) | 27.0 | 117 |
| 1 Institutions | 59.3 | 74 ● |
| 1.1 Political environment | 51.6 | 65 ● |
| 1.1.1 Political stability* | 72.2 | 51 ● |
| 1.1.2 Government effectiveness* | 31.1 | 89 |
| 1.2 Regulatory environment | 62.9 | 79 |
| 1.2.1 Regulatory quality* | 38.5 | 97 |
| 1.2.2 Rule of law* | 40.7 | 75 ● |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 15.0 | 65 ● |
| 1.3 Business environment | 63.4 | 91 |
| 1.3.1 Ease of starting a business* | 82.8 | 88 |
| 1.3.2 Ease of resolving insolvency* | 37.5 | 107 |
| 1.3.3 Ease of paying taxes* | 69.7 | 86 |
| 2 Human capital & research | 25.6 | 85 |
| 2.1 Education | 63.0 | 8 ● |
| 2.1.1 Expenditure on education, % GDP [Ⓢ] | 13.0 | 1 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓢ] | 51.2 | 3 ● |
| 2.1.3 School life expectancy, years | 11.1 | 104 |
| 2.1.4 PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary | 24.7 | 94 |
| 2.2 Tertiary education | 13.8 | 115 |
| 2.2.1 Tertiary enrolment, % gross | 10.8 | 108 |
| 2.2.2 Graduates in science & engineering, % | 12.6 | 92 |
| 2.2.3 Tertiary inbound mobility, % | 0.5 | 96 |
| 2.3 Research & development (R&D) | 0.0 | 128 ○ |
| 2.3.1 Researchers, FTE/mn pop. [Ⓢ] | 5.9 | 105 ○ |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓢ] | 0.0 | 118 ○ |
| 2.3.3 QS university ranking, average score top 3* | 0.0 | 73 ○ |
| 3 Infrastructure | 26.8 | 111 |
| 3.1 Information & communication technologies (ICTs) | 16.3 | 132 ○ |
| 3.1.1 ICT access* | 30.2 | 117 |
| 3.1.2 ICT use* | 5.5 | 119 |
| 3.1.3 Government's online service* | 15.7 | 126 |
| 3.1.4 E-participation* | 13.7 | 129 ○ |
| 3.2 General infrastructure | 43.3 | 31 ● |
| 3.2.1 Electricity output, kWh/cap | n/a | n/a |
| 3.2.2 Logistics performance* | 10.8 | 119 |
| 3.2.3 Gross capital formation, % GDP | 35.6 | 11 ● |
| 3.3 Ecological sustainability | 20.8 | 133 ○ |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | n/a | n/a |
| 3.3.2 Environmental performance* | 20.8 | 138 ○ |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | n/a | n/a |
| 4 Market sophistication | 41.1 | 107 |
| 4.1 Credit | 15.1 | 123 |
| 4.1.1 Ease of getting credit* | 25.0 | 125 |
| 4.1.2 Domestic credit to private sector, % GDP | 20.2 | 115 |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a |

| | | |
|---|------|-------|
| 4.2 Investment | 49.2 | 31 |
| 4.2.1 Ease of protecting investors* | 49.2 | 93 |
| 4.2.2 Market capitalization, % GDP | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | n/a | n/a |
| 4.3 Trade & competition | 59.1 | 130 |
| 4.3.1 Applied tariff rate, weighted mean, % | 12.7 | 132 ○ |
| 4.3.2 Intensity of local competition† | 62.9 | 90 |

5 Business sophistication 26.8 114

| | | |
|--|------|------|
| 5.1 Knowledge workers | 25.6 | 103 |
| 5.1.1 Knowledge-intensive employment, % | 6.8 | 107 |
| 5.1.2 Firms offering formal training, % firms [Ⓢ] | 42.5 | 40 ● |
| 5.1.3 GERD performed by business, % of GDP | n/a | n/a |
| 5.1.4 GERD financed by business, % [Ⓢ] | 3.4 | 78 |
| 5.1.5 Females employed w/advanced degrees, % total | n/a | n/a |
| 5.2 Innovation linkages | 28.0 | 89 |
| 5.2.1 University/industry research collaboration† | 36.7 | 96 |
| 5.2.2 State of cluster development† | 47.5 | 62 ● |
| 5.2.3 GERD financed by abroad, % [Ⓢ] | 3.4 | 73 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | n/a | n/a |
| 5.3 Knowledge absorption | 26.9 | 106 |
| 5.3.1 Royalty & license fees payments, % total trade | 0.3 | 78 |
| 5.3.2 High-tech imports less re-imports, % total trade | n/a | n/a |
| 5.3.3 Comm., computer & info. services imp., % total trade | 0.7 | 81 |
| 5.3.4 FDI net inflows, % GDP | 2.0 | 84 |

6 Knowledge & technology outputs 12.2 132 ○

| | | |
|---|------|-------|
| 6.1 Knowledge creation | 3.6 | 120 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP | n/a | n/a |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 4.4 | 105 |
| 6.1.5 Citable documents H index | 23.0 | 138 ○ |
| 6.2 Knowledge impact | 5.1 | 131 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64 | 1.5 | 56 ● |
| 6.2.3 Computer software spending, % GDP | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 0.2 | 137 ○ |
| 6.2.5 High- & medium-high-tech manufactures, % | n/a | n/a |
| 6.3 Knowledge diffusion | 27.9 | 67 |
| 6.3.1 Royalty & license fees receipts, % total trade | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade | n/a | n/a |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓢ] | 0.3 | 107 |
| 6.3.4 FDI net outflows, % GDP | 0.7 | 58 ● |

7 Creative outputs 23.8 105

| | | |
|---|------|-------|
| 7.1 Intangible assets | 35.6 | 112 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | n/a | n/a |
| 7.1.3 ICTs & business model creation† | 38.3 | 125 ○ |
| 7.1.4 ICTs & organizational model creation† | 32.8 | 127 ○ |
| 7.2 Creative goods & services | n/a | n/a |
| 7.2.1 Cultural & creative services exports, % total trade | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade | n/a | n/a |
| 7.3 Online creativity | 0.2 | 127 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 0.2 | 123 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 0.2 | 113 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 37.3 | 127 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓢ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------|-------------|
| Population (millions) | 3.0 |
| GDP (US\$ billions) | 48.2 |
| GDP per capita, PPP\$ | 23,978.1 |
| Income group | High income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 42.3 | 38 |
| Innovation Output Sub-Index | 34.7 | 42 |
| Innovation Input Sub-Index | 49.9 | 35 |
| Innovation Efficiency Ratio | 0.7 | 74 |
| Global Innovation Index 2014 (out of 143) | 41.0 | 39 |

| | | | |
|----------|---|-------------|-----------|
| 1 | Institutions | 73.6 | 39 |
| 1.1 | Political environment | 75.3 | 32 |
| 1.1.1 | Political stability* | 87.0 | 25 |
| 1.1.2 | Government effectiveness* | 63.7 | 38 |
| 1.2 | Regulatory environment | 70.2 | 54 |
| 1.2.1 | Regulatory quality* | 77.9 | 24 |
| 1.2.2 | Rule of law* | 68.7 | 35 |
| 1.2.3 | Cost of redundancy dismissal, salary weeks | 24.6 | 110 ○ |
| 1.3 | Business environment | 75.3 | 46 |
| 1.3.1 | Ease of starting a business* | 96.2 | 11 ● |
| 1.3.2 | Ease of resolving insolvency* | 48.5 | 64 |
| 1.3.3 | Ease of paying taxes* | 81.2 | 39 |
| 2 | Human capital & research | 39.2 | 41 |
| 2.1 | Education | 52.4 | 40 |
| 2.1.1 | Expenditure on education, % GDP | 5.2 | 48 |
| 2.1.2 | Gov't expenditure/pupil, secondary, % GDP/cap | 19.5 | 60 |
| 2.1.3 | School life expectancy, years | 16.4 | 17 ● |
| 2.1.4 | PISA scales in reading, maths, & science | 483.9 | 32 |
| 2.1.5 | Pupil-teacher ratio, secondary | 8.3 | 10 ● |
| 2.2 | Tertiary education | 39.5 | 47 |
| 2.2.1 | Tertiary enrolment, % gross | 73.9 | 20 ● |
| 2.2.2 | Graduates in science & engineering, % | 22.1 | 36 |
| 2.2.3 | Tertiary inbound mobility, % | 1.8 | 70 |
| 2.3 | Research & development (R&D) | 25.5 | 37 |
| 2.3.1 | Researchers, FTE/mn pop. | 2836.3 | 29 |
| 2.3.2 | Gross expenditure on R&D, % GDP | 1.0 | 36 |
| 2.3.3 | QS university ranking, average score top 3* | 19.9 | 53 |
| 3 | Infrastructure | 48.2 | 40 |
| 3.1 | Information & communication technologies (ICTs) | 65.8 | 32 |
| 3.1.1 | ICT access* | 70.0 | 47 |
| 3.1.2 | ICT use* | 52.9 | 33 |
| 3.1.3 | Government's online service* | 75.6 | 21 ● |
| 3.1.4 | E-participation* | 64.7 | 33 |
| 3.2 | General infrastructure | 27.3 | 85 |
| 3.2.1 | Electricity output, kWh/cap | 1514.7 | 85 |
| 3.2.2 | Logistics performance* | 51.9 | 44 |
| 3.2.3 | Gross capital formation, % GDP | 19.6 | 93 |
| 3.3 | Ecological sustainability | 51.4 | 25 |
| 3.3.1 | GDP/unit of energy use, 2005 PPP\$/kg oil eq | 7.6 | 54 |
| 3.3.2 | Environmental performance* | 61.3 | 46 |
| 3.3.3 | ISO 14001 environmental certificates/bn PPP\$ GDP | 8.5 | 10 ● |
| 4 | Market sophistication | 51.9 | 48 |
| 4.1 | Credit | 42.0 | 40 |
| 4.1.1 | Ease of getting credit* | 70.0 | 22 |
| 4.1.2 | Domestic credit to private sector, % GDP | 46.2 | 71 |
| 4.1.3 | Microfinance gross loans, % GDP | n/a | n/a |

| | | | |
|-------|---------------------------------------|------|-------|
| 4.2 | Investment | 26.9 | 108 ○ |
| 4.2.1 | Ease of protecting investors* | 55.0 | 72 |
| 4.2.2 | Market capitalization, % GDP | 9.4 | 91 ○ |
| 4.2.3 | Total value of stocks traded, % GDP | 0.4 | 81 ○ |
| 4.2.4 | Venture capital deals/tr PPP\$ GDP | 0.2 | 18 |
| 4.3 | Trade & competition | 86.9 | 16 ● |
| 4.3.1 | Applied tariff rate, weighted mean, % | 1.0 | 9 |
| 4.3.2 | Intensity of local competition† | 77.1 | 20 ● |

| | | | |
|----------|--|-------------|-----------|
| 5 | Business sophistication | 36.4 | 59 |
| 5.1 | Knowledge workers | 52.4 | 33 |
| 5.1.1 | Knowledge-intensive employment, % | 42.8 | 19 ● |
| 5.1.2 | Firms offering formal training, % firms | 42.0 | 42 |
| 5.1.3 | GERD performed by business, % of GDP | 0.2 | 45 |
| 5.1.4 | GERD financed by business, % | 27.4 | 55 |
| 5.1.5 | Females employed w/advanced degrees, % total | 26.1 | 6 ● |
| 5.2 | Innovation linkages | 36.1 | 55 |
| 5.2.1 | University/industry research collaboration† | 60.1 | 26 |
| 5.2.2 | State of cluster development† | 41.7 | 86 |
| 5.2.3 | GERD financed by abroad, % | 37.1 | 13 ● |
| 5.2.4 | JV–strategic alliance deals/tr PPP\$ GDP | 0.0 | 68 ○ |
| 5.2.5 | Patent families 3+ offices/bn PPP\$ GDP | 0.0 | 58 |
| 5.3 | Knowledge absorption | 20.9 | 135 ○ |
| 5.3.1 | Royalty & license fees payments, % total trade | 0.1 | 98 ○ |
| 5.3.2 | High-tech imports less re-imports, % total trade | 4.7 | 103 ○ |
| 5.3.3 | Comm., computer & info. services imp., % total trade | 0.5 | 89 ○ |
| 5.3.4 | FDI net inflows, % GDP | 1.6 | 97 ○ |

| | | | |
|----------|--|-------------|-----------|
| 6 | Knowledge & technology outputs | 28.3 | 55 |
| 6.1 | Knowledge creation | 17.3 | 53 |
| 6.1.1 | Domestic resident patent app/bn PPP\$ GDP | 1.5 | 56 |
| 6.1.2 | PCT resident patent app/bn PPP\$ GDP | 0.6 | 33 |
| 6.1.3 | Domestic res utility model app/bn PPP\$ GDP | n/a | n/a |
| 6.1.4 | Scientific & technical articles/bn PPP\$ GDP | 25.5 | 34 |
| 6.1.5 | Citable documents H index | 122.0 | 58 |
| 6.2 | Knowledge impact | 44.0 | 41 |
| 6.2.1 | Growth rate of PPP\$ GDP/worker, % | 2.0 | 46 |
| 6.2.2 | New businesses/th pop. 15–64 | 4.7 | 24 |
| 6.2.3 | Computer software spending, % GDP | n/a | n/a |
| 6.2.4 | ISO 9001 quality certificates/bn PPP\$ GDP | 14.6 | 27 |
| 6.2.5 | High- & medium-high-tech manufactures, % | 20.6 | 55 |
| 6.3 | Knowledge diffusion | 23.7 | 96 |
| 6.3.1 | Royalty & license fees receipts, % total trade | 0.1 | 66 |
| 6.3.2 | High-tech exports less re-exports, % total trade | 4.8 | 32 |
| 6.3.3 | Comm., computer & info. services exp., % total trade | 0.6 | 91 ○ |
| 6.3.4 | FDI net outflows, % GDP | 0.6 | 63 |

| | | | |
|----------|---|-------------|-----------|
| 7 | Creative outputs | 41.0 | 35 |
| 7.1 | Intangible assets | 51.0 | 42 |
| 7.1.1 | Domestic res trademark app/bn PPP\$ GDP | 51.4 | 46 |
| 7.1.2 | Madrid trademark app. holders/bn PPP\$ GDP | 1.5 | 22 |
| 7.1.3 | ICTs & business model creation† | 66.9 | 26 |
| 7.1.4 | ICTs & organizational model creation† | 66.3 | 22 |
| 7.2 | Creative goods & services | 22.4 | 58 |
| 7.2.1 | Cultural & creative services exports, % total trade | 0.3 | 44 |
| 7.2.2 | National feature films/mn pop. 15–69 | 6.8 | 29 |
| 7.2.3 | Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 | Printing & publishing output manufactures, % | 0.9 | 74 ○ |
| 7.2.5 | Creative goods exports, % total trade | 1.5 | 33 |
| 7.3 | Online creativity | 39.5 | 33 |
| 7.3.1 | Generic top-level domains (TLDs)/th pop. 15–69 | 14.1 | 37 |
| 7.3.2 | Country-code TLDs/th pop. 15–69 | 32.3 | 24 |
| 7.3.3 | Wikipedia edits/pop. 15–69 | 3619.1 | 36 |
| 7.3.4 | Video uploads on YouTube/pop. 15–69 | 84.8 | 25 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓜ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|-------------|
| Population (millions) | 0.5 |
| GDP (US\$ billions) | 62.4 |
| GDP per capita, PPP\$ | 79,977.0 |
| Income group | High income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 59.0 | 9 |
| Innovation Output Sub-Index | 59.0 | 2 ● |
| Innovation Input Sub-Index | 59.0 | 20 |
| Innovation Efficiency Ratio | 1.0 | 3 ● |
| Global Innovation Index 2014 (out of 143) | 56.9 | 9 |
| 1 Institutions | 83.5 | 18 |
| 1.1 Political environment | 91.1 | 8 |
| 1.1.1 Political stability* | 97.1 | 6 |
| 1.1.2 Government effectiveness* | 85.1 | 12 |
| 1.2 Regulatory environment | 83.9 | 22 |
| 1.2.1 Regulatory quality* | 94.7 | 10 |
| 1.2.2 Rule of law* | 95.2 | 9 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 21.7 | 99 ○ |
| 1.3 Business environment | 75.6 | 44 |
| 1.3.1 Ease of starting a business* | 86.5 | 68 |
| 1.3.2 Ease of resolving insolvency* | 51.8 | 59 |
| 1.3.3 Ease of paying taxes* | 88.6 | 19 |
| 2 Human capital & research | 40.8 | 34 |
| 2.1 Education | 51.1 | 46 |
| 2.1.1 Expenditure on education, % GDP | n/a | n/a |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 18.3 | 66 |
| 2.1.3 School life expectancy, years | 13.8 | 61 |
| 2.1.4 PISA scales in reading, maths, & science | 489.6 | 26 |
| 2.1.5 Pupil-teacher ratio, secondary | 7.9 | 4 ● |
| 2.2 Tertiary education | 42.7 | 36 |
| 2.2.1 Tertiary enrolment, % gross | 19.7 | 91 |
| 2.2.2 Graduates in science & engineering, % | 14.7 | 84 ○ |
| 2.2.3 Tertiary inbound mobility, % | 40.6 | 1 ● |
| 2.3 Research & development (R&D) | 28.8 | 35 |
| 2.3.1 Researchers, FTE/mn pop. | 4930.8 | 10 |
| 2.3.2 Gross expenditure on R&D, % GDP | 1.2 | 31 |
| 2.3.3 QS university ranking, average score top 3* | 0.0 | 73 ○ |
| 3 Infrastructure | 54.2 | 25 |
| 3.1 Information & communication technologies (ICTs) | 72.1 | 23 |
| 3.1.1 ICT access* | 94.6 | 1 ● |
| 3.1.2 ICT use* | 76.6 | 8 |
| 3.1.3 Government's online service* | 62.2 | 42 |
| 3.1.4 E-participation* | 54.9 | 54 |
| 3.2 General infrastructure | 38.5 | 45 |
| 3.2.1 Electricity output, kWh/cap | 3301.8 | 56 |
| 3.2.2 Logistics performance* | 91.1 | 8 |
| 3.2.3 Gross capital formation, % GDP | 18.8 | 105 ○ |
| 3.3 Ecological sustainability | 52.1 | 22 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 8.9 | 43 |
| 3.3.2 Environmental performance* | 83.3 | 2 ● |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 18.3 | 50 |
| 4 Market sophistication | 56.2 | 31 |
| 4.1 Credit | 34.1 | 55 |
| 4.1.1 Ease of getting credit* | 15.0 | 129 ○ |
| 4.1.2 Domestic credit to private sector, % GDP | 162.4 | 11 |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a |
| 4.2 Investment | 50.9 | 27 |
| 4.2.1 Ease of protecting investors* | 46.7 | 102 ○ |
| 4.2.2 Market capitalization, % GDP | 125.0 | 6 |
| 4.2.3 Total value of stocks traded, % GDP | 0.2 | 91 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.7 | 5 |
| 4.3 Trade & competition | 83.7 | 34 |
| 4.3.1 Applied tariff rate, weighted mean, % | 1.0 | 9 |
| 4.3.2 Intensity of local competition [†] | 70.8 | 52 |
| 5 Business sophistication | 60.2 | 2 |
| 5.1 Knowledge workers | 61.5 | 18 |
| 5.1.1 Knowledge-intensive employment, % | 59.1 | 1 ● |
| 5.1.2 Firms offering formal training, % firms | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP | 0.7 | 27 |
| 5.1.4 GERD financed by business, % | 20.5 | 60 |
| 5.1.5 Females employed w/advanced degrees, % total | 20.3 | 22 |
| 5.2 Innovation linkages | 57.6 | 6 |
| 5.2.1 University/industry research collaboration [†] | 65.0 | 17 |
| 5.2.2 State of cluster development [†] | 64.2 | 16 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 20.4 | 21 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.1 | 3 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 1.7 | 10 |
| 5.3 Knowledge absorption | 61.7 | 4 ● |
| 5.3.1 Royalty & license fees payments, % total trade | 0.9 | 36 |
| 5.3.2 High-tech imports less re-imports, % total trade | 3.9 | 113 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade | 3.2 | 4 ● |
| 5.3.4 FDI net inflows, % GDP | 49.8 | 1 ● |
| 6 Knowledge & technology outputs | 49.1 | 13 |
| 6.1 Knowledge creation | 36.9 | 25 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP | 2.3 | 44 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP | 7.6 | 6 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 19.3 | 41 |
| 6.1.5 Citable documents H index | 92.0 | 76 |
| 6.2 Knowledge impact | 43.1 | 44 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | -0.2 | 102 ○ |
| 6.2.2 New businesses/th pop. 15–64 | 21.0 | 1 ● |
| 6.2.3 Computer software spending, % GDP | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 5.3 | 61 |
| 6.2.5 High- & medium-high-tech manufactures, % | 3.4 | 92 ○ |
| 6.3 Knowledge diffusion | 67.2 | 4 ● |
| 6.3.1 Royalty & license fees receipts, % total trade | 0.9 | 17 |
| 6.3.2 High-tech exports less re-exports, % total trade | 1.0 | 65 |
| 6.3.3 Comm., computer & info. services exp., % total trade | 4.7 | 7 |
| 6.3.4 FDI net outflows, % GDP | 610.0 | 1 ● |
| 7 Creative outputs | 69.0 | 2 |
| 7.1 Intangible assets | 75.5 | 1 ● |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP | 122.4 | 6 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | 6.8 | 1 ● |
| 7.1.3 ICTs & business model creation [†] | 76.1 | 7 |
| 7.1.4 ICTs & organizational model creation [†] | 69.3 | 16 |
| 7.2 Creative goods & services | 43.2 | 8 |
| 7.2.1 Cultural & creative services exports, % total trade | 5.7 | 1 ● |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓔ] | 42.9 | 1 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 1.6 | 42 |
| 7.2.5 Creative goods exports, % total trade | 0.2 | 81 |
| 7.3 Online creativity | 81.7 | 4 ● |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 100.0 | 1 ● |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 90.9 | 8 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 7322.3 | 14 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Madagascar

Key indicators

| | |
|-----------------------------|--------------------|
| Population (millions) | 23.6 |
| GDP (US\$ billions) | 10.6 |
| GDP per capita, PPP\$ | 990.5 |
| Income group | Low income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|--------------|
| Global Innovation Index (out of 141) | 24.4 | 125 |
| Innovation Output Sub-Index | 18.2 | 123 |
| Innovation Input Sub-Index | 30.7 | 123 |
| Innovation Efficiency Ratio | 0.6 | 116 |
| Global Innovation Index 2014 (out of 143) | 25.5 | 124 |
| 1 Institutions | 52.0 | 99 |
| 1.1 Political environment | 28.8 | 123 |
| 1.1.1 Political stability* | 46.5 | 106 |
| 1.1.2 Government effectiveness* | 11.0 | 133 |
| 1.2 Regulatory environment | 59.2 | 87 |
| 1.2.1 Regulatory quality* | 30.0 | 114 |
| 1.2.2 Rule of law* | 23.8 | 120 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 12.2 | 48 ● |
| 1.3 Business environment | 68.1 | 75 |
| 1.3.1 Ease of starting a business* | 92.0 | 32 ● |
| 1.3.2 Ease of resolving insolvency* | 34.4 | 113 |
| 1.3.3 Ease of paying taxes* | 77.8 | 53 ● |
| 2 Human capital & research | 15.3 | 120 |
| 2.1 Education | 22.5 | 130 |
| 2.1.1 Expenditure on education, % GDP | 2.7 | 113 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 8.4 | 106 |
| 2.1.3 School life expectancy, years | 10.3 | 112 |
| 2.1.4 PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary | 27.6 | 103 |
| 2.2 Tertiary education | 22.5 | 96 |
| 2.2.1 Tertiary enrolment, % gross | 4.1 | 127 |
| 2.2.2 Graduates in science & engineering, % | 20.5 | 53 |
| 2.2.3 Tertiary inbound mobility, % | 1.7 | 72 |
| 2.3 Research & development (R&D) | 0.9 | 116 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 51.0 | 88 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.1 | 106 |
| 2.3.3 QS university ranking, average score top 3* | 0.0 | 73 ○ |
| 3 Infrastructure | 17.3 | 137 ○ |
| 3.1 Information & communication technologies (ICTs) | 19.4 | 124 |
| 3.1.1 ICT access* | 16.8 | 137 ○ |
| 3.1.2 ICT use* | 0.9 | 134 ○ |
| 3.1.3 Government's online service* | 24.4 | 113 |
| 3.1.4 E-participation* | 35.3 | 88 |
| 3.2 General infrastructure | 14.5 | 133 |
| 3.2.1 Electricity output, kWh/cap | n/a | n/a |
| 3.2.2 Logistics performance* | 11.3 | 118 |
| 3.2.3 Gross capital formation, % GDP | 15.6 | 121 |
| 3.3 Ecological sustainability | 18.0 | 138 ○ |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | n/a | n/a |
| 3.3.2 Environmental performance* | 26.7 | 134 ○ |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 0.1 | 130 |
| 4 Market sophistication | 41.8 | 103 |
| 4.1 Credit | 6.6 | 137 ○ |
| 4.1.1 Ease of getting credit* | 5.0 | 138 ○ |
| 4.1.2 Domestic credit to private sector, % GDP | 11.9 | 134 ○ |
| 4.1.3 Microfinance gross loans, % GDP | 1.0 | 38 ● |

| | | |
|---|------|-----|
| 4.2 Investment | 53.3 | 20 |
| 4.2.1 Ease of protecting investors* | 53.3 | 79 |
| 4.2.2 Market capitalization, % GDP | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | n/a | n/a |
| 4.3 Trade & competition | 65.6 | 115 |
| 4.3.1 Applied tariff rate, weighted mean, % | 9.1 | 116 |
| 4.3.2 Intensity of local competition [†] | 63.3 | 87 |

5 Business sophistication **26.9** **113**

| | | |
|---|------|-------|
| 5.1 Knowledge workers | 8.2 | 137 ○ |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 3.5 | 114 ○ |
| 5.1.2 Firms offering formal training, % firms | 12.7 | 103 |
| 5.1.3 GERD performed by business, % of GDP | n/a | n/a |
| 5.1.4 GERD financed by business, % | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total [Ⓔ] | 2.3 | 82 |
| 5.2 Innovation linkages | 25.3 | 99 |
| 5.2.1 University/industry research collaboration [†] | 37.6 | 90 |
| 5.2.2 State of cluster development [†] | 31.1 | 127 ○ |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 10.6 | 41 ● |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | n/a | n/a |
| 5.3 Knowledge absorption | 47.2 | 19 ● |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 0.7 | 46 ● |
| 5.3.2 High-tech imports less re-imports, % total trade | 4.2 | 110 |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 3.0 | 5 ● |
| 5.3.4 FDI net inflows, % GDP | 7.8 | 16 ● |

6 Knowledge & technology outputs **14.2** **124**

| | | |
|---|------|-------|
| 6.1 Knowledge creation | 3.8 | 116 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | 0.1 | 96 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | 0.1 | 72 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 5.7 | 92 |
| 6.1.5 Citable documents H index | 62.0 | 102 |
| 6.2 Knowledge impact | 20.0 | 122 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | -0.6 | 107 |
| 6.2.2 New businesses/th pop. 15–64 | 0.1 | 103 ○ |
| 6.2.3 Computer software spending, % GDP | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 1.4 | 106 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 2.4 | 94 |
| 6.3 Knowledge diffusion | 19.0 | 113 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓔ] | 0.2 | 31 ● |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.1 | 116 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 1.7 | 53 |
| 6.3.4 FDI net outflows, % GDP | n/a | n/a |

7 Creative outputs **22.1** **113**

| | | |
|---|------|-------|
| 7.1 Intangible assets | 35.1 | 116 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | 51.5 | 45 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | 0.1 | 59 |
| 7.1.3 ICTs & business model creation [†] | 47.3 | 101 |
| 7.1.4 ICTs & organizational model creation [†] | 47.0 | 95 |
| 7.2 Creative goods & services | 18.0 | 74 |
| 7.2.1 Cultural & creative services exports, % total trade | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 2.1 | 27 ● |
| 7.2.5 Creative goods exports, % total trade [Ⓔ] | 0.1 | 90 |
| 7.3 Online creativity | 0.1 | 135 ○ |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 0.2 | 129 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 0.1 | 126 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 16.1 | 134 ○ |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------|--------------------|
| Population (millions) | 16.8 |
| GDP (US\$ billions) | 4.3 |
| GDP per capita, PPP\$ | 920.0 |
| Income group | Low income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|--------------|
| Global Innovation Index (out of 141) | 29.7 | 98 |
| Innovation Output Sub-Index | 25.4 | 89 |
| Innovation Input Sub-Index | 34.0 | 111 |
| Innovation Efficiency Ratio | 0.7 | 53 ● |
| Global Innovation Index 2014 (out of 143) | 27.6 | 113 |
| 1 Institutions | 51.6 | 103 |
| 1.1 Political environment | 42.4 | 90 |
| 1.1.1 Political stability* | 58.6 | 80 |
| 1.1.2 Government effectiveness* | 26.2 | 104 |
| 1.2 Regulatory environment | 59.5 | 86 |
| 1.2.1 Regulatory quality* | 29.7 | 115 |
| 1.2.2 Rule of law* | 42.6 | 69 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 16.6 | 74 |
| 1.3 Business environment | 53.0 | 125 |
| 1.3.1 Ease of starting a business* | 68.5 | 124 |
| 1.3.2 Ease of resolving insolvency* | 19.0 | 138 ○ |
| 1.3.3 Ease of paying taxes* | 71.4 | 81 |
| 2 Human capital & research | 11.5 | 136 ○ |
| 2.1 Education | 31.9 | 109 |
| 2.1.1 Expenditure on education, % GDP | 5.4 | 43 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 33.2 | 15 ● |
| 2.1.3 School life expectancy, years [Ⓔ] | 10.8 | 109 |
| 2.1.4 PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary | 41.7 | 120 ○ |
| 2.2 Tertiary education | 2.4 | 137 ○ |
| 2.2.1 Tertiary enrolment, % gross [Ⓔ] | 0.8 | 134 ○ |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, % [Ⓔ] | 1.1 | 81 |
| 2.3 Research & development (R&D) | 0.3 | 124 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 48.8 | 90 |
| 2.3.2 Gross expenditure on R&D, % GDP | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3* | 0.0 | 73 ○ |
| 3 Infrastructure | 23.9 | 118 |
| 3.1 Information & communication technologies (ICTs) | 15.7 | 134 ○ |
| 3.1.1 ICT access* | 18.9 | 134 ○ |
| 3.1.2 ICT use* | 3.1 | 126 ○ |
| 3.1.3 Government's online service* | 17.3 | 122 |
| 3.1.4 E-participation* | 23.5 | 115 |
| 3.2 General infrastructure | 28.0 | 81 |
| 3.2.1 Electricity output, kWh/cap | n/a | n/a |
| 3.2.2 Logistics performance* | 33.3 | 70 |
| 3.2.3 Gross capital formation, % GDP | 19.9 | 86 |
| 3.3 Ecological sustainability | 27.9 | 107 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | n/a | n/a |
| 3.3.2 Environmental performance* | 40.1 | 107 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 0.5 | 85 |
| 4 Market sophistication | 39.2 | 114 |
| 4.1 Credit | 20.8 | 111 |
| 4.1.1 Ease of getting credit* | 25.0 | 125 ○ |
| 4.1.2 Domestic credit to private sector, % GDP | 18.5 | 116 |
| 4.1.3 Microfinance gross loans, % GDP | 2.7 | 20 ● |

| | | |
|---|------|-----|
| 4.2 Investment | 25.3 | 122 |
| 4.2.1 Ease of protecting investors* | 45.0 | 114 |
| 4.2.2 Market capitalization, % GDP | 17.8 | 76 |
| 4.2.3 Total value of stocks traded, % GDP | 0.4 | 83 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | n/a | n/a |
| 4.3 Trade & competition | 71.7 | 90 |
| 4.3.1 Applied tariff rate, weighted mean, % | 6.4 | 94 |
| 4.3.2 Intensity of local competition [†] | 65.8 | 73 |

| | | |
|---|-------------|-----------|
| 5 Business sophistication | 43.7 | 32 |
| 5.1 Knowledge workers | 59.4 | 25 |
| 5.1.1 Knowledge-intensive employment, % | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 48.4 | 31 ● |
| 5.1.3 GERD performed by business, % of GDP | n/a | n/a |
| 5.1.4 GERD financed by business, % | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total | n/a | n/a |
| 5.2 Innovation linkages | 40.1 | 43 |
| 5.2.1 University/industry research collaboration [†] | 30.7 | 116 |
| 5.2.2 State of cluster development [†] | 44.8 | 76 |
| 5.2.3 GERD financed by abroad, % | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | n/a | n/a |
| 5.3 Knowledge absorption | 31.6 | 80 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 0.0 | 116 ○ |
| 5.3.2 High-tech imports less re-imports, % total trade | 13.3 | 20 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 0.4 | 109 |
| 5.3.4 FDI net inflows, % GDP | 3.2 | 59 ● |

| | | |
|---|-------------|-----------|
| 6 Knowledge & technology outputs | 26.7 | 66 |
| 6.1 Knowledge creation | 23.9 | 41 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP | n/a | n/a |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 26.2 | 30 ● |
| 6.1.5 Citable documents H index | 89.0 | 81 |
| 6.2 Knowledge impact | 28.5 | 112 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 1.7 | 52 ● |
| 6.2.2 New businesses/th pop. 15–64 [Ⓔ] | 0.1 | 102 ○ |
| 6.2.3 Computer software spending, % GDP | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 1.7 | 98 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 8.6 | 82 |
| 6.3 Knowledge diffusion | 27.7 | 68 |
| 6.3.1 Royalty & license fees receipts, % total trade | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade | 1.0 | 64 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 1.2 | 73 |
| 6.3.4 FDI net outflows, % GDP [Ⓔ] | 1.2 | 48 ● |

| | | |
|---|-------------|------------|
| 7 Creative outputs | 24.1 | 104 |
| 7.1 Intangible assets | 42.1 | 88 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 42.6 | 118 |
| 7.1.4 ICTs & organizational model creation [†] | 41.6 | 111 |
| 7.2 Creative goods & services | 12.3 | 89 |
| 7.2.1 Cultural & creative services exports, % total trade | 0.0 | 67 |
| 7.2.2 National feature films/mn pop. 15–69 | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 1.7 | 35 ● |
| 7.2.5 Creative goods exports, % total trade [Ⓔ] | 0.1 | 93 |
| 7.3 Online creativity | 0.1 | 132 ○ |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 0.2 | 124 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 0.1 | 120 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 14.2 | 135 ○ |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

[Ⓔ] indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|-----------------------------|
| Population (millions)..... | 30.2 |
| GDP (US\$ billions)..... | 326.9 |
| GDP per capita, PPP\$..... | 18,639.2 |
| Income group..... | Upper-middle income |
| Region..... | South East Asia and Oceania |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 46.0 | 32 |
| Innovation Output Sub-Index..... | 39.2 | 34 |
| Innovation Input Sub-Index..... | 52.8 | 31 |
| Innovation Efficiency Ratio..... | 0.7 | 56 |
| Global Innovation Index 2014 (out of 143)..... | 45.6 | 33 |

| | | |
|--|-------------|-----------|
| 1 Institutions..... | 71.7 | 42 |
| 1.1 Political environment..... | 68.3 | 42 |
| 1.1.1 Political stability*..... | 65.4 | 63 |
| 1.1.2 Government effectiveness*..... | 71.1 | 31 |
| 1.2 Regulatory environment..... | 65.4 | 74 |
| 1.2.1 Regulatory quality*..... | 64.2 | 43 |
| 1.2.2 Rule of law*..... | 60.3 | 45 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 23.9 | 108 ○ |
| 1.3 Business environment..... | 81.5 | 22 |
| 1.3.1 Ease of starting a business*..... | 94.9 | 13 |
| 1.3.2 Ease of resolving insolvency*..... | 65.6 | 34 |
| 1.3.3 Ease of paying taxes*..... | 84.0 | 29 |
| 2 Human capital & research..... | 39.9 | 37 |
| 2.1 Education..... | 42.3 | 77 |
| 2.1.1 Expenditure on education, % GDP..... | 5.9 | 31 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 19.9 | 57 |
| 2.1.3 School life expectancy, years [Ⓔ] | 12.7 | 82 |
| 2.1.4 PISA scales in reading, maths, & science..... | 412.7 | 51 ○ |
| 2.1.5 Pupil-teacher ratio, secondary..... | 13.9 | 53 |
| 2.2 Tertiary education..... | 45.1 | 29 |
| 2.2.1 Tertiary enrolment, % gross..... | 37.2 | 69 |
| 2.2.2 Graduates in science & engineering, %..... | 30.9 | 9 ● |
| 2.2.3 Tertiary inbound mobility, %..... | 5.2 | 34 |
| 2.3 Research & development (R&D)..... | 32.4 | 31 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 1777.2 | 37 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 1.1 | 32 |
| 2.3.3 QS university ranking, average score top 3*..... | 49.4 | 27 |
| 3 Infrastructure..... | 46.7 | 44 |
| 3.1 Information & communication technologies (ICTs)..... | 54.5 | 49 |
| 3.1.1 ICT access*..... | 65.8 | 54 |
| 3.1.2 ICT use*..... | 31.6 | 65 |
| 3.1.3 Government's online service*..... | 67.7 | 31 |
| 3.1.4 E-participation*..... | 52.9 | 59 |
| 3.2 General infrastructure..... | 44.3 | 30 |
| 3.2.1 Electricity output, kWh/cap..... | 4595.8 | 46 |
| 3.2.2 Logistics performance*..... | 72.9 | 24 |
| 3.2.3 Gross capital formation, % GDP..... | 26.7 | 39 |
| 3.3 Ecological sustainability..... | 41.2 | 52 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 7.0 | 65 |
| 3.3.2 Environmental performance*..... | 59.3 | 48 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 3.2 | 30 |
| 4 Market sophistication..... | 58.0 | 27 |
| 4.1 Credit..... | 37.3 | 48 |
| 4.1.1 Ease of getting credit*..... | 70.0 | 22 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 124.0 | 22 |
| 4.1.3 Microfinance gross loans, % GDP [Ⓔ] | 0.1 | 65 ○ |

| | | |
|---|-------------|-----------|
| 4.2 Investment..... | 56.2 | 16 |
| 4.2.1 Ease of protecting investors*..... | 74.2 | 5 ● |
| 4.2.2 Market capitalization, % GDP..... | 156.0 | 4 ● |
| 4.2.3 Total value of stocks traded, % GDP..... | 40.8 | 20 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 46 |
| 4.3 Trade & competition..... | 80.6 | 51 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 4.0 | 63 |
| 4.3.2 Intensity of local competition [†] | 74.9 | 32 |
| 5 Business sophistication..... | 47.6 | 22 |
| 5.1 Knowledge workers..... | 48.1 | 38 |
| 5.1.1 Knowledge-intensive employment, %..... | 24.7 | 57 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 50.1 | 28 |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 0.7 | 26 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 60.2 | 11 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 10.5 | 60 ○ |
| 5.2 Innovation linkages..... | 38.7 | 46 |
| 5.2.1 University/industry research collaboration [†] | 72.1 | 12 ● |
| 5.2.2 State of cluster development [†] | 71.3 | 8 ● |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 4.6 | 66 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 23 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 56 |
| 5.3 Knowledge absorption..... | 55.8 | 6 ● |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.6 | 51 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 23.4 | 1 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.3 | 43 |
| 5.3.4 FDI net inflows, % GDP..... | 3.7 | 43 |
| 6 Knowledge & technology outputs..... | 36.2 | 35 |
| 6.1 Knowledge creation..... | 9.3 | 76 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 1.7 | 49 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.4 | 42 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 0.1 | 53 ○ |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 13.9 | 54 |
| 6.1.5 Citable documents H index..... | 145.0 | 51 |
| 6.2 Knowledge impact..... | 48.0 | 27 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 3.0 | 29 |
| 6.2.2 New businesses/th pop. 15–64..... | 2.3 | 44 |
| 6.2.3 Computer software spending, % GDP..... | 0.4 | 20 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 17.3 | 22 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 42.0 | 19 |
| 6.3 Knowledge diffusion..... | 51.3 | 12 ● |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.0 | 74 ○ |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 27.8 | 1 ● |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.2 | 75 |
| 6.3.4 FDI net outflows, % GDP..... | 4.2 | 12 |
| 7 Creative outputs..... | 42.1 | 32 |
| 7.1 Intangible assets..... | 53.5 | 32 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 21.2 | 80 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 75.0 | 10 ● |
| 7.1.4 ICTs & organizational model creation [†] | 74.9 | 4 ● |
| 7.2 Creative goods & services..... | 37.7 | 22 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | 3.4 | 47 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 10.7 | 32 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 0.9 | 78 ○ |
| 7.2.5 Creative goods exports, % total trade..... | 10.3 | 3 ● |
| 7.3 Online creativity..... | 23.7 | 57 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 7.6 | 49 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 5.3 | 52 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 1677.1 | 60 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 69.6 | 56 ○ |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|--------------------|
| Population (millions) | 15.8 |
| GDP (US\$ billions) | 11.9 |
| GDP per capita, PPP\$ | 1,156.6 |
| Income group | Low income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 28.4 | 105 |
| Innovation Output Sub-Index | 26.4 | 81 |
| Innovation Input Sub-Index..... | 30.4 | 125 |
| Innovation Efficiency Ratio..... | 0.9 | 14 ● |
| Global Innovation Index 2014 (out of 143) | 26.2 | 119 |
| 1 Institutions..... | 45.0 | 122 |
| 1.1 Political environment..... | 20.6 | 135 |
| 1.1.1 Political stability*..... | 22.5 | 136 ○ |
| 1.1.2 Government effectiveness*..... | 18.7 | 120 |
| 1.2 Regulatory environment | 60.0 | 85 |
| 1.2.1 Regulatory quality*..... | 34.4 | 108 |
| 1.2.2 Rule of law*..... | 27.7 | 109 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 13.6 | 57 ● |
| 1.3 Business environment..... | 54.5 | 119 |
| 1.3.1 Ease of starting a business*..... | 62.9 | 133 |
| 1.3.2 Ease of resolving insolvency*..... | 40.4 | 100 |
| 1.3.3 Ease of paying taxes*..... | 60.2 | 111 |
| 2 Human capital & research..... | 14.7 | 124 |
| 2.1 Education | 34.9 | 101 |
| 2.1.1 Expenditure on education, % GDP | 4.8 | 65 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 31.2 | 21 ● |
| 2.1.3 School life expectancy, years [Ⓐ] | 8.4 | 126 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 19.3 | 81 |
| 2.2 Tertiary education..... | 4.0 | 134 ○ |
| 2.2.1 Tertiary enrolment, % gross..... | 7.5 | 120 |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, % [Ⓐ] | 0.5 | 94 |
| 2.3 Research & development (R&D)..... | 5.3 | 81 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓐ] | 31.6 | 101 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓐ] | 0.7 | 53 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 19.9 | 130 |
| 3.1 Information & communication technologies (ICTs)..... | 16.5 | 129 |
| 3.1.1 ICT access*..... | 35.5 | 107 |
| 3.1.2 ICT use*..... | 1.4 | 133 ○ |
| 3.1.3 Government's online service*..... | 13.4 | 131 |
| 3.1.4 E-participation*..... | 15.7 | 126 |
| 3.2 General infrastructure..... | 30.9 | 68 |
| 3.2.1 Electricity output, kWh/cap..... | n/a | n/a |
| 3.2.2 Logistics performance*..... | 17.0 | 109 |
| 3.2.3 Gross capital formation, % GDP..... | 25.6 | 41 ● |
| 3.3 Ecological sustainability | 12.4 | 141 ○ |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | n/a | n/a |
| 3.3.2 Environmental performance*..... | 18.4 | 139 ○ |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.0 | 134 ○ |
| 4 Market sophistication | 41.2 | 106 |
| 4.1 Credit..... | 14.8 | 124 |
| 4.1.1 Ease of getting credit*..... | 30.0 | 113 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 22.8 | 113 |
| 4.1.3 Microfinance gross loans, % GDP | 0.7 | 41 |

| | | |
|---|------|------|
| 4.2 Investment | 42.5 | 45 ● |
| 4.2.1 Ease of protecting investors*..... | 42.5 | 120 |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition | 66.1 | 110 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 8.4 | 111 |
| 4.3.2 Intensity of local competition [†] | 61.7 | 94 |

5 Business sophistication **31.1** **87**

| | | |
|---|------|------|
| 5.1 Knowledge workers..... | 22.3 | 114 |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 32.1 | 57 |
| 5.1.3 GERD performed by business, % of GDP [Ⓐ] | 0.0 | 81 |
| 5.1.4 GERD financed by business, % [Ⓐ] | 10.1 | 70 |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages | 30.8 | 74 |
| 5.2.1 University/industry research collaboration [†] | 36.7 | 97 |
| 5.2.2 State of cluster development [†] | 49.2 | 53 ● |
| 5.2.3 GERD financed by abroad, % [Ⓐ] | 8.8 | 47 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 33 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a |
| 5.3 Knowledge absorption..... | 40.2 | 41 ● |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓐ] | 0.1 | 108 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 5.1 | 97 |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓐ] | 2.6 | 7 ● |
| 5.3.4 FDI net inflows, % GDP..... | 3.7 | 41 ● |

6 Knowledge & technology outputs **24.8** **77**

| | | |
|---|------|-------|
| 6.1 Knowledge creation..... | 6.0 | 95 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 4.9 | 98 |
| 6.1.5 Citable documents H index..... | 59.0 | 107 |
| 6.2 Knowledge impact..... | 42.6 | 46 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 1.8 | 49 ● |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.2 | 139 ○ |
| 6.2.5 High- & medium-high-tech manufactures, % | n/a | n/a |
| 6.3 Knowledge diffusion..... | 25.8 | 82 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓐ] | 0.0 | 93 |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.1 | 107 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓐ] | 3.3 | 17 ● |
| 6.3.4 FDI net outflows, % GDP [Ⓐ] | 0.0 | 96 |

7 Creative outputs **28.0** **87**

| | | |
|--|------|-------|
| 7.1 Intangible assets..... | 55.7 | 24 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 59.1 | 55 ● |
| 7.1.4 ICTs & organizational model creation [†] | 52.4 | 67 |
| 7.2 Creative goods & services..... | 0.3 | 136 ○ |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.0 | 80 |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓐ] | 0.1 | 103 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade [Ⓐ] | 0.0 | 127 ○ |
| 7.3 Online creativity..... | 0.1 | 136 ○ |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.2 | 127 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.0 | 140 ○ |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 12.7 | 137 ○ |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|-------------|
| Population (millions)..... | 0.4 |
| GDP (US\$ billions)..... | 10.6 |
| GDP per capita, PPP\$..... | 28,741.0 |
| Income group..... | High income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 50.5 | 26 |
| Innovation Output Sub-Index..... | 49.2 | 13 |
| Innovation Input Sub-Index..... | 51.8 | 33 |
| Innovation Efficiency Ratio..... | 0.9 | 7 ● |
| Global Innovation Index 2014 (out of 143)..... | 50.4 | 25 |
| 1 Institutions..... | 80.6 | 24 |
| 1.1 Political environment..... | 82.1 | 21 |
| 1.1.1 Political stability*..... | 89.0 | 18 |
| 1.1.2 Government effectiveness*..... | 75.1 | 24 |
| 1.2 Regulatory environment..... | 91.2 | 15 |
| 1.2.1 Regulatory quality*..... | 82.1 | 20 |
| 1.2.2 Rule of law*..... | 82.8 | 23 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.0 | 1 ● |
| 1.3 Business environment..... | 68.6 | 73 |
| 1.3.1 Ease of starting a business*..... | 75.3 | 110 ○ |
| 1.3.2 Ease of resolving insolvency*..... | 44.8 | 81 |
| 1.3.3 Ease of paying taxes*..... | 85.8 | 25 |
| 2 Human capital & research..... | 39.3 | 40 |
| 2.1 Education..... | 70.4 | 4 ● |
| 2.1.1 Expenditure on education, % GDP..... | 8.0 | 7 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 66.4 | 2 ● |
| 2.1.3 School life expectancy, years..... | 14.4 | 50 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 8.5 | 12 |
| 2.2 Tertiary education..... | 32.3 | 68 |
| 2.2.1 Tertiary enrolment, % gross..... | 41.2 | 63 |
| 2.2.2 Graduates in science & engineering, %..... | 19.1 | 59 |
| 2.2.3 Tertiary inbound mobility, %..... | 4.8 | 35 |
| 2.3 Research & development (R&D)..... | 15.1 | 55 |
| 2.3.1 Researchers, FTE/mn pop..... | 2039.6 | 34 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.9 | 38 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 48.0 | 41 |
| 3.1 Information & communication technologies (ICTs)..... | 58.0 | 44 |
| 3.1.1 ICT access*..... | 89.8 | 7 ● |
| 3.1.2 ICT use*..... | 54.8 | 31 |
| 3.1.3 Government's online service*..... | 40.2 | 80 |
| 3.1.4 E-participation*..... | 47.1 | 70 |
| 3.2 General infrastructure..... | 28.6 | 77 |
| 3.2.1 Electricity output, kWh/cap..... | 5452.4 | 37 |
| 3.2.2 Logistics performance*..... | 48.2 | 49 |
| 3.2.3 Gross capital formation, % GDP..... | 16.9 | 117 ○ |
| 3.3 Ecological sustainability..... | 57.4 | 8 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 14.5 | 3 ● |
| 3.3.2 Environmental performance*..... | 67.4 | 34 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 2.6 | 40 |
| 4 Market sophistication..... | 50.3 | 54 |
| 4.1 Credit..... | 24.4 | 91 ○ |
| 4.1.1 Ease of getting credit*..... | 10.0 | 133 ○ |
| 4.1.2 Domestic credit to private sector, % GDP..... | 119.3 | 24 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|-------------|------------|
| 4.2 Investment..... | 36.0 | 65 |
| 4.2.1 Ease of protecting investors*..... | 59.2 | 49 |
| 4.2.2 Market capitalization, % GDP..... | 41.0 | 49 |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.5 | 79 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 90.7 | 4 ● |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition†..... | 84.8 | 2 ● |
| 5 Business sophistication..... | 40.8 | 38 |
| 5.1 Knowledge workers..... | 49.0 | 37 |
| 5.1.1 Knowledge-intensive employment, %..... | 40.6 | 22 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP..... | 0.5 | 33 |
| 5.1.4 GERD financed by business, %..... | 44.3 | 29 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 12.2 | 53 ○ |
| 5.2 Innovation linkages..... | 41.7 | 33 |
| 5.2.1 University/industry research collaboration†..... | 47.6 | 49 |
| 5.2.2 State of cluster development†..... | 50.7 | 46 |
| 5.2.3 GERD financed by abroad, %..... | 20.2 | 22 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.7 | 21 |
| 5.3 Knowledge absorption..... | 31.8 | 77 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.5 | 16 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 13.4 | 19 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.2 | 47 |
| 5.3.4 FDI net inflows, % GDP..... | -19.4 | 140 ○ |
| 6 Knowledge & technology outputs..... | 38.5 | 29 |
| 6.1 Knowledge creation..... | 22.3 | 43 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 1.0 | 62 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 4.1 | 12 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 17.1 | 45 |
| 6.1.5 Citable documents H index..... | 70.0 | 96 ○ |
| 6.2 Knowledge impact..... | 51.8 | 16 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | -0.3 | 104 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 13.6 | 6 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 34.3 | 6 ● |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 0.3 | 100 ○ |
| 6.3 Knowledge diffusion..... | 41.5 | 32 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.2 | 35 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 11.8 | 18 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.3 | 70 |
| 6.3.4 FDI net outflows, % GDP..... | 2.8 | 22 |
| 7 Creative outputs..... | 59.8 | 6 ● |
| 7.1 Intangible assets..... | 66.3 | 5 ● |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 132.5 | 4 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation†..... | 64.2 | 35 |
| 7.1.4 ICTs & organizational model creation†..... | 60.2 | 39 |
| 7.2 Creative goods & services..... | 47.3 | 5 ● |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.2 | 50 |
| 7.2.2 National feature films/mn pop. 15–69..... | 6.2 | 31 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 36.2 | 1 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.9 | 40 |
| 7.3 Online creativity..... | 59.3 | 18 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 100.0 | 1 ● |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 8.2 | 45 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 9424.4 | 5 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------|
| Population (millions)..... | 1.2 |
| GDP (US\$ billions)..... | 13.2 |
| GDP per capita, PPP\$..... | 16,820.3 |
| Income group..... | Upper-middle income |
| Region..... | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-------------|
| Global Innovation Index (out of 141)..... | 39.2 | 49 |
| Innovation Output Sub-Index..... | 31.0 | 60 |
| Innovation Input Sub-Index..... | 47.5 | 44 |
| Innovation Efficiency Ratio..... | 0.7 | 96 |
| Global Innovation Index 2014 (out of 143)..... | 40.9 | 40 |
| 1 Institutions..... | 80.7 | 23 |
| 1.1 Political environment..... | 76.2 | 31 |
| 1.1.1 Political stability*..... | 87.3 | 22 ● |
| 1.1.2 Government effectiveness*..... | 65.1 | 36 |
| 1.2 Regulatory environment..... | 83.5 | 23 |
| 1.2.1 Regulatory quality*..... | 72.8 | 31 |
| 1.2.2 Rule of law*..... | 71.6 | 34 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 10.6 | 39 |
| 1.3 Business environment..... | 82.4 | 20 ● |
| 1.3.1 Ease of starting a business*..... | 92.5 | 26 |
| 1.3.2 Ease of resolving insolvency*..... | 62.8 | 41 |
| 1.3.3 Ease of paying taxes*..... | 91.9 | 13 ● |
| 2 Human capital & research..... | 23.1 | 95 |
| 2.1 Education..... | 43.8 | 72 |
| 2.1.1 Expenditure on education, % GDP..... | 3.7 | 96 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 19.0 | 61 |
| 2.1.3 School life expectancy, years..... | 15.6 | 31 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 14.7 | 62 |
| 2.2 Tertiary education..... | 23.5 | 92 |
| 2.2.1 Tertiary enrolment, % gross..... | 41.2 | 64 |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | 2.9 | 55 |
| 2.3 Research & development (R&D)..... | 2.1 | 101 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 183.9 | 68 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.2 | 91 ○ |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 40.5 | 66 |
| 3.1 Information & communication technologies (ICTs)..... | 48.3 | 66 |
| 3.1.1 ICT access*..... | 63.2 | 61 |
| 3.1.2 ICT use*..... | 29.7 | 72 |
| 3.1.3 Government's online service*..... | 47.2 | 68 |
| 3.1.4 E-participation*..... | 52.9 | 59 |
| 3.2 General infrastructure..... | 23.6 | 106 |
| 3.2.1 Electricity output, kWh/cap..... | 2168.2 | 74 |
| 3.2.2 Logistics performance*..... | 18.0 | 106 ○ |
| 3.2.3 Gross capital formation, % GDP..... | 23.2 | 55 |
| 3.3 Ecological sustainability..... | 49.5 | 30 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 13.9 | 6 ● |
| 3.3.2 Environmental performance*..... | 58.1 | 53 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.6 | 74 |
| 4 Market sophistication..... | 63.7 | 15 ● |
| 4.1 Credit..... | 50.0 | 22 ● |
| 4.1.1 Ease of getting credit*..... | 65.0 | 34 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 108.1 | 28 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|------|------|
| 4.2 Investment..... | 54.0 | 19 ● |
| 4.2.1 Ease of protecting investors*..... | 65.0 | 28 |
| 4.2.2 Market capitalization, % GDP..... | 62.0 | 29 |
| 4.2.3 Total value of stocks traded, % GDP..... | 2.6 | 57 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.8 | 1 ● |
| 4.3 Trade & competition..... | 87.0 | 15 ● |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 0.8 | 5 ● |
| 4.3.2 Intensity of local competition [†] | 76.7 | 22 |

5 Business sophistication.....29.5 98

| | | |
|---|------|------|
| 5.1 Knowledge workers..... | 24.6 | 106 |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 20.4 | 71 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 25.6 | 74 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, % [Ⓔ] | 0.3 | 88 ○ |
| 5.1.5 Females employed w/advanced degrees, % total [Ⓔ] | 7.4 | 72 ○ |
| 5.2 Innovation linkages..... | 35.8 | 57 |
| 5.2.1 University/industry research collaboration [†] | 36.5 | 98 |
| 5.2.2 State of cluster development [†] | 54.8 | 33 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 6.4 | 59 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 8 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓔ] | 0.2 | 35 |
| 5.3 Knowledge absorption..... | 28.0 | 100 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.2 | 87 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 5.1 | 98 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.2 | 50 |
| 5.3.4 FDI net inflows, % GDP..... | 2.2 | 77 |

6 Knowledge & technology outputs.....27.2 62

| | | |
|---|-------|-------|
| 6.1 Knowledge creation..... | 3.5 | 123 ○ |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 0.1 | 102 ○ |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 4.5 | 103 |
| 6.1.5 Citable documents H index..... | 45.0 | 120 ○ |
| 6.2 Knowledge impact..... | 27.6 | 113 ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | 7.4 | 17 ● |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 10.0 | 41 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 9.2 | 80 ○ |
| 6.3 Knowledge diffusion..... | 50.5 | 13 ● |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.0 | 71 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.1 | 113 ○ |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 2.6 | 27 |
| 6.3.4 FDI net outflows, % GDP..... | 210.2 | 1 ● |

7 Creative outputs.....34.8 57

| | | |
|--|-------|------|
| 7.1 Intangible assets..... | 44.8 | 72 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 35.3 | 66 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 58.9 | 57 |
| 7.1.4 ICTs & organizational model creation [†] | 56.9 | 53 |
| 7.2 Creative goods & services..... | 41.0 | 13 ● |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.0 | 74 ○ |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓔ] | 32.6 | 1 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | 3.2 | 10 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.8 | 44 |
| 7.3 Online creativity..... | 8.5 | 82 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 14.9 | 35 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 3.4 | 62 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 998.8 | 74 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------------------|
| Population (millions) | 123.8 |
| GDP (US\$ billions) | 1,282.7 |
| GDP per capita, PPP\$ | 16,111.5 |
| Income group | Upper-middle income |
| Region | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 38.0 | 57 |
| Innovation Output Sub-Index | 32.2 | 54 |
| Innovation Input Sub-Index | 43.9 | 58 |
| Innovation Efficiency Ratio | 0.7 | 61 |
| Global Innovation Index 2014 (out of 143) | 36.0 | 66 |

| | | |
|---|-------------|-----------|
| 1 Institutions | 61.5 | 66 |
| 1.1 Political environment | 47.8 | 76 |
| 1.1.1 Political stability* | 45.9 | 107 ○ |
| 1.1.2 Government effectiveness* | 49.7 | 54 |
| 1.2 Regulatory environment | 59.2 | 88 |
| 1.2.1 Regulatory quality* | 60.0 | 51 |
| 1.2.2 Rule of law* | 32.3 | 96 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 22.0 | 103 |
| 1.3 Business environment | 77.5 | 34 |
| 1.3.1 Ease of starting a business* | 88.9 | 57 |
| 1.3.2 Ease of resolving insolvency* | 72.6 | 25 ● |
| 1.3.3 Ease of paying taxes* | 71.2 | 83 |
| 2 Human capital & research | 34.3 | 52 |
| 2.1 Education | 38.9 | 87 |
| 2.1.1 Expenditure on education, % GDP | 5.1 | 50 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 15.9 | 78 |
| 2.1.3 School life expectancy, years | 13.1 | 80 |
| 2.1.4 PISA scales in reading, maths, & science | 417.3 | 47 ○ |
| 2.1.5 Pupil-teacher ratio, secondary | 17.7 | 77 |
| 2.2 Tertiary education | 44.4 | 34 |
| 2.2.1 Tertiary enrolment, % gross | 29.0 | 77 |
| 2.2.2 Graduates in science & engineering, % | 26.9 | 18 ● |
| 2.2.3 Tertiary inbound mobility, % | n/a | n/a |
| 2.3 Research & development (R&D) | 19.8 | 47 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 386.4 | 63 |
| 2.3.2 Gross expenditure on R&D, % GDP | 0.5 | 62 |
| 2.3.3 QS university ranking, average score top 3* | 43.2 | 33 ● |
| 3 Infrastructure | 39.5 | 69 |
| 3.1 Information & communication technologies (ICTs) | 49.9 | 59 |
| 3.1.1 ICT access* | 48.0 | 81 |
| 3.1.2 ICT use* | 24.5 | 85 |
| 3.1.3 Government's online service* | 66.1 | 35 |
| 3.1.4 E-participation* | 60.8 | 45 |
| 3.2 General infrastructure | 30.4 | 70 |
| 3.2.1 Electricity output, kWh/cap | 2518.7 | 69 |
| 3.2.2 Logistics performance* | 49.3 | 48 |
| 3.2.3 Gross capital formation, % GDP | 21.9 | 69 |
| 3.3 Ecological sustainability | 38.4 | 66 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 8.7 | 44 |
| 3.3.2 Environmental performance* | 55.0 | 59 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 0.5 | 79 |
| 4 Market sophistication | 47.0 | 69 |
| 4.1 Credit | 30.0 | 75 |
| 4.1.1 Ease of getting credit* | 80.0 | 11 ● |
| 4.1.2 Domestic credit to private sector, % GDP | 30.6 | 99 |
| 4.1.3 Microfinance gross loans, % GDP | 0.1 | 66 |

| | | |
|--|------|------|
| 4.2 Investment | 30.2 | 96 |
| 4.2.1 Ease of protecting investors* | 57.5 | 60 |
| 4.2.2 Market capitalization, % GDP | 44.3 | 45 |
| 4.2.3 Total value of stocks traded, % GDP | 10.0 | 39 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.0 | 62 ○ |
| 4.3 Trade & competition | 80.7 | 50 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 2.2 | 47 |
| 4.3.2 Intensity of local competition [†] | 68.9 | 62 |

| | | |
|---|-------------|-----------|
| 5 Business sophistication | 36.9 | 56 |
| 5.1 Knowledge workers | 37.1 | 72 |
| 5.1.1 Knowledge-intensive employment, % | 19.1 | 77 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 50.8 | 27 |
| 5.1.3 GERD performed by business, % of GDP | 0.2 | 51 |
| 5.1.4 GERD financed by business, % | 31.7 | 46 |
| 5.1.5 Females employed w/advanced degrees, % total | 8.2 | 68 ○ |
| 5.2 Innovation linkages | 23.4 | 108 ○ |
| 5.2.1 University/industry research collaboration [†] | 49.5 | 42 |
| 5.2.2 State of cluster development [†] | 52.5 | 42 |
| 5.2.3 GERD financed by abroad, % | 0.7 | 93 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 82 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 0.0 | 66 |
| 5.3 Knowledge absorption | 50.4 | 13 ● |
| 5.3.1 Royalty & license fees payments, % total trade | 0.4 | 65 |
| 5.3.2 High-tech imports less re-imports, % total trade | 17.7 | 9 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP | 3.0 | 64 |

| | | |
|--|-------------|-----------|
| 6 Knowledge & technology outputs | 29.4 | 50 |
| 6.1 Knowledge creation | 8.4 | 83 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | 0.6 | 73 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | 0.1 | 58 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | 0.3 | 43 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 5.5 | 95 |
| 6.1.5 Citable documents H index | 261.0 | 33 ● |
| 6.2 Knowledge impact | 32.4 | 96 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 0.3 | 92 ○ |
| 6.2.2 New businesses/th pop. 15–64 | 0.9 | 73 |
| 6.2.3 Computer software spending, % GDP | 0.2 | 70 ○ |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 2.6 | 87 |
| 6.2.5 High- & medium-high-tech manufactures, % | 43.7 | 12 ● |
| 6.3 Knowledge diffusion | 47.5 | 22 ● |
| 6.3.1 Royalty & license fees receipts, % total trade | 0.6 | 23 ● |
| 6.3.2 High-tech exports less re-exports, % total trade | 14.4 | 10 ● |
| 6.3.3 Comm., computer & info. services exp., % total trade | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP | 1.0 | 53 |

| | | |
|---|-------------|-----------|
| 7 Creative outputs | 35.0 | 56 |
| 7.1 Intangible assets | 43.9 | 78 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | 37.4 | 65 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 56.9 | 65 |
| 7.1.4 ICTs & organizational model creation [†] | 54.7 | 61 |
| 7.2 Creative goods & services | 29.3 | 38 |
| 7.2.1 Cultural & creative services exports, % total trade | 0.0 | 70 ○ |
| 7.2.2 National feature films/mn pop. 15–69 | 1.5 | 66 |
| 7.2.3 Global ent. & media output/th pop. 15–69 | 8.0 | 39 |
| 7.2.4 Printing & publishing output manufactures, % | 0.6 | 88 ○ |
| 7.2.5 Creative goods exports, % total trade | 9.8 | 5 ● |
| 7.3 Online creativity | 22.8 | 60 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 3.1 | 71 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 3.6 | 60 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 1479.0 | 65 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 73.7 | 48 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------|
| Population (millions)..... | 3.5 |
| GDP (US\$ billions)..... | 7.9 |
| GDP per capita, PPP\$..... | 3,926.9 |
| Income group..... | Lower-middle income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 40.5 | 44 |
| Innovation Output Sub-Index..... | 40.1 | 31 |
| Innovation Input Sub-Index..... | 41.0 | 74 |
| Innovation Efficiency Ratio..... | 1.0 | 5 ● |
| Global Innovation Index 2014 (out of 143)..... | 40.7 | 43 |
| 1 Institutions..... | 59.0 | 75 |
| 1.1 Political environment..... | 47.0 | 78 |
| 1.1.1 Political stability*..... | 63.3 | 68 |
| 1.1.2 Government effectiveness*..... | 30.6 | 92 |
| 1.2 Regulatory environment..... | 56.1 | 98 |
| 1.2.1 Regulatory quality*..... | 45.5 | 79 |
| 1.2.2 Rule of law*..... | 36.7 | 84 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 22.6 | 104 |
| 1.3 Business environment..... | 74.0 | 53 |
| 1.3.1 Ease of starting a business*..... | 92.2 | 30 |
| 1.3.2 Ease of resolving insolvency*..... | 53.3 | 56 |
| 1.3.3 Ease of paying taxes*..... | 76.6 | 57 |
| 2 Human capital & research..... | 27.6 | 74 |
| 2.1 Education..... | 55.8 | 26 ● |
| 2.1.1 Expenditure on education, % GDP..... | 8.3 | 5 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 37.8 | 9 ● |
| 2.1.3 School life expectancy, years..... | 11.9 | 94 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 9.6 | 24 ● |
| 2.2 Tertiary education..... | 21.5 | 100 |
| 2.2.1 Tertiary enrolment, % gross..... | 41.3 | 62 |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | 1.9 | 67 |
| 2.3 Research & development (R&D)..... | 5.7 | 78 |
| 2.3.1 Researchers, FTE/mn pop..... | 752.2 | 53 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.4 | 73 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 36.0 | 82 |
| 3.1 Information & communication technologies (ICTs)..... | 55.1 | 48 |
| 3.1.1 ICT access*..... | 65.6 | 55 |
| 3.1.2 ICT use*..... | 39.4 | 57 |
| 3.1.3 Government's online service*..... | 52.8 | 60 |
| 3.1.4 E-participation*..... | 62.7 | 40 |
| 3.2 General infrastructure..... | 24.1 | 104 |
| 3.2.1 Electricity output, kWh/cap..... | 1629.8 | 83 |
| 3.2.2 Logistics performance*..... | 25.1 | 89 |
| 3.2.3 Gross capital formation, % GDP..... | 22.7 | 57 |
| 3.3 Ecological sustainability..... | 28.9 | 98 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 4.0 | 108 ○ |
| 3.3.2 Environmental performance*..... | 53.4 | 66 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.5 | 84 |
| 4 Market sophistication..... | 50.6 | 52 |
| 4.1 Credit..... | 36.6 | 51 |
| 4.1.1 Ease of getting credit*..... | 70.0 | 22 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 39.7 | 85 |
| 4.1.3 Microfinance gross loans, % GDP..... | 2.3 | 23 |

| | | |
|--|------|------|
| 4.2 Investment..... | 38.9 | 56 |
| 4.2.1 Ease of protecting investors*..... | 58.3 | 54 |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP [Ⓜ] | 0.2 | 88 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 76.2 | 72 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 2.6 | 53 |
| 4.3.2 Intensity of local competition [†] | 61.4 | 95 |

5 Business sophistication..... 31.7 83

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 36.8 | 74 |
| 5.1.1 Knowledge-intensive employment, %..... | 30.0 | 47 |
| 5.1.2 Firms offering formal training, % firms..... | 32.8 | 56 |
| 5.1.3 GERD performed by business, % of GDP..... | 0.1 | 66 ○ |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | 13.9 | 42 |
| 5.2 Innovation linkages..... | 20.9 | 121 ○ |
| 5.2.1 University/industry research collaboration [†] | 29.0 | 120 ○ |
| 5.2.2 State of cluster development [†] | 23.2 | 133 ○ |
| 5.2.3 GERD financed by abroad, %..... | 11.8 | 39 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.1 | 37 |
| 5.3 Knowledge absorption..... | 37.4 | 52 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.5 | 56 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 7.0 | 65 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.8 | 21 ● |
| 5.3.4 FDI net inflows, % GDP..... | 3.2 | 61 |

6 Knowledge & technology outputs..... 39.6 26 ●

| | | |
|---|------|------|
| 6.1 Knowledge creation..... | 43.2 | 20 ● |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 4.0 | 25 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.2 | 52 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 12.6 | 1 ● |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 13.8 | 55 |
| 6.1.5 Citable documents H index..... | 68.0 | 97 |
| 6.2 Knowledge impact..... | 42.6 | 45 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 5.3 | 4 ● |
| 6.2.2 New businesses/th pop. 15–64 [Ⓜ] | 1.6 | 53 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 7.2 | 48 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 8.3 | 83 ○ |
| 6.3 Knowledge diffusion..... | 33.0 | 47 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.1 | 50 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.3 | 85 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 4.1 | 11 ● |
| 6.3.4 FDI net outflows, % GDP..... | 0.5 | 66 |

7 Creative outputs..... 40.5 38

| | | |
|--|-------|-------|
| 7.1 Intangible assets..... | 68.1 | 3 ● |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 176.7 | 1 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 4.2 | 1 ● |
| 7.1.3 ICTs & business model creation [†] | 45.2 | 112 ○ |
| 7.1.4 ICTs & organizational model creation [†] | 43.1 | 103 ○ |
| 7.2 Creative goods & services..... | 21.7 | 62 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.8 | 23 |
| 7.2.2 National feature films/mn pop. 15–69..... | 1.1 | 72 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | 2.4 | 20 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.1 | 99 ○ |
| 7.3 Online creativity..... | 4.3 | 93 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 2.9 | 73 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 4.0 | 59 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 812.6 | 83 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓜ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|-----------------------------|
| Population (millions) | 2.9 |
| GDP (US\$ billions) | 12.0 |
| GDP per capita, PPP\$ | 6,630.6 |
| Income group | Lower-middle income |
| Region | South East Asia and Oceania |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 36.4 | 66 |
| Innovation Output Sub-Index | 27.6 | 73 |
| Innovation Input Sub-Index | 45.2 | 53 |
| Innovation Efficiency Ratio | 0.6 | 111 |
| Global Innovation Index 2014 (out of 143) | 37.5 | 56 |
| 1 Institutions..... | 63.4 | 60 |
| 1.1 Political environment..... | 51.6 | 66 |
| 1.1.1 Political stability*..... | 76.5 | 44 |
| 1.1.2 Government effectiveness*..... | 26.8 | 103 |
| 1.2 Regulatory environment | 68.9 | 58 |
| 1.2.1 Regulatory quality*..... | 40.2 | 89 |
| 1.2.2 Rule of law*..... | 37.8 | 82 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.6 | 20 ● |
| 1.3 Business environment..... | 69.7 | 66 |
| 1.3.1 Ease of starting a business*..... | 91.3 | 37 |
| 1.3.2 Ease of resolving insolvency*..... | 43.9 | 84 |
| 1.3.3 Ease of paying taxes*..... | 73.8 | 66 |
| 2 Human capital & research..... | 26.4 | 79 |
| 2.1 Education | 45.6 | 66 |
| 2.1.1 Expenditure on education, % GDP | 5.5 | 42 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓔ] | 17.8 | 70 |
| 2.1.3 School life expectancy, years [Ⓔ] | 14.6 | 48 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓔ] | 14.5 | 58 |
| 2.2 Tertiary education..... | 30.7 | 73 |
| 2.2.1 Tertiary enrolment, % gross..... | 62.3 | 35 |
| 2.2.2 Graduates in science & engineering, % [Ⓔ] | 17.6 | 65 |
| 2.2.3 Tertiary inbound mobility, %..... | 0.6 | 89 |
| 2.3 Research & development (R&D)..... | 2.9 | 94 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.3 | 81 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 43.5 | 52 |
| 3.1 Information & communication technologies (ICTs)..... | 48.7 | 64 |
| 3.1.1 ICT access*..... | 47.9 | 82 |
| 3.1.2 ICT use*..... | 16.9 | 95 |
| 3.1.3 Government's online service*..... | 61.4 | 43 |
| 3.1.4 E-participation*..... | 68.6 | 30 |
| 3.2 General infrastructure..... | 54.7 | 14 ● |
| 3.2.1 Electricity output, kWh/cap..... | 1720.0 | 80 |
| 3.2.2 Logistics performance*..... | 9.9 | 120 ○ |
| 3.2.3 Gross capital formation, % GDP..... | 54.3 | 1 ● |
| 3.3 Ecological sustainability | 27.1 | 111 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 5.2 | 94 |
| 3.3.2 Environmental performance*..... | 44.7 | 95 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.1 | 127 ○ |
| 4 Market sophistication | 55.9 | 33 |
| 4.1 Credit..... | 58.7 | 12 ● |
| 4.1.1 Ease of getting credit*..... | 55.0 | 56 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 67.3 | 52 |
| 4.1.3 Microfinance gross loans, % GDP..... | 18.9 | 1 ● |

| | | |
|--|-------------|-----------|
| 4.2 Investment | 35.7 | 66 |
| 4.2.1 Ease of protecting investors*..... | 67.5 | 17 ● |
| 4.2.2 Market capitalization, % GDP..... | 12.5 | 82 |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.4 | 82 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition | 73.4 | 84 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 5.1 | 83 |
| 4.3.2 Intensity of local competition [†] | 64.7 | 79 |
| 5 Business sophistication | 36.9 | 55 |
| 5.1 Knowledge workers..... | 41.9 | 56 |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 24.3 | 61 |
| 5.1.2 Firms offering formal training, % firms..... | 62.3 | 9 ● |
| 5.1.3 GERD performed by business, % of GDP..... | 0.0 | 80 ○ |
| 5.1.4 GERD financed by business, %..... | 8.3 | 71 |
| 5.1.5 Females employed w/advanced degrees, % total [Ⓔ] | 15.4 | 36 |
| 5.2 Innovation linkages | 24.1 | 106 |
| 5.2.1 University/industry research collaboration [†] | 33.1 | 111 ○ |
| 5.2.2 State of cluster development [†] | 30.8 | 128 ○ |
| 5.2.3 GERD financed by abroad, %..... | 4.9 | 64 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 20 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓔ] | 0.1 | 40 |
| 5.3 Knowledge absorption..... | 44.8 | 28 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.2 | 84 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 6.8 | 67 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.7 | 26 |
| 5.3.4 FDI net inflows, % GDP..... | 18.7 | 6 ● |
| 6 Knowledge & technology outputs | 23.8 | 85 |
| 6.1 Knowledge creation..... | 50.6 | 13 ● |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP [Ⓔ] | 5.4 | 20 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP [Ⓔ] | 6.2 | 5 ● |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 6.1 | 91 |
| 6.1.5 Citable documents H index..... | 61.0 | 104 |
| 6.2 Knowledge impact..... | 4.5 | 132 ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.5 | 122 ○ |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 5.5 | 88 ○ |
| 6.3 Knowledge diffusion..... | 16.4 | 125 ○ |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.0 | 91 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.4 | 83 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 0.2 | 110 ○ |
| 6.3.4 FDI net outflows, % GDP..... | 0.4 | 73 |
| 7 Creative outputs | 31.3 | 74 |
| 7.1 Intangible assets..... | 49.3 | 50 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 135.2 | 3 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.0 | 62 ○ |
| 7.1.3 ICTs & business model creation [†] | 52.2 | 81 |
| 7.1.4 ICTs & organizational model creation [†] | 44.0 | 100 |
| 7.2 Creative goods & services..... | 23.4 | 54 |
| 7.2.1 Cultural & creative services exports, % total trade [Ⓔ] | 0.0 | 64 |
| 7.2.2 National feature films/mn pop. 15–69..... | 10.5 | 16 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | 2.9 | 12 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.1 | 105 |
| 7.3 Online creativity..... | 3.4 | 100 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.7 | 109 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 2.1 | 71 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 984.7 | 75 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------|
| Population (millions)..... | 0.6 |
| GDP (US\$ billions)..... | 4.5 |
| GDP per capita, PPP\$..... | 12,412.0 |
| Income group..... | Upper-middle income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 41.2 | 41 |
| Innovation Output Sub-Index..... | 36.5 | 40 |
| Innovation Input Sub-Index..... | 45.9 | 50 |
| Innovation Efficiency Ratio..... | 0.8 | 29 ● |
| Global Innovation Index 2014 (out of 143)..... | 37.0 | 59 |
| 1 Institutions..... | 69.5 | 47 |
| 1.1 Political environment..... | 60.9 | 51 |
| 1.1.1 Political stability*..... | 76.1 | 45 |
| 1.1.2 Government effectiveness*..... | 45.6 | 60 |
| 1.2 Regulatory environment..... | 71.1 | 48 |
| 1.2.1 Regulatory quality*..... | 49.1 | 71 |
| 1.2.2 Rule of law*..... | 48.2 | 61 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 11.2 | 42 |
| 1.3 Business environment..... | 76.6 | 38 |
| 1.3.1 Ease of starting a business*..... | 90.1 | 47 |
| 1.3.2 Ease of resolving insolvency*..... | 68.2 | 31 ● |
| 1.3.3 Ease of paying taxes*..... | 71.6 | 77 |
| 2 Human capital & research..... | 35.9 | 49 |
| 2.1 Education..... | 54.3 | 33 |
| 2.1.1 Expenditure on education, % GDP..... | n/a | n/a |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years [Ⓔ] | 15.2 | 39 |
| 2.1.4 PISA scales in reading, maths, & science..... | 413.9 | 49 ○ |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a |
| 2.2 Tertiary education..... | 47.2 | 23 |
| 2.2.1 Tertiary enrolment, % gross [Ⓔ] | 55.5 | 46 |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 6.2 | 77 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 762.9 | 52 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.4 | 68 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 39.3 | 70 |
| 3.1 Information & communication technologies (ICTs)..... | 53.2 | 51 |
| 3.1.1 ICT access*..... | 67.4 | 51 |
| 3.1.2 ICT use*..... | 33.7 | 62 |
| 3.1.3 Government's online service*..... | 52.8 | 60 |
| 3.1.4 E-participation*..... | 58.8 | 49 |
| 3.2 General infrastructure..... | 27.5 | 84 |
| 3.2.1 Electricity output, kWh/cap..... | 4587.1 | 47 |
| 3.2.2 Logistics performance*..... | 36.4 | 64 |
| 3.2.3 Gross capital formation, % GDP..... | 19.6 | 92 |
| 3.3 Ecological sustainability..... | 37.2 | 73 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.2 | 85 ○ |
| 3.3.2 Environmental performance*..... | 55.5 | 57 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 2.6 | 39 |
| 4 Market sophistication..... | 51.0 | 50 |
| 4.1 Credit..... | 38.3 | 47 |
| 4.1.1 Ease of getting credit*..... | 90.0 | 4 ● |
| 4.1.2 Domestic credit to private sector, % GDP..... | 53.6 | 62 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.7 | 42 |

| | | |
|---|-------------|-------------|
| 4.2 Investment..... | 45.2 | 40 |
| 4.2.1 Ease of protecting investors*..... | 60.8 | 41 |
| 4.2.2 Market capitalization, % GDP..... | 94.6 | 17 ● |
| 4.2.3 Total value of stocks traded, % GDP..... | 1.1 | 64 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 69.5 | 97 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 2.6 | 54 |
| 4.3.2 Intensity of local competition [†] | 48.0 | 128 ○ |
| 5 Business sophistication..... | 34.0 | 71 |
| 5.1 Knowledge workers..... | 35.1 | 80 |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 37.2 | 29 |
| 5.1.2 Firms offering formal training, % firms..... | 23.7 | 81 ○ |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 0.1 | 60 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 22.3 | 57 |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 29.0 | 85 |
| 5.2.1 University/industry research collaboration [†] | 49.1 | 45 |
| 5.2.2 State of cluster development [†] | 33.8 | 117 ○ |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 15.3 | 31 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓔ] | 0.1 | 39 |
| 5.3 Knowledge absorption..... | 38.0 | 47 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.2 | 88 ○ |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 4.9 | 102 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.9 | 19 ● |
| 5.3.4 FDI net inflows, % GDP..... | 10.1 | 12 ● |
| 6 Knowledge & technology outputs..... | 28.4 | 54 |
| 6.1 Knowledge creation..... | 13.5 | 63 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 2.5 | 39 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.1 | 63 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 21.6 | 37 |
| 6.1.5 Citable documents H index..... | 23.0 | 138 ○ |
| 6.2 Knowledge impact..... | 48.6 | 23 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64 [Ⓔ] | 10.7 | 11 ● |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 12.9 | 30 ● |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 23.3 | 97 ○ |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.0 | 78 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.3 | 89 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 2.0 | 39 |
| 6.3.4 FDI net outflows, % GDP..... | 0.4 | 68 |
| 7 Creative outputs..... | 44.6 | 26 ● |
| 7.1 Intangible assets..... | 48.1 | 59 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 1.5 | 20 |
| 7.1.3 ICTs & business model creation [†] | 53.8 | 75 |
| 7.1.4 ICTs & organizational model creation [†] | 48.9 | 82 |
| 7.2 Creative goods & services..... | 28.8 | 41 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 1.3 | 7 ● |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 0.1 | 85 |
| 7.3 Online creativity..... | 53.3 | 20 ● |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 1.7 | 94 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 100.0 | 1 ● |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 5218.3 | 24 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 73.1 | 52 ○ |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|----------------------------------|
| Population (millions) | 33.5 |
| GDP (US\$ billions) | 109.2 |
| GDP per capita, PPP\$ | 5,699.1 |
| Income group | Lower-middle income |
| Region | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|--------------|
| Global Innovation Index (out of 141) | 33.2 | 78 |
| Innovation Output Sub-Index | 25.8 | 84 |
| Innovation Input Sub-Index | 40.5 | 76 |
| Innovation Efficiency Ratio | 0.6 | 102 |
| Global Innovation Index 2014 (out of 143) | 32.2 | 84 |
| 1 Institutions | 57.6 | 78 |
| 1.1 Political environment..... | 45.6 | 80 |
| 1.1.1 Political stability*..... | 51.8 | 96 |
| 1.1.2 Government effectiveness*..... | 39.4 | 74 |
| 1.2 Regulatory environment | 58.5 | 92 |
| 1.2.1 Regulatory quality*..... | 43.3 | 84 |
| 1.2.2 Rule of law*..... | 41.0 | 74 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 20.7 | 95 |
| 1.3 Business environment..... | 68.8 | 68 |
| 1.3.1 Ease of starting a business*..... | 90.3 | 45 |
| 1.3.2 Ease of resolving insolvency*..... | 38.5 | 104 |
| 1.3.3 Ease of paying taxes*..... | 77.7 | 54 |
| 2 Human capital & research | 32.6 | 56 |
| 2.1 Education..... | 47.0 | 60 |
| 2.1.1 Expenditure on education, % GDP..... | 6.6 | 20 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 36.5 | 11 ● |
| 2.1.3 School life expectancy, years [Ⓓ] | 11.6 | 96 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓓ] | 18.7 | 80 |
| 2.2 Tertiary education..... | 41.5 | 38 ● |
| 2.2.1 Tertiary enrolment, % gross [Ⓓ] | 16.2 | 97 |
| 2.2.2 Graduates in science & engineering, % [Ⓓ] | 34.9 | 5 ● |
| 2.2.3 Tertiary inbound mobility, % [Ⓓ] | 1.9 | 66 |
| 2.3 Research & development (R&D)..... | 9.2 | 70 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓓ] | 864.5 | 48 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓓ] | 0.7 | 47 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure | 45.9 | 46 |
| 3.1 Information & communication technologies (ICTs)..... | 57.7 | 45 |
| 3.1.1 ICT access*..... | 56.3 | 69 |
| 3.1.2 ICT use*..... | 25.0 | 83 |
| 3.1.3 Government's online service*..... | 69.3 | 30 ● |
| 3.1.4 E-participation*..... | 80.4 | 17 ● |
| 3.2 General infrastructure..... | 39.2 | 42 ● |
| 3.2.1 Electricity output, kWh/cap..... | 840.6 | 96 ○ |
| 3.2.2 Logistics performance*..... | n/a | n/a |
| 3.2.3 Gross capital formation, % GDP..... | 34.3 | 12 ● |
| 3.3 Ecological sustainability | 40.7 | 55 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 10.8 | 20 ● |
| 3.3.2 Environmental performance*..... | 51.9 | 72 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.4 | 92 |
| 4 Market sophistication | 45.1 | 82 |
| 4.1 Credit..... | 22.9 | 100 |
| 4.1.1 Ease of getting credit*..... | 40.0 | 93 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 70.2 | 49 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.5 | 44 |
| 4.2 Investment..... | 32.1 | 83 |
| 4.2.1 Ease of protecting investors*..... | 45.8 | 107 ○ |
| 4.2.2 Market capitalization, % GDP..... | 54.9 | 34 ● |
| 4.2.3 Total value of stocks traded, % GDP..... | 3.7 | 53 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition | 80.3 | 52 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 3.4 | 60 |
| 4.3.2 Intensity of local competition [†] | 72.4 | 46 |
| 5 Business sophistication | 21.5 | 134 ○ |
| 5.1 Knowledge workers..... | 20.5 | 122 ○ |
| 5.1.1 Knowledge-intensive employment, % [Ⓓ] | 6.8 | 106 ○ |
| 5.1.2 Firms offering formal training, % firms [Ⓓ] | 24.7 | 79 |
| 5.1.3 GERD performed by business, % of GDP [Ⓓ] | 0.2 | 47 |
| 5.1.4 GERD financed by business, % [Ⓓ] | 29.9 | 49 |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 20.0 | 124 ○ |
| 5.2.1 University/industry research collaboration [†] | 37.2 | 93 |
| 5.2.2 State of cluster development [†] | 46.3 | 68 |
| 5.2.3 GERD financed by abroad, % [Ⓓ] | 1.7 | 82 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 70 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓓ] | 0.0 | 95 ○ |
| 5.3 Knowledge absorption..... | 24.1 | 121 ○ |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.2 | 89 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | n/a | n/a |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓓ] | 0.4 | 106 ○ |
| 5.3.4 FDI net inflows, % GDP..... | 3.2 | 58 |
| 6 Knowledge & technology outputs | 25.2 | 73 |
| 6.1 Knowledge creation..... | 7.9 | 86 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 1.3 | 58 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.2 | 50 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 6.4 | 89 |
| 6.1.5 Citable documents H index..... | 109.0 | 67 |
| 6.2 Knowledge impact..... | 37.4 | 69 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 3.6 | 19 ● |
| 6.2.2 New businesses/th pop. 15–64 [Ⓓ] | 1.3 | 60 |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 56 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 2.9 | 85 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 28.3 | 40 |
| 6.3 Knowledge diffusion..... | 30.2 | 57 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.0 | 101 ○ |
| 6.3.2 High-tech exports less re-exports, % total trade..... | n/a | n/a |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓓ] | 2.7 | 23 ● |
| 6.3.4 FDI net outflows, % GDP..... | 0.4 | 67 |
| 7 Creative outputs | 26.5 | 91 |
| 7.1 Intangible assets..... | 37.0 | 106 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 54.6 | 40 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.3 | 48 |
| 7.1.3 ICTs & business model creation [†] | 51.3 | 85 |
| 7.1.4 ICTs & organizational model creation [†] | 44.6 | 97 |
| 7.2 Creative goods & services..... | 12.2 | 90 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.6 | 32 |
| 7.2.2 National feature films/mn pop. 15–69..... | 1.0 | 77 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 0.6 | 55 ○ |
| 7.2.4 Printing & publishing output manufactures, %..... | 0.8 | 80 ○ |
| 7.2.5 Creative goods exports, % total trade..... | n/a | n/a |
| 7.3 Online creativity..... | 19.9 | 65 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 1.8 | 92 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.8 | 88 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 390.4 | 96 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 74.1 | 47 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓓ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|--------------------|
| Population (millions) | 26.5 |
| GDP (US\$ billions) | 16.7 |
| GDP per capita, PPP\$ | 1,170.2 |
| Income group | Low income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 30.1 | 95 |
| Innovation Output Sub-Index | 23.3 | 97 |
| Innovation Input Sub-Index..... | 36.9 | 93 |
| Innovation Efficiency Ratio..... | 0.6 | 104 |
| Global Innovation Index 2014 (out of 143) | 28.5 | 107 |
| 1 Institutions..... | 46.8 | 116 |
| 1.1 Political environment..... | 40.7 | 99 |
| 1.1.1 Political stability*..... | 57.5 | 82 |
| 1.1.2 Government effectiveness*..... | 23.9 | 108 |
| 1.2 Regulatory environment | 36.2 | 133 ○ |
| 1.2.1 Regulatory quality*..... | 36.8 | 104 |
| 1.2.2 Rule of law*..... | 25.1 | 117 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 37.5 | 134 ○ |
| 1.3 Business environment..... | 63.5 | 89 |
| 1.3.1 Ease of starting a business*..... | 83.0 | 87 |
| 1.3.2 Ease of resolving insolvency*..... | 40.8 | 99 |
| 1.3.3 Ease of paying taxes*..... | 66.9 | 97 |
| 2 Human capital & research..... | 21.1 | 102 |
| 2.1 Education | 51.4 | 44 ● |
| 2.1.1 Expenditure on education, % GDP [Ⓐ] | 5.0 | 57 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓐ] | 86.0 | 1 ● |
| 2.1.3 School life expectancy, years..... | 9.3 | 118 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 31.2 | 109 |
| 2.2 Tertiary education..... | 8.3 | 125 |
| 2.2.1 Tertiary enrolment, % gross..... | 5.2 | 124 ○ |
| 2.2.2 Graduates in science & engineering, % [Ⓐ] | 8.9 | 99 ○ |
| 2.2.3 Tertiary inbound mobility, %..... | 0.3 | 102 |
| 2.3 Research & development (R&D)..... | 3.7 | 87 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓐ] | 38.1 | 96 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓐ] | 0.5 | 66 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 28.5 | 105 |
| 3.1 Information & communication technologies (ICTs)..... | 22.3 | 118 |
| 3.1.1 ICT access*..... | 22.1 | 131 ○ |
| 3.1.2 ICT use*..... | 2.4 | 129 ○ |
| 3.1.3 Government's online service*..... | 31.5 | 98 |
| 3.1.4 E-participation*..... | 33.3 | 92 |
| 3.2 General infrastructure..... | 47.0 | 24 ● |
| 3.2.1 Electricity output, kWh/cap..... | 601.8 | 104 |
| 3.2.2 Logistics performance*..... | 3.5 | 128 ○ |
| 3.2.3 Gross capital formation, % GDP..... | 50.1 | 3 ● |
| 3.3 Ecological sustainability | 16.0 | 139 ○ |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 2.1 | 120 ○ |
| 3.3.2 Environmental performance*..... | 30.0 | 128 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.6 | 77 |
| 4 Market sophistication | 46.0 | 76 |
| 4.1 Credit..... | 13.7 | 125 |
| 4.1.1 Ease of getting credit*..... | 30.0 | 113 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 28.9 | 101 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.2 | 53 |

| | | |
|---|-------------|-------------|
| 4.2 Investment | 51.7 | 23 |
| 4.2.1 Ease of protecting investors*..... | 51.7 | 83 |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition | 72.7 | 86 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓐ] | 4.8 | 78 |
| 4.3.2 Intensity of local competition [†] | 61.9 | 93 |
| 5 Business sophistication | 41.9 | 36 ● |
| 5.1 Knowledge workers..... | 16.9 | 128 |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 22.1 | 85 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total [Ⓐ] | 0.5 | 86 ○ |
| 5.2 Innovation linkages | 57.9 | 5 ● |
| 5.2.1 University/industry research collaboration [†] | 38.0 | 86 |
| 5.2.2 State of cluster development [†] | 42.5 | 82 |
| 5.2.3 GERD financed by abroad, % [Ⓐ] | 78.1 | 1 ● |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 36 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a |
| 5.3 Knowledge absorption..... | 51.0 | 12 ● |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓐ] | 0.1 | 102 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 14.4 | 16 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓐ] | 0.7 | 79 |
| 5.3.4 FDI net inflows, % GDP..... | 42.1 | 1 ● |
| 6 Knowledge & technology outputs | 29.0 | 52 ● |
| 6.1 Knowledge creation..... | 6.5 | 92 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 5.5 | 94 |
| 6.1.5 Citable documents H index..... | 60.0 | 105 |
| 6.2 Knowledge impact..... | 53.4 | 14 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 4.0 | 14 ● |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.8 | 97 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 27.0 | 71 ● |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓐ] | 0.0 | 77 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.8 | 69 ● |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓐ] | 0.4 | 95 |
| 6.3.4 FDI net outflows, % GDP..... | 3.3 | 19 ● |
| 7 Creative outputs | 17.6 | 128 |
| 7.1 Intangible assets..... | 33.7 | 119 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.1 | 58 |
| 7.1.3 ICTs & business model creation [†] | 44.1 | 115 |
| 7.1.4 ICTs & organizational model creation [†] | 39.4 | 119 |
| 7.2 Creative goods & services..... | 2.9 | 120 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.1 | 55 |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 0.0 | 117 |
| 7.3 Online creativity..... | 0.1 | 134 ○ |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.0 | 137 ○ |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.1 | 119 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 27.5 | 129 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|-----------------------------|
| Population (millions)..... | 53.7 |
| GDP (US\$ billions)..... | 62.8 |
| GDP per capita, PPP\$..... | 1,866.9 |
| Income group..... | Low income |
| Region..... | South East Asia and Oceania |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 20.3 | 138 |
| Innovation Output Sub-Index..... | 16.6 | 130 |
| Innovation Input Sub-Index..... | 23.9 | 139 |
| Innovation Efficiency Ratio..... | 0.7 | 75 ● |
| Global Innovation Index 2014 (out of 143)..... | 19.6 | 140 |

| | | |
|---|-------------|-------------|
| 1 Institutions..... | 33.3 | 137 |
| 1.1 Political environment..... | 18.1 | 137 |
| 1.1.1 Political stability*..... | 35.6 | 122 |
| 1.1.2 Government effectiveness*..... | 0.6 | 140 ○ |
| 1.2 Regulatory environment..... | 43.6 | 124 |
| 1.2.1 Regulatory quality*..... | 7.6 | 138 |
| 1.2.2 Rule of law*..... | 15.2 | 134 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 20.2 | 92 ● |
| 1.3 Business environment..... | 38.3 | 139 |
| 1.3.1 Ease of starting a business*..... | 22.9 | 141 ○ |
| 1.3.2 Ease of resolving insolvency*..... | 23.5 | 134 |
| 1.3.3 Ease of paying taxes*..... | 68.6 | 91 ● |
| 2 Human capital & research..... | 22.7 | 97 ● |
| 2.1 Education..... | 15.4 | 140 ○ |
| 2.1.1 Expenditure on education, % GDP..... | 0.8 | 129 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years [Ⓓ] | 8.6 | 125 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓓ] | 34.1 | 114 |
| 2.2 Tertiary education..... | 52.6 | 14 ● |
| 2.2.1 Tertiary enrolment, % gross..... | 13.4 | 102 ● |
| 2.2.2 Graduates in science & engineering, %..... | 47.1 | 2 ● |
| 2.2.3 Tertiary inbound mobility, %..... | 0.0 | 116 ○ |
| 2.3 Research & development (R&D)..... | 0.0 | 128 ○ |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP..... | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 16.2 | 139 |
| 3.1 Information & communication technologies (ICTs)..... | 7.4 | 139 |
| 3.1.1 ICT access*..... | 18.5 | 136 ○ |
| 3.1.2 ICT use*..... | 0.8 | 136 ○ |
| 3.1.3 Government's online service*..... | 2.4 | 138 |
| 3.1.4 E-participation*..... | 7.8 | 137 |
| 3.2 General infrastructure..... | 19.3 | 122 |
| 3.2.1 Electricity output, kWh/cap..... | 203.3 | 114 |
| 3.2.2 Logistics performance*..... | 4.5 | 126 |
| 3.2.3 Gross capital formation, % GDP..... | 24.7 | 47 ● |
| 3.3 Ecological sustainability..... | 21.8 | 130 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.1 | 90 ● |
| 3.3.2 Environmental performance*..... | 27.4 | 133 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.0 | 136 |
| 4 Market sophistication..... | 36.4 | 125 |
| 4.1 Credit..... | 5.0 | 139 |
| 4.1.1 Ease of getting credit*..... | 10.0 | 133 |
| 4.1.2 Domestic credit to private sector, % GDP [Ⓓ] | 4.7 | 139 ○ |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|--|------|-------|
| 4.2 Investment..... | 29.2 | 100s |
| 4.2.1 Ease of protecting investors*..... | 29.2 | 139 ○ |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 75.2 | 77 ● |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓓ] | 3.2 | 59 ● |
| 4.3.2 Intensity of local competition [†] | 61.3 | 96 ● |

| | | |
|---|-------------|--------------|
| 5 Business sophistication..... | 11.0 | 141 ○ |
| 5.1 Knowledge workers..... | 15.4 | 129 |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms..... | 15.1 | 100 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 17.5 | 132 |
| 5.2.1 University/industry research collaboration [†] | 20.8 | 130 |
| 5.2.2 State of cluster development [†] | 28.2 | 130 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 59 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓓ] | 0.0 | 92 |
| 5.3 Knowledge absorption..... | 0.0 | 141 ○ |
| 5.3.1 Royalty & license fees payments, % total trade..... | n/a | n/a |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 2.0 | 129 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP..... | n/a | n/a |

| | | |
|---|-------------|--------------|
| 6 Knowledge & technology outputs..... | 20.0 | 103 ● |
| 6.1 Knowledge creation..... | 1.5 | 138 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 0.3 | 140 ○ |
| 6.1.5 Citable documents H index..... | 41.0 | 126 |
| 6.2 Knowledge impact..... | 58.4 | 4 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 5.2 | 7 ● |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.5 | 125 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 0.0 | 140 ○ |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.0 | 128 ○ |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | n/a | n/a |

| | | |
|--|-------------|------------|
| 7 Creative outputs..... | 13.3 | 136 |
| 7.1 Intangible assets..... | 25.7 | 133 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP [Ⓓ] | 21.9 | 79 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 34.5 | 130 |
| 7.1.4 ICTs & organizational model creation [†] | 31.5 | 129 |
| 7.2 Creative goods & services..... | 1.6 | 129 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓓ] | 0.7 | 85 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade [Ⓓ] | 0.0 | 111 |
| 7.3 Online creativity..... | 0.1 | 138 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.0 | 138 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.0 | 135 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 21.1 | 133 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓓ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------|
| Population (millions)..... | 2.3 |
| GDP (US\$ billions)..... | 13.4 |
| GDP per capita, PPP\$..... | 8,603.1 |
| Income group..... | Upper-middle income |
| Region..... | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 28.1 | 107 |
| Innovation Output Sub-Index..... | 19.1 | 119 |
| Innovation Input Sub-Index..... | 37.2 | 91 |
| Innovation Efficiency Ratio..... | 0.5 | 126 ○ |
| Global Innovation Index 2014 (out of 143)..... | 28.5 | 108 |

1 Institutions.....67.9 53

| | | |
|---|------|-------|
| 1.1 Political environment..... | 66.9 | 47 ● |
| 1.1.1 Political stability*..... | 87.1 | 23 ● |
| 1.1.2 Government effectiveness*..... | 46.6 | 59 |
| 1.2 Regulatory environment..... | 74.2 | 43 ● |
| 1.2.1 Regulatory quality*..... | 49.2 | 70 |
| 1.2.2 Rule of law*..... | 54.3 | 54 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 9.6 | 32 ● |
| 1.3 Business environment..... | 62.6 | 95 |
| 1.3.1 Ease of starting a business*..... | 68.7 | 123 ○ |
| 1.3.2 Ease of resolving insolvency*..... | 45.5 | 76 |
| 1.3.3 Ease of paying taxes*..... | 73.6 | 67 |

2 Human capital & research.....18.4 108

| | | |
|--|------|-------|
| 2.1 Education..... | 41.0 | 83 |
| 2.1.1 Expenditure on education, % GDP [ⓐ] | 8.5 | 4 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [ⓐ] | 15.8 | 81 |
| 2.1.3 School life expectancy, years [ⓐ] | 11.3 | 99 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [ⓐ] | 24.6 | 93 |
| 2.2 Tertiary education..... | 12.7 | 119 ○ |
| 2.2.1 Tertiary enrolment, % gross [ⓐ] | 9.3 | 115 |
| 2.2.2 Graduates in science & engineering, % [ⓐ] | 2.6 | 101 ○ |
| 2.2.3 Tertiary inbound mobility, % [ⓐ] | 10.2 | 16 ● |
| 2.3 Research & development (R&D)..... | 1.6 | 110 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP [ⓐ] | 0.1 | 100 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |

3 Infrastructure.....32.4 93

| | | |
|--|-------|------|
| 3.1 Information & communication technologies (ICTs)..... | 30.4 | 105 |
| 3.1.1 ICT access*..... | 39.3 | 104 |
| 3.1.2 ICT use*..... | 16.7 | 97 |
| 3.1.3 Government's online service*..... | 32.3 | 95 |
| 3.1.4 E-participation*..... | 33.3 | 92 |
| 3.2 General infrastructure..... | 28.0 | 80 |
| 3.2.1 Electricity output, kWh/cap..... | 727.0 | 100 |
| 3.2.2 Logistics performance*..... | 25.3 | 88 |
| 3.2.3 Gross capital formation, % GDP..... | 27.3 | 34 ● |
| 3.3 Ecological sustainability..... | 38.8 | 64 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 11.4 | 18 ● |
| 3.3.2 Environmental performance*..... | 43.7 | 100 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.5 | 83 |

4 Market sophistication.....39.9 112

| | | |
|--|------|----|
| 4.1 Credit..... | 23.2 | 98 |
| 4.1.1 Ease of getting credit*..... | 55.0 | 56 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 47.0 | 69 |
| 4.1.3 Microfinance gross loans, % GDP [ⓐ] | 0.0 | 75 |

| | | |
|---|------|------|
| 4.2 Investment..... | 28.2 | 103 |
| 4.2.1 Ease of protecting investors*..... | 53.3 | 79 |
| 4.2.2 Market capitalization, % GDP..... | 10.0 | 89 |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.2 | 95 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 68.2 | 102 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 6.9 | 101 |
| 4.3.2 Intensity of local competition [†] | 60.7 | 100 |

5 Business sophistication.....27.3 109

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 30.4 | 93 |
| 5.1.1 Knowledge-intensive employment, %..... | 14.6 | 95 |
| 5.1.2 Firms offering formal training, % firms [ⓐ] | 44.5 | 37 ● |
| 5.1.3 GERD performed by business, % of GDP [ⓐ] | 0.0 | 78 ○ |
| 5.1.4 GERD financed by business, % [ⓐ] | 19.8 | 61 |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 26.2 | 95 |
| 5.2.1 University/industry research collaboration [†] | 41.0 | 76 |
| 5.2.2 State of cluster development [†] | 46.8 | 65 |
| 5.2.3 GERD financed by abroad, % [ⓐ] | 1.5 | 85 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 28 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [ⓐ] | 0.1 | 44 |
| 5.3 Knowledge absorption..... | 25.3 | 112 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.1 | 109 ○ |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 6.3 | 76 |
| 5.3.3 Comm., computer & info. services imp., % total trade [ⓐ] | 0.5 | 87 |
| 5.3.4 FDI net inflows, % GDP..... | 5.6 | 29 ● |

6 Knowledge & technology outputs.....8.5 138 ○

| | | |
|---|------|-------|
| 6.1 Knowledge creation..... | 5.5 | 99 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.1 | 60 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 6.7 | 86 |
| 6.1.5 Citable documents H index..... | 62.0 | 102 |
| 6.2 Knowledge impact..... | 4.2 | 133 ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | 0.9 | 76 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.4 | 107 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 15.8 | 127 ○ |
| 6.3.1 Royalty & license fees receipts, % total trade [ⓐ] | 0.0 | 112 ○ |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 1.1 | 62 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 0.2 | 116 ○ |
| 6.3.4 FDI net outflows, % GDP..... | 0.2 | 82 |

7 Creative outputs.....29.7 80

| | | |
|--|-------|-------|
| 7.1 Intangible assets..... | 49.4 | 49 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 51.2 | 88 |
| 7.1.4 ICTs & organizational model creation [†] | 47.6 | 90 |
| 7.2 Creative goods & services..... | 16.1 | 81 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 0.6 | 53 |
| 7.3 Online creativity..... | 4.0 | 95 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 10.3 | 44 ● |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.1 | 127 ○ |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 224.1 | 106 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------------|
| Population (millions)..... | 28.1 |
| GDP (US\$ billions)..... | 19.6 |
| GDP per capita, PPP\$..... | 1,575.7 |
| Income group..... | Low income |
| Region..... | Central and Southern Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|--------------|
| Global Innovation Index (out of 141)..... | 21.1 | 135 ○ |
| Innovation Output Sub-Index..... | 12.1 | 136 ○ |
| Innovation Input Sub-Index..... | 30.0 | 127 |
| Innovation Efficiency Ratio..... | 0.4 | 134 ○ |
| Global Innovation Index 2014 (out of 143)..... | 23.8 | 136 |

| | | |
|---|-------------|------------|
| 1 Institutions..... | 45.1 | 121 |
| 1.1 Political environment..... | 26.1 | 128 ○ |
| 1.1.1 Political stability*..... | 35.9 | 120 |
| 1.1.2 Government effectiveness*..... | 16.3 | 125 |
| 1.2 Regulatory environment..... | 44.1 | 123 |
| 1.2.1 Regulatory quality*..... | 24.8 | 122 |
| 1.2.2 Rule of law*..... | 27.5 | 110 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 27.2 | 116 |
| 1.3 Business environment..... | 65.0 | 85 |
| 1.3.1 Ease of starting a business*..... | 83.0 | 84 |
| 1.3.2 Ease of resolving insolvency*..... | 45.4 | 77 ● |
| 1.3.3 Ease of paying taxes*..... | 66.5 | 100 |

| | | |
|--|-------------|------------|
| 2 Human capital & research..... | 16.0 | 117 |
| 2.1 Education..... | 31.4 | 113 |
| 2.1.1 Expenditure on education, % GDP [Ⓓ] | 4.7 | 67 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓓ] | 12.2 | 91 |
| 2.1.3 School life expectancy, years [Ⓓ] | 12.4 | 87 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 29.2 | 106 |
| 2.2 Tertiary education..... | 13.2 | 116 |
| 2.2.1 Tertiary enrolment, % gross [Ⓓ] | 14.5 | 100 |
| 2.2.2 Graduates in science & engineering, % [Ⓓ] | 11.8 | 96 ○ |
| 2.2.3 Tertiary inbound mobility, % [Ⓓ] | 0.0 | 115 ○ |
| 2.3 Research & development (R&D)..... | 3.5 | 89 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓓ] | 0.3 | 76 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |

| | | |
|--|-------------|------------|
| 3 Infrastructure..... | 24.1 | 116 |
| 3.1 Information & communication technologies (ICTs)..... | 20.3 | 121 |
| 3.1.1 ICT access*..... | 27.0 | 121 |
| 3.1.2 ICT use*..... | 9.2 | 113 |
| 3.1.3 Government's online service*..... | 15.7 | 126 ○ |
| 3.1.4 E-participation*..... | 29.4 | 104 |
| 3.2 General infrastructure..... | 28.0 | 79 ● |
| 3.2.1 Electricity output, kWh/cap..... | 129.3 | 118 ○ |
| 3.2.2 Logistics performance*..... | 21.8 | 99 |
| 3.2.3 Gross capital formation, % GDP..... | 28.9 | 28 ● |
| 3.3 Ecological sustainability..... | 23.9 | 125 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 5.2 | 97 |
| 3.3.2 Environmental performance*..... | 37.0 | 116 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.1 | 123 |

| | | |
|--|-------------|------------|
| 4 Market sophistication..... | 37.9 | 121 |
| 4.1 Credit..... | 20.9 | 109 |
| 4.1.1 Ease of getting credit*..... | 35.0 | 102 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 58.1 | 57 ● |
| 4.1.3 Microfinance gross loans, % GDP [Ⓓ] | 0.8 | 40 ● |

| | | |
|---|------|-------|
| 4.2 Investment..... | 31.7 | 87 |
| 4.2.1 Ease of protecting investors*..... | 56.7 | 67 ● |
| 4.2.2 Market capitalization, % GDP..... | 21.7 | 66 |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.3 | 86 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 61.0 | 125 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 11.6 | 128 ○ |
| 4.3.2 Intensity of local competition [†] | 62.8 | 91 |

| | | |
|---|-------------|------------|
| 5 Business sophistication..... | 27.1 | 111 |
| 5.1 Knowledge workers..... | 21.8 | 116 |
| 5.1.1 Knowledge-intensive employment, % [Ⓓ] | 4.3 | 109 ○ |
| 5.1.2 Firms offering formal training, % firms..... | 31.9 | 59 ● |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 29.1 | 84 |
| 5.2.1 University/industry research collaboration [†] | 27.3 | 123 ○ |
| 5.2.2 State of cluster development [†] | 39.1 | 99 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 52 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a |
| 5.3 Knowledge absorption..... | 30.3 | 90 |
| 5.3.1 Royalty & license fees payments, % total trade..... | n/a | n/a |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 6.0 | 84 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP..... | 0.4 | 125 |

| | | |
|---|------------|--------------|
| 6 Knowledge & technology outputs..... | 3.2 | 140 ○ |
| 6.1 Knowledge creation..... | 6.7 | 90 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 0.3 | 85 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 7.4 | 78 ● |
| 6.1.5 Citable documents H index..... | 80.0 | 89 |
| 6.2 Knowledge impact..... | 2.8 | 137 ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | 0.7 | 82 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.1 | 111 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓓ] | 1.4 | 98 ○ |
| 6.3 Knowledge diffusion..... | 0.2 | 139 ○ |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.0 | 119 ○ |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | n/a | n/a |

| | | |
|---|-------------|------------|
| 7 Creative outputs..... | 21.1 | 118 |
| 7.1 Intangible assets..... | 33.2 | 122 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 39.9 | 62 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 39.3 | 120 |
| 7.1.4 ICTs & organizational model creation [†] | 39.0 | 120 |
| 7.2 Creative goods & services..... | 16.7 | 80 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓓ] | 1.7 | 39 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.3 | 73 ● |
| 7.3 Online creativity..... | 1.0 | 113 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.6 | 115 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 1.0 | 86 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 218.2 | 107 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓓ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|-------------|
| Population (millions) | 16.8 |
| GDP (US\$ billions) | 866.4 |
| GDP per capita, PPP\$ | 42,585.9 |
| Income group | High income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 61.6 | 4 ● |
| Innovation Output Sub-Index | 58.9 | 3 ● |
| Innovation Input Sub-Index..... | 64.2 | 11 |
| Innovation Efficiency Ratio..... | 0.9 | 8 |
| Global Innovation Index 2014 (out of 143) | 60.6 | 5 |
| 1 Institutions..... | 91.9 | 7 |
| 1.1 Political environment..... | 90.5 | 10 |
| 1.1.1 Political stability*..... | 91.8 | 12 |
| 1.1.2 Government effectiveness*..... | 89.2 | 8 |
| 1.2 Regulatory environment | 97.0 | 5 ● |
| 1.2.1 Regulatory quality*..... | 94.8 | 8 |
| 1.2.2 Rule of law*..... | 95.8 | 7 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.7 | 24 |
| 1.3 Business environment..... | 88.2 | 9 |
| 1.3.1 Ease of starting a business*..... | 94.1 | 20 |
| 1.3.2 Ease of resolving insolvency*..... | 83.8 | 11 |
| 1.3.3 Ease of paying taxes*..... | 86.8 | 22 |
| 2 Human capital & research..... | 51.7 | 17 |
| 2.1 Education | 58.2 | 14 |
| 2.1.1 Expenditure on education, % GDP | 5.9 | 32 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 25.9 | 33 |
| 2.1.3 School life expectancy, years..... | 17.9 | 7 |
| 2.1.4 PISA scales in reading, maths, & science..... | 518.8 | 10 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 13.9 | 51 ○ |
| 2.2 Tertiary education..... | 37.4 | 52 ○ |
| 2.2.1 Tertiary enrolment, % gross..... | 77.3 | 15 |
| 2.2.2 Graduates in science & engineering, % | 14.4 | 85 ○ |
| 2.2.3 Tertiary inbound mobility, %..... | 7.2 | 24 |
| 2.3 Research & development (R&D)..... | 59.5 | 15 |
| 2.3.1 Researchers, FTE/mn pop..... | 4315.5 | 15 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 2.1 | 16 |
| 2.3.3 QS university ranking, average score top 3*..... | 76.7 | 12 |
| 3 Infrastructure..... | 60.5 | 13 |
| 3.1 Information & communication technologies (ICTs)..... | 89.1 | 2 ● |
| 3.1.1 ICT access*..... | 89.3 | 9 |
| 3.1.2 ICT use*..... | 74.3 | 12 |
| 3.1.3 Government's online service*..... | 92.9 | 8 |
| 3.1.4 E-participation*..... | 100.0 | 1 ● |
| 3.2 General infrastructure..... | 42.4 | 34 |
| 3.2.1 Electricity output, kWh/cap..... | 5879.5 | 33 |
| 3.2.2 Logistics performance*..... | 96.2 | 2 ● |
| 3.2.3 Gross capital formation, % GDP..... | 18.1 | 108 ○ |
| 3.3 Ecological sustainability | 49.9 | 28 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 7.9 | 52 ○ |
| 3.3.2 Environmental performance*..... | 77.8 | 11 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 3.1 | 34 |
| 4 Market sophistication | 61.8 | 17 |
| 4.1 Credit..... | 54.3 | 18 |
| 4.1.1 Ease of getting credit*..... | 50.0 | 65 ○ |
| 4.1.2 Domestic credit to private sector, % GDP..... | 178.0 | 6 ● |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a |

| | | |
|---|-------------|------------|
| 4.2 Investment | 42.2 | 48 |
| 4.2.1 Ease of protecting investors*..... | 51.7 | 83 ○ |
| 4.2.2 Market capitalization, % GDP..... | 79.1 | 20 |
| 4.2.3 Total value of stocks traded, % GDP..... | 53.6 | 16 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.1 | 21 |
| 4.3 Trade & competition | 88.9 | 9 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition [†] | 81.1 | 12 |
| 5 Business sophistication | 55.3 | 10 |
| 5.1 Knowledge workers..... | 61.3 | 19 |
| 5.1.1 Knowledge-intensive employment, %..... | 46.4 | 9 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP..... | 1.2 | 18 |
| 5.1.4 GERD financed by business, %..... | 47.1 | 22 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 17.8 | 28 |
| 5.2 Innovation linkages | 49.0 | 16 |
| 5.2.1 University/industry research collaboration [†] | 73.0 | 9 |
| 5.2.2 State of cluster development [†] | 72.4 | 6 ● |
| 5.2.3 GERD financed by abroad, %..... | 14.3 | 32 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 34 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 1.3 | 13 |
| 5.3 Knowledge absorption..... | 55.5 | 7 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 4.2 | 1 ● |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 12.6 | 22 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.6 | 37 |
| 5.3.4 FDI net inflows, % GDP..... | 4.0 | 39 |
| 6 Knowledge & technology outputs | 55.9 | 6 ● |
| 6.1 Knowledge creation..... | 55.2 | 11 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 3.0 | 33 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 5.3 | 9 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 43.8 | 13 |
| 6.1.5 Citable documents H index..... | 636.0 | 8 |
| 6.2 Knowledge impact..... | 48.1 | 26 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.4 | 87 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 4.4 | 26 |
| 6.2.3 Computer software spending, % GDP..... | 0.7 | 7 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 14.6 | 26 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 41.2 | 20 |
| 6.3 Knowledge diffusion..... | 64.5 | 5 ● |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 5.3 | 2 ● |
| 6.3.2 High-tech exports less re-exports, % total trade | 13.3 | 13 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 2.0 | 40 |
| 6.3.4 FDI net outflows, % GDP | 4.9 | 9 |
| 7 Creative outputs | 61.9 | 4 ● |
| 7.1 Intangible assets..... | 58.4 | 15 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 59.6 | 37 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 1.8 | 15 |
| 7.1.3 ICTs & business model creation [†] | 76.6 | 5 ● |
| 7.1.4 ICTs & organizational model creation [†] | 74.5 | 6 ● |
| 7.2 Creative goods & services..... | 42.2 | 9 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.5 | 36 ○ |
| 7.2.2 National feature films/mn pop. 15–69..... | 5.7 | 34 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 49.9 | 12 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 1.8 | 32 |
| 7.2.5 Creative goods exports, % total trade..... | 5.6 | 8 |
| 7.3 Online creativity..... | 88.6 | 2 ● |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 89.6 | 7 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 100.0 | 1 ● |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 9406.7 | 6 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 95.3 | 3 ● |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

New Zealand

Key indicators

| | |
|-----------------------------|-----------------------------|
| Population (millions) | 4.6 |
| GDP (US\$ billions) | 198.1 |
| GDP per capita, PPP\$ | 31,692.2 |
| Income group | High income |
| Region | South East Asia and Oceania |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 55.9 | 15 |
| Innovation Output Sub-Index | 48.7 | 15 |
| Innovation Input Sub-Index | 63.1 | 13 |
| Innovation Efficiency Ratio | 0.8 | 40 |
| Global Innovation Index 2014 (out of 143) | 54.5 | 18 |

| | | | | |
|----------|---|-------------|-----------|----------|
| 1 | Institutions | 93.0 | 5 | ● |
| 1.1 | Political environment | 94.3 | 4 | ● |
| 1.1.1 | Political stability* | 100.0 | 1 | ● |
| 1.1.2 | Government effectiveness* | 88.6 | 9 | |
| 1.2 | Regulatory environment | 98.3 | 3 | ● |
| 1.2.1 | Regulatory quality* | 96.1 | 5 | ● |
| 1.2.2 | Rule of law* | 97.1 | 5 | ● |
| 1.2.3 | Cost of redundancy dismissal, salary weeks | 8.0 | 1 | ● |
| 1.3 | Business environment | 86.5 | 13 | |
| 1.3.1 | Ease of starting a business* | 100.0 | 1 | ● |
| 1.3.2 | Ease of resolving insolvency* | 71.6 | 26 | |
| 1.3.3 | Ease of paying taxes* | 88.0 | 21 | |
| 2 | Human capital & research | 52.9 | 16 | |
| 2.1 | Education | 62.1 | 10 | |
| 2.1.1 | Expenditure on education, % GDP | 7.4 | 11 | |
| 2.1.2 | Gov't expenditure/pupil, secondary, % GDP/cap | 25.2 | 37 | |
| 2.1.3 | School life expectancy, years | 19.2 | 2 | ● |
| 2.1.4 | PISA scales in reading, maths, & science | 509.2 | 16 | |
| 2.1.5 | Pupil-teacher ratio, secondary | 14.4 | 57 | ○ |
| 2.2 | Tertiary education | 52.0 | 16 | |
| 2.2.1 | Tertiary enrolment, % gross | 79.8 | 11 | |
| 2.2.2 | Graduates in science & engineering, % | 18.8 | 61 | ○ |
| 2.2.3 | Tertiary inbound mobility, % | 15.8 | 10 | |
| 2.3 | Research & development (R&D) | 44.6 | 23 | |
| 2.3.1 | Researchers, FTE/mn pop. [Ⓔ] | 3692.9 | 23 | |
| 2.3.2 | Gross expenditure on R&D, % GDP [Ⓔ] | 1.3 | 29 | |
| 2.3.3 | QS university ranking, average score top 3* | 59.7 | 18 | |
| 3 | Infrastructure | 56.3 | 20 | |
| 3.1 | Information & communication technologies (ICTs) | 77.9 | 14 | |
| 3.1.1 | ICT access* | 77.9 | 27 | |
| 3.1.2 | ICT use* | 71.0 | 15 | |
| 3.1.3 | Government's online service* | 84.3 | 15 | |
| 3.1.4 | E-participation* | 78.4 | 19 | |
| 3.2 | General infrastructure | 46.3 | 27 | |
| 3.2.1 | Electricity output, kWh/cap | 9456.3 | 15 | |
| 3.2.2 | Logistics performance* | 75.6 | 22 | |
| 3.2.3 | Gross capital formation, % GDP | 22.1 | 66 | |
| 3.3 | Ecological sustainability | 44.7 | 47 | |
| 3.3.1 | GDP/unit of energy use, 2005 PPP\$/kg oil eq | 6.4 | 82 | ○ |
| 3.3.2 | Environmental performance* | 76.4 | 16 | |
| 3.3.3 | ISO 14001 environmental certificates/bn PPP\$ GDP | 1.8 | 49 | |
| 4 | Market sophistication | 67.6 | 8 | |
| 4.1 | Credit | 73.8 | 3 | ● |
| 4.1.1 | Ease of getting credit* | 100.0 | 1 | ● |
| 4.1.2 | Domestic credit to private sector, % GDP [Ⓔ] | 145.4 | 15 | |
| 4.1.3 | Microfinance gross loans, % GDP | n/a | n/a | |

| | | | | |
|----------|--|-------------|-----------|---|
| 4.2 | Investment | 43.5 | 44 | |
| 4.2.1 | Ease of protecting investors* | 81.7 | 1 | ● |
| 4.2.2 | Market capitalization, % GDP | 46.5 | 41 | |
| 4.2.3 | Total value of stocks traded, % GDP | 14.6 | 31 | |
| 4.2.4 | Venture capital deals/tr PPP\$ GDP | 0.1 | 22 | |
| 4.3 | Trade & competition | 85.5 | 25 | |
| 4.3.1 | Applied tariff rate, weighted mean, % [Ⓔ] | 1.6 | 42 | |
| 4.3.2 | Intensity of local competition [†] | 76.5 | 24 | |
| 5 | Business sophistication | 45.8 | 26 | |
| 5.1 | Knowledge workers | 55.1 | 29 | |
| 5.1.1 | Knowledge-intensive employment, % [Ⓔ] | 42.9 | 17 | |
| 5.1.2 | Firms offering formal training, % firms | n/a | n/a | |
| 5.1.3 | GERD performed by business, % of GDP [Ⓔ] | 0.6 | 32 | |
| 5.1.4 | GERD financed by business, % [Ⓔ] | 40.0 | 38 | |
| 5.1.5 | Females employed w/advanced degrees, % total | 20.8 | 20 | |
| 5.2 | Innovation linkages | 41.5 | 34 | |
| 5.2.1 | University/industry research collaboration [†] | 65.1 | 16 | |
| 5.2.2 | State of cluster development [†] | 50.1 | 50 | |
| 5.2.3 | GERD financed by abroad, % [Ⓔ] | 6.3 | 60 | ○ |
| 5.2.4 | JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 7 | |
| 5.2.5 | Patent families 3+ offices/bn PPP\$ GDP | 0.5 | 25 | |
| 5.3 | Knowledge absorption | 40.9 | 38 | |
| 5.3.1 | Royalty & license fees payments, % total trade | 1.9 | 10 | |
| 5.3.2 | High-tech imports less re-imports, % total trade | 9.5 | 40 | |
| 5.3.3 | Comm., computer & info. services imp., % total trade | 1.3 | 42 | |
| 5.3.4 | FDI net inflows, % GDP | 0.5 | 122 | ○ |
| 6 | Knowledge & technology outputs | 42.0 | 20 | |
| 6.1 | Knowledge creation | 54.8 | 12 | |
| 6.1.1 | Domestic resident patent app/bn PPP\$ GDP | 10.6 | 6 | ● |
| 6.1.2 | PCT resident patent app/bn PPP\$ GDP | 2.2 | 19 | |
| 6.1.3 | Domestic res utility model app/bn PPP\$ GDP | n/a | n/a | |
| 6.1.4 | Scientific & technical articles/bn PPP\$ GDP | 51.9 | 7 | ● |
| 6.1.5 | Citable documents H index | 318.0 | 26 | |
| 6.2 | Knowledge impact | 45.8 | 35 | |
| 6.2.1 | Growth rate of PPP\$ GDP/worker, % | 0.8 | 81 | ○ |
| 6.2.2 | New businesses/th pop. 15–64 | 15.1 | 1 | ● |
| 6.2.3 | Computer software spending, % GDP | 0.3 | 33 | |
| 6.2.4 | ISO 9001 quality certificates/bn PPP\$ GDP | 8.1 | 46 | |
| 6.2.5 | High- & medium-high-tech manufactures, % [Ⓔ] | 14.8 | 66 | ○ |
| 6.3 | Knowledge diffusion | 25.4 | 84 | ○ |
| 6.3.1 | Royalty & license fees receipts, % total trade | 0.6 | 22 | |
| 6.3.2 | High-tech exports less re-exports, % total trade | 1.5 | 55 | |
| 6.3.3 | Comm., computer & info. services exp., % total trade | 1.2 | 76 | ○ |
| 6.3.4 | FDI net outflows, % GDP | -0.9 | 120 | ○ |
| 7 | Creative outputs | 55.4 | 10 | |
| 7.1 | Intangible assets | 63.0 | 9 | |
| 7.1.1 | Domestic res trademark app/bn PPP\$ GDP | 95.2 | 15 | |
| 7.1.2 | Madrid trademark app. holders/bn PPP\$ GDP | 2.1 | 12 | |
| 7.1.3 | ICTs & business model creation [†] | 72.8 | 15 | |
| 7.1.4 | ICTs & organizational model creation [†] | 69.5 | 15 | |
| 7.2 | Creative goods & services | 29.2 | 39 | |
| 7.2.1 | Cultural & creative services exports, % total trade [Ⓔ] | 0.9 | 17 | |
| 7.2.2 | National feature films/mn pop. 15–69 | 7.9 | 24 | |
| 7.2.3 | Global ent. & media output/th pop. 15–69 | 44.6 | 16 | |
| 7.2.4 | Printing & publishing output manufactures, % [Ⓔ] | 2.0 | 28 | |
| 7.2.5 | Creative goods exports, % total trade | 0.3 | 69 | ○ |
| 7.3 | Online creativity | 66.3 | 13 | |
| 7.3.1 | Generic top-level domains (TLDs)/th pop. 15–69 | 39.9 | 21 | |
| 7.3.2 | Country-code TLDs/th pop. 15–69 | 78.4 | 12 | |
| 7.3.3 | Wikipedia edits/pop. 15–69 | 7816.3 | 10 | |
| 7.3.4 | Video uploads on YouTube/pop. 15–69 | 89.2 | 15 | |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------------------|
| Population (millions)..... | 6.2 |
| GDP (US\$ billions)..... | 11.7 |
| GDP per capita, PPP\$..... | 4,758.0 |
| Income group..... | Lower-middle income |
| Region..... | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 23.5 | 130 |
| Innovation Output Sub-Index..... | 15.0 | 133 ○ |
| Innovation Input Sub-Index..... | 31.9 | 120 |
| Innovation Efficiency Ratio..... | 0.5 | 130 |
| Global Innovation Index 2014 (out of 143)..... | 25.5 | 125 |

1 Institutions.....51.9 100

| | | |
|---|-------------|------------|
| 1.1 Political environment..... | 38.7 | 104 |
| 1.1.1 Political stability*..... | 58.0 | 81 ● |
| 1.1.2 Government effectiveness*..... | 19.3 | 118 |
| 1.2 Regulatory environment..... | 60.7 | 84 |
| 1.2.1 Regulatory quality*..... | 39.7 | 91 |
| 1.2.2 Rule of law*..... | 30.4 | 101 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 14.9 | 64 ● |
| 1.3 Business environment..... | 56.5 | 113 |
| 1.3.1 Ease of starting a business*..... | 80.3 | 98 |
| 1.3.2 Ease of resolving insolvency*..... | 39.6 | 102 |
| 1.3.3 Ease of paying taxes*..... | 49.5 | 125 |

2 Human capital & research.....10.4 139 ○

| | | |
|--|-------------|--------------|
| 2.1 Education..... | 20.9 | 134 ○ |
| 2.1.1 Expenditure on education, % GDP [Ⓔ] | 4.4 | 75 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓔ] | 7.3 | 107 ○ |
| 2.1.3 School life expectancy, years..... | n/a | n/a |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓔ] | 30.8 | 107 |
| 2.2 Tertiary education..... | n/a | n/a |
| 2.2.1 Tertiary enrolment, % gross..... | n/a | n/a |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 0.0 | 128 ○ |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP..... | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |

3 Infrastructure.....22.7 126

| | | |
|---|-------------|------------|
| 3.1 Information & communication technologies (ICTs)..... | 16.5 | 130 |
| 3.1.1 ICT access*..... | 39.8 | 102 |
| 3.1.2 ICT use*..... | 6.8 | 117 |
| 3.1.3 Government's online service*..... | 9.4 | 135 ○ |
| 3.1.4 E-participation*..... | 9.8 | 133 ○ |
| 3.2 General infrastructure..... | 18.9 | 123 |
| 3.2.1 Electricity output, kWh/cap..... | 673.0 | 101 |
| 3.2.2 Logistics performance*..... | 25.1 | 90 |
| 3.2.3 Gross capital formation, % GDP..... | 19.0 | 101 |
| 3.3 Ecological sustainability..... | 32.8 | 87 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.8 | 70 |
| 3.3.2 Environmental performance*..... | 50.3 | 80 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.4 | 97 |

4 Market sophistication.....41.6 104

| | | |
|---|-------------|-------------|
| 4.1 Credit..... | 28.8 | 78 ● |
| 4.1.1 Ease of getting credit*..... | 45.0 | 80 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 28.8 | 102 |
| 4.1.3 Microfinance gross loans, % GDP..... | 2.8 | 19 ● |

| | | |
|--|-------------|------------|
| 4.2 Investment..... | 23.6 | 131 |
| 4.2.1 Ease of protecting investors*..... | 33.3 | 134 ○ |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 45 |

| | | |
|--|-------------|-----------|
| 4.3 Trade & competition..... | 72.5 | 88 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 2.3 | 49 ● |
| 4.3.2 Intensity of local competition [†] | 52.9 | 124 ○ |

5 Business sophistication.....33.0 75 ●

| | | |
|--|-------------|-----------|
| 5.1 Knowledge workers..... | 41.0 | 59 |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 14.8 | 94 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 47.2 | 33 ● |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |

5.2 Innovation linkages.....26.9 93

| | | |
|---|------|-------|
| 5.2.1 University/industry research collaboration [†] | 32.6 | 113 |
| 5.2.2 State of cluster development [†] | 37.5 | 107 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 108 ○ |

5.3 Knowledge absorption.....31.3 81 ●

| | | |
|---|-----|-------|
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.0 | 118 ○ |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 6.5 | 73 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP..... | 7.5 | 17 ● |

6 Knowledge & technology outputs.....12.3 131

| | | |
|---|------------|--------------|
| 6.1 Knowledge creation..... | 2.5 | 134 ○ |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 0.1 | 98 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 2.1 | 125 |
| 6.1.5 Citable documents H index..... | 51.0 | 114 |

6.2 Knowledge impact.....3.6 136 ○

| | | |
|---|-----|-----|
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.8 | 96 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |

6.3 Knowledge diffusion.....30.8 53 ●

| | | |
|---|-----|------|
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.1 | 104 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 2.4 | 29 ● |
| 6.3.4 FDI net outflows, % GDP..... | 0.9 | 54 ● |

7 Creative outputs.....17.7 127

| | | |
|---|-------------|------------|
| 7.1 Intangible assets..... | 32.5 | 124 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 41.2 | 60 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 37.0 | 128 ○ |
| 7.1.4 ICTs & organizational model creation [†] | 38.3 | 122 |

7.2 Creative goods & services.....2.8 122

| | | |
|--|-----|-------|
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓔ] | 0.3 | 100 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 0.1 | 89 |

7.3 Online creativity.....3.1 103

| | | |
|---|-------|------|
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 3.3 | 70 ● |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.8 | 89 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 691.2 | 88 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|--------------------|
| Population (millions) | 18.5 |
| GDP (US\$ billions) | 8.0 |
| GDP per capita, PPP\$ | 869.6 |
| Income group | Low income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|------------|
| Global Innovation Index (out of 141) | 21.2 | 134 |
| Innovation Output Sub-Index | 9.6 | 139 ○ |
| Innovation Input Sub-Index | 32.9 | 117 |
| Innovation Efficiency Ratio | 0.3 | 139 ○ |
| Global Innovation Index 2014 (out of 143) | 24.3 | 131 |

| | | |
|--|-------------|------------|
| 1 Institutions | 45.1 | 119 |
| 1.1 Political environment | 27.2 | 126 |
| 1.1.1 Political stability* | 32.1 | 129 |
| 1.1.2 Government effectiveness* | 22.3 | 113 |
| 1.2 Regulatory environment | 58.9 | 90 |
| 1.2.1 Regulatory quality* | 31.6 | 110 |
| 1.2.2 Rule of law* | 27.8 | 108 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 14.0 | 58 ● |
| 1.3 Business environment | 49.2 | 135 |
| 1.3.1 Ease of starting a business* | 54.4 | 137 ○ |
| 1.3.2 Ease of resolving insolvency* | 36.0 | 112 |
| 1.3.3 Ease of paying taxes* | 57.1 | 119 |
| 2 Human capital & research | 11.7 | 135 |
| 2.1 Education | 27.3 | 124 |
| 2.1.1 Expenditure on education, % GDP | 4.4 | 73 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 46.7 | 4 ● |
| 2.1.3 School life expectancy, years | 5.4 | 132 ○ |
| 2.1.4 PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓔ] | 34.7 | 115 |
| 2.2 Tertiary education | 7.8 | 127 |
| 2.2.1 Tertiary enrolment, % gross | 1.8 | 132 ○ |
| 2.2.2 Graduates in science & engineering, % [Ⓔ] | 4.3 | 100 ○ |
| 2.2.3 Tertiary inbound mobility, % | 5.4 | 33 ● |
| 2.3 Research & development (R&D) | 0.0 | 127 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 7.7 | 104 ○ |
| 2.3.2 Gross expenditure on R&D, % GDP | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3* | 0.0 | 73 ○ |
| 3 Infrastructure | 32.7 | 91 |
| 3.1 Information & communication technologies (ICTs) | 14.1 | 136 |
| 3.1.1 ICT access* | 19.5 | 133 |
| 3.1.2 ICT use* | 0.9 | 134 ○ |
| 3.1.3 Government's online service* | 12.6 | 133 |
| 3.1.4 E-participation* | 23.5 | 115 |
| 3.2 General infrastructure | 59.2 | 8 ● |
| 3.2.1 Electricity output, kWh/cap | n/a | n/a |
| 3.2.2 Logistics performance* | 11.9 | 117 |
| 3.2.3 Gross capital formation, % GDP | 46.4 | 5 ● |
| 3.3 Ecological sustainability | 24.8 | 120 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | n/a | n/a |
| 3.3.2 Environmental performance* | 36.3 | 119 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 0.2 | 111 |
| 4 Market sophistication | 40.4 | 111 |
| 4.1 Credit | 12.8 | 127 |
| 4.1.1 Ease of getting credit* | 30.0 | 113 |
| 4.1.2 Domestic credit to private sector, % GDP | 14.2 | 131 |
| 4.1.3 Microfinance gross loans, % GDP | 0.4 | 45 ● |

| | | |
|---|-------------|--------------|
| 4.2 Investment | 42.5 | 45 |
| 4.2.1 Ease of protecting investors* | 42.5 | 120 |
| 4.2.2 Market capitalization, % GDP | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | n/a | n/a |
| 4.3 Trade & competition | 66.0 | 112 |
| 4.3.1 Applied tariff rate, weighted mean, % | 9.7 | 118 |
| 4.3.2 Intensity of local competition [†] | n/a | n/a |
| 5 Business sophistication | 34.4 | 70 |
| 5.1 Knowledge workers | 37.9 | 69 |
| 5.1.1 Knowledge-intensive employment, % | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 32.1 | 57 |
| 5.1.3 GERD performed by business, % of GDP | n/a | n/a |
| 5.1.4 GERD financed by business, % | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total | n/a | n/a |
| 5.2 Innovation linkages | 12.9 | 136 ○ |
| 5.2.1 University/industry research collaboration [†] | n/a | n/a |
| 5.2.2 State of cluster development [†] | n/a | n/a |
| 5.2.3 GERD financed by abroad, % | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 0.1 | 45 ● |
| 5.3 Knowledge absorption | 52.5 | 10 ● |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 0.1 | 99 |
| 5.3.2 High-tech imports less re-imports, % total trade | 6.9 | 66 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 7.8 | 1 ● |
| 5.3.4 FDI net inflows, % GDP | 8.6 | 14 ● |
| 6 Knowledge & technology outputs | 18.4 | 111 |
| 6.1 Knowledge creation | 4.8 | 106 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | n/a | n/a |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP [Ⓔ] | 0.1 | 71 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 6.6 | 87 |
| 6.1.5 Citable documents H index | 51.0 | 114 |
| 6.2 Knowledge impact | 34.0 | 89 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 2.4 | 39 ● |
| 6.2.2 New businesses/th pop. 15–64 [Ⓔ] | 0.0 | 106 ○ |
| 6.2.3 Computer software spending, % GDP | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 0.7 | 121 |
| 6.2.5 High- & medium-high-tech manufactures, % | n/a | n/a |
| 6.3 Knowledge diffusion | 16.3 | 126 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓔ] | 0.0 | 113 ○ |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.1 | 96 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 0.7 | 88 |
| 6.3.4 FDI net outflows, % GDP [Ⓔ] | 0.0 | 102 |
| 7 Creative outputs | 0.8 | 140 ○ |
| 7.1 Intangible assets | n/a | n/a |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | n/a | n/a |
| 7.1.4 ICTs & organizational model creation [†] | n/a | n/a |
| 7.2 Creative goods & services | 1.1 | 131 |
| 7.2.1 Cultural & creative services exports, % total trade | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓔ] | 0.7 | 84 |
| 7.2.3 Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade [Ⓔ] | 0.0 | 123 |
| 7.3 Online creativity | 0.4 | 119 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 1.3 | 101 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 0.0 | 137 ○ |
| 7.3.3 Wikipedia edits/pop. 15–69 | 5.3 | 141 ○ |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------|
| Population (millions)..... | 178.5 |
| GDP (US\$ billions)..... | 573.7 |
| GDP per capita, PPP\$..... | 2,997.4 |
| Income group..... | Lower-middle income |
| Region..... | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 23.7 | 128 |
| Innovation Output Sub-Index..... | 21.1 | 109 |
| Innovation Input Sub-Index..... | 26.3 | 135 |
| Innovation Efficiency Ratio..... | 0.8 | 28 ● |
| Global Innovation Index 2014 (out of 143)..... | 27.8 | 110 |

1 Institutions.....39.2 133

| | | |
|---|------|-------|
| 1.1 Political environment..... | 13.4 | 138 ○ |
| 1.1.1 Political stability*..... | 12.7 | 138 ○ |
| 1.1.2 Government effectiveness*..... | 14.1 | 129 |
| 1.2 Regulatory environment..... | 54.1 | 104 |
| 1.2.1 Regulatory quality*..... | 29.0 | 117 |
| 1.2.2 Rule of law*..... | 16.8 | 131 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 15.4 | 67 ● |
| 1.3 Business environment..... | 50.0 | 132 |
| 1.3.1 Ease of starting a business*..... | 77.1 | 106 |
| 1.3.2 Ease of resolving insolvency*..... | 33.8 | 114 |
| 1.3.3 Ease of paying taxes*..... | 39.2 | 135 |

2 Human capital & research.....11.5 137 ○

| | | |
|--|------|------|
| 2.1 Education..... | 24.5 | 128 |
| 2.1.1 Expenditure on education, % GDP..... | n/a | n/a |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years [Ⓔ] | 9.0 | 121 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓔ] | 33.1 | 112 |
| 2.2 Tertiary education..... | 8.3 | 124 |
| 2.2.1 Tertiary enrolment, % gross [Ⓔ] | 10.4 | 109 |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 1.8 | 106 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 38.6 | 95 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.2 | 87 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |

3 Infrastructure.....22.9 124

| | | |
|--|-------|-------|
| 3.1 Information & communication technologies (ICTs)..... | 26.3 | 111 |
| 3.1.1 ICT access*..... | 25.3 | 125 |
| 3.1.2 ICT use*..... | 16.0 | 100 |
| 3.1.3 Government's online service*..... | 30.7 | 101 |
| 3.1.4 E-participation*..... | 33.3 | 92 |
| 3.2 General infrastructure..... | 15.9 | 128 |
| 3.2.1 Electricity output, kWh/cap..... | 170.0 | 117 |
| 3.2.2 Logistics performance*..... | 33.0 | 72 |
| 3.2.3 Gross capital formation, % GDP..... | 15.0 | 123 |
| 3.3 Ecological sustainability..... | 26.5 | 115 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.1 | 89 |
| 3.3.2 Environmental performance*..... | 39.2 | 111 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.0 | 133 ○ |

4 Market sophistication.....37.6 122

| | | |
|---|------|------|
| 4.1 Credit..... | 21.2 | 107 |
| 4.1.1 Ease of getting credit*..... | 60.0 | 48 ● |
| 4.1.2 Domestic credit to private sector, % GDP..... | 12.6 | 132 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.1 | 71 |

| | | |
|--|------|------|
| 4.2 Investment..... | 24.7 | 128 |
| 4.2.1 Ease of protecting investors*..... | 57.5 | 60 ● |
| 4.2.2 Market capitalization, % GDP..... | 12.2 | 83 |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.9 | 67 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 70 |
| 4.3 Trade & competition..... | 67.1 | 105 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 10.6 | 125 |
| 4.3.2 Intensity of local competition [†] | 71.3 | 48 ● |

5 Business sophistication.....20.3 137 ○

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 19.6 | 124 |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 25.7 | 73 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, % [Ⓔ] | 0.2 | 89 ○ |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 17.8 | 129 |
| 5.2.1 University/industry research collaboration [†] | 29.2 | 119 |
| 5.2.2 State of cluster development [†] | 46.2 | 69 ● |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 1.0 | 88 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 90 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓔ] | 0.0 | 102 |
| 5.3 Knowledge absorption..... | 23.4 | 123 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.3 | 75 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 2.9 | 124 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.1 | 57 ● |
| 5.3.4 FDI net inflows, % GDP..... | 1.1 | 112 |

6 Knowledge & technology outputs.....19.8 105

| | | |
|---|-------|-------|
| 6.1 Knowledge creation..... | 3.2 | 124 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 0.1 | 107 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.0 | 100 ○ |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 2.1 | 124 |
| 6.1.5 Citable documents H index..... | 103.0 | 69 ● |
| 6.2 Knowledge impact..... | 31.2 | 99 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 3.5 | 22 ● |
| 6.2.2 New businesses/th pop. 15–64..... | 0.9 | 71 |
| 6.2.3 Computer software spending, % GDP..... | 0.1 | 74 ○ |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.1 | 140 ○ |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 25.0 | 88 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.1 | 108 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP [Ⓔ] | 0.3 | 74 |

7 Creative outputs.....22.5 111

| | | |
|--|------|------|
| 7.1 Intangible assets..... | 38.0 | 100 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 19.9 | 83 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 55.8 | 69 ● |
| 7.1.4 ICTs & organizational model creation [†] | 48.2 | 85 |
| 7.2 Creative goods & services..... | 13.8 | 85 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓔ] | 11.2 | 14 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 0.3 | 56 |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 0.2 | 78 |
| 7.3 Online creativity..... | 0.3 | 125 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.6 | 113 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.1 | 116 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 36.2 | 128 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 0.0 | 74 ○ |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Norway

Key indicators

| | |
|----------------------------|-------------|
| Population (millions)..... | 5.1 |
| GDP (US\$ billions)..... | 500.2 |
| GDP per capita, PPP\$..... | 56,222.6 |
| Income group..... | High income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 53.8 | 20 |
| Innovation Output Sub-Index..... | 45.4 | 25 |
| Innovation Input Sub-Index..... | 62.2 | 16 |
| Innovation Efficiency Ratio..... | 0.7 | 63 |
| Global Innovation Index 2014 (out of 143)..... | 55.6 | 14 |

1 Institutions.....94.0 3 ●

| | | |
|---|-------|-----|
| 1.1 Political environment..... | 94.4 | 3 ● |
| 1.1.1 Political stability*..... | 97.1 | 7 ● |
| 1.1.2 Government effectiveness*..... | 91.8 | 5 ● |
| 1.2 Regulatory environment..... | 97.3 | 4 ● |
| 1.2.1 Regulatory quality*..... | 91.9 | 12 |
| 1.2.2 Rule of law*..... | 100.0 | 1 ● |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.7 | 24 |
| 1.3 Business environment..... | 90.2 | 5 ● |
| 1.3.1 Ease of starting a business*..... | 94.0 | 21 |
| 1.3.2 Ease of resolving insolvency*..... | 85.6 | 7 ● |
| 1.3.3 Ease of paying taxes*..... | 90.8 | 14 |

2 Human capital & research.....49.9 21

| | | |
|--|--------|------|
| 2.1 Education..... | 54.2 | 34 |
| 2.1.1 Expenditure on education, % GDP..... | 6.6 | 21 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 26.2 | 32 |
| 2.1.3 School life expectancy, years..... | 17.5 | 9 |
| 2.1.4 PISA scales in reading, maths, & science..... | 495.9 | 23 |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a |
| 2.2 Tertiary education..... | 40.1 | 45 |
| 2.2.1 Tertiary enrolment, % gross..... | 74.1 | 19 |
| 2.2.2 Graduates in science & engineering, %..... | 17.0 | 66 ○ |
| 2.2.3 Tertiary inbound mobility, %..... | 7.7 | 23 |
| 2.3 Research & development (R&D)..... | 55.3 | 18 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 5575.0 | 8 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 1.7 | 22 |
| 2.3.3 QS university ranking, average score top 3*..... | 58.9 | 19 |

3 Infrastructure.....64.8 3 ●

| | | |
|--|---------|------|
| 3.1 Information & communication technologies (ICTs)..... | 77.1 | 16 |
| 3.1.1 ICT access*..... | 83.6 | 15 |
| 3.1.2 ICT use*..... | 80.7 | 5 ● |
| 3.1.3 Government's online service*..... | 75.6 | 21 |
| 3.1.4 E-participation*..... | 68.6 | 30 |
| 3.2 General infrastructure..... | 68.1 | 1 ● |
| 3.2.1 Electricity output, kWh/cap..... | 26317.9 | 1 ● |
| 3.2.2 Logistics performance*..... | 91.7 | 7 ● |
| 3.2.3 Gross capital formation, % GDP..... | 26.8 | 38 |
| 3.3 Ecological sustainability..... | 49.1 | 31 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 7.3 | 59 ○ |
| 3.3.2 Environmental performance*..... | 78.0 | 10 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 3.1 | 32 |

4 Market sophistication.....56.5 29

| | | |
|---|------|-----|
| 4.1 Credit..... | 41.3 | 43 |
| 4.1.1 Ease of getting credit*..... | 55.0 | 56 |
| 4.1.2 Domestic credit to private sector, % GDP [Ⓔ] | 86.2 | 37 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|------|-----|
| 4.2 Investment..... | 42.5 | 47 |
| 4.2.1 Ease of protecting investors*..... | 70.0 | 12 |
| 4.2.2 Market capitalization, % GDP..... | 50.6 | 38 |
| 4.2.3 Total value of stocks traded, % GDP..... | 26.6 | 27 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.2 | 17 |
| 4.3 Trade & competition..... | 85.7 | 23 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 0.3 | 2 ● |
| 4.3.2 Intensity of local competition [†] | 72.3 | 47 |

5 Business sophistication.....45.8 27

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 62.1 | 17 |
| 5.1.1 Knowledge-intensive employment, %..... | 46.8 | 7 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP..... | 0.9 | 23 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 44.2 | 31 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 23.2 | 11 |
| 5.2 Innovation linkages..... | 42.9 | 29 |
| 5.2.1 University/industry research collaboration [†] | 67.0 | 14 |
| 5.2.2 State of cluster development [†] | 67.7 | 13 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 7.8 | 50 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 25 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.5 | 23 |
| 5.3 Knowledge absorption..... | 32.4 | 71 ○ |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.4 | 62 ○ |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 5.9 | 85 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.7 | 31 |
| 5.3.4 FDI net inflows, % GDP..... | -0.5 | 131 ○ |

6 Knowledge & technology outputs.....39.2 27

| | | |
|---|-------|------|
| 6.1 Knowledge creation..... | 34.5 | 27 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 3.3 | 29 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 2.0 | 23 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 33.6 | 24 |
| 6.1.5 Citable documents H index..... | 362.0 | 20 |
| 6.2 Knowledge impact..... | 49.1 | 22 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 1.4 | 63 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 7.8 | 16 |
| 6.2.3 Computer software spending, % GDP..... | 0.6 | 17 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 6.3 | 56 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 37.9 | 24 |
| 6.3 Knowledge diffusion..... | 33.9 | 43 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.3 | 30 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 3.2 | 41 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.5 | 61 ○ |
| 6.3.4 FDI net outflows, % GDP..... | 2.3 | 30 |

7 Creative outputs.....51.7 16

| | | |
|---|--------|------|
| 7.1 Intangible assets..... | 50.5 | 45 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 30.0 | 71 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.9 | 32 ○ |
| 7.1.3 ICTs & business model creation [†] | 74.9 | 11 |
| 7.1.4 ICTs & organizational model creation [†] | 75.1 | 3 ● |
| 7.2 Creative goods & services..... | 35.5 | 26 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.6 | 34 |
| 7.2.2 National feature films/mn pop. 15–69..... | 8.1 | 23 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 100.0 | 1 ● |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 1.8 | 33 |
| 7.2.5 Creative goods exports, % total trade..... | 0.5 | 59 |
| 7.3 Online creativity..... | 70.1 | 10 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 62.6 | 15 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 76.5 | 13 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 7232.9 | 15 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 88.0 | 18 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|----------------------------------|
| Population (millions)..... | 3.9 |
| GDP (US\$ billions)..... | 77.8 |
| GDP per capita, PPP\$..... | 30,325.1 |
| Income group..... | High income |
| Region..... | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 35.0 | 69 |
| Innovation Output Sub-Index..... | 28.2 | 68 |
| Innovation Input Sub-Index..... | 41.8 | 68 |
| Innovation Efficiency Ratio..... | 0.7 | 86 |
| Global Innovation Index 2014 (out of 143)..... | 33.9 | 75 |

1 Institutions.....70.9 44

| | | |
|---|------|------|
| 1.1 Political environment..... | 61.5 | 50 |
| 1.1.1 Political stability*..... | 75.9 | 47 |
| 1.1.2 Government effectiveness*..... | 47.1 | 58 |
| 1.2 Regulatory environment..... | 80.7 | 29 ● |
| 1.2.1 Regulatory quality*..... | 60.4 | 50 |
| 1.2.2 Rule of law*..... | 62.4 | 41 ● |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.0 | 1 ● |
| 1.3 Business environment..... | 70.4 | 62 |
| 1.3.1 Ease of starting a business*..... | 79.3 | 100 |
| 1.3.2 Ease of resolving insolvency*..... | 39.0 | 103 |
| 1.3.3 Ease of paying taxes*..... | 92.9 | 10 ● |

2 Human capital & research.....29.1 68

| | | |
|--|-------|-------|
| 2.1 Education..... | 33.6 | 105 |
| 2.1.1 Expenditure on education, % GDP [Ⓓ] | 4.2 | 80 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 15.9 | 79 |
| 2.1.3 School life expectancy, years [Ⓓ] | 13.6 | 66 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a |
| 2.2 Tertiary education..... | 49.4 | 20 ● |
| 2.2.1 Tertiary enrolment, % gross [Ⓓ] | 28.1 | 81 |
| 2.2.2 Graduates in science & engineering, % [Ⓓ] | 38.9 | 4 ● |
| 2.2.3 Tertiary inbound mobility, %..... | 2.6 | 58 |
| 2.3 Research & development (R&D)..... | 4.3 | 85 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓓ] | 159.9 | 76 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓓ] | 0.1 | 102 ○ |
| 2.3.3 QS university ranking, average score top 3*..... | 8.3 | 63 |

3 Infrastructure.....45.4 48

| | | |
|--|--------|------|
| 3.1 Information & communication technologies (ICTs)..... | 65.4 | 36 ● |
| 3.1.1 ICT access*..... | 71.2 | 42 ● |
| 3.1.2 ICT use*..... | 46.5 | 44 |
| 3.1.3 Government's online service*..... | 73.2 | 26 ● |
| 3.1.4 E-participation*..... | 70.6 | 24 ● |
| 3.2 General infrastructure..... | 42.3 | 35 ● |
| 3.2.1 Electricity output, kWh/cap..... | 7558.0 | 26 ● |
| 3.2.2 Logistics performance*..... | 42.5 | 57 |
| 3.2.3 Gross capital formation, % GDP..... | 28.4 | 30 ● |
| 3.3 Ecological sustainability..... | 28.5 | 103 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 5.0 | 98 |
| 3.3.2 Environmental performance*..... | 47.8 | 88 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.5 | 81 |

4 Market sophistication.....40.7 108

| | | |
|---|------|-----|
| 4.1 Credit..... | 23.8 | 94 |
| 4.1.1 Ease of getting credit*..... | 35.0 | 102 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 42.2 | 80 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|------|-------|
| 4.2 Investment..... | 22.2 | 134 ○ |
| 4.2.1 Ease of protecting investors*..... | 45.8 | 107 |
| 4.2.2 Market capitalization, % GDP..... | 25.9 | 62 |
| 4.2.3 Total value of stocks traded, % GDP..... | 3.4 | 54 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 66 ○ |
| 4.3 Trade & competition..... | 76.2 | 71 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 4.1 | 65 |
| 4.3.2 Intensity of local competition [†] | 66.6 | 70 |

5 Business sophistication.....23.0 128 ○

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 3.4 | 139 ○ |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP [Ⓓ] | 0.0 | 76 ○ |
| 5.1.4 GERD financed by business, % [Ⓓ] | 4.6 | 75 ○ |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 40.9 | 39 ● |
| 5.2.1 University/industry research collaboration [†] | 43.6 | 67 |
| 5.2.2 State of cluster development [†] | 49.8 | 51 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 13 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓓ] | 0.0 | 74 |
| 5.3 Knowledge absorption..... | 24.7 | 116 |
| 5.3.1 Royalty & license fees payments, % total trade..... | n/a | n/a |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 2.9 | 125 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP..... | 2.0 | 83 |

6 Knowledge & technology outputs.....23.9 84

| | | |
|---|------|------|
| 6.1 Knowledge creation..... | 4.1 | 112 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP [Ⓓ] | 0.0 | 92 ○ |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 3.8 | 110 |
| 6.1.5 Citable documents H index..... | 74.0 | 93 |
| 6.2 Knowledge impact..... | 35.4 | 82 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 2.6 | 36 |
| 6.2.2 New businesses/th pop. 15–64 [Ⓓ] | 1.7 | 49 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 3.0 | 80 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓓ] | 14.9 | 65 |
| 6.3 Knowledge diffusion..... | 32.0 | 51 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.3 | 88 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | 1.7 | 38 |

7 Creative outputs.....32.5 70

| | | |
|---|-------|-------|
| 7.1 Intangible assets..... | 55.4 | 27 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 58.7 | 58 |
| 7.1.4 ICTs & organizational model creation [†] | 52.1 | 70 |
| 7.2 Creative goods & services..... | 3.0 | 119 ○ |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓓ] | 0.0 | 104 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 7.8 | 40 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓓ] | 0.4 | 92 ○ |
| 7.2.5 Creative goods exports, % total trade..... | 0.0 | 119 ○ |
| 7.3 Online creativity..... | 16.0 | 72 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 2.5 | 80 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.2 | 111 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 637.4 | 89 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 56.7 | 64 ○ |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓓ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------------|
| Population (millions) | 185.1 |
| GDP (US\$ billions) | 250.1 |
| GDP per capita, PPP\$ | 3,231.2 |
| Income group | Lower-middle income |
| Region | Central and Southern Asia |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|--------------|
| Global Innovation Index (out of 141) | 23.1 | 131 ○ |
| Innovation Output Sub-Index | 19.9 | 117 |
| Innovation Input Sub-Index | 26.2 | 136 ○ |
| Innovation Efficiency Ratio | 0.8 | 47 ● |
| Global Innovation Index 2014 (out of 143) | 24.0 | 134 |

| | | |
|--|-------------|--------------|
| 1 Institutions | 37.1 | 134 ○ |
| 1.1 Political environment | 9.9 | 139 ○ |
| 1.1.1 Political stability* | 0.0 | 141 ○ |
| 1.1.2 Government effectiveness* | 19.8 | 117 |
| 1.2 Regulatory environment | 44.3 | 122 |
| 1.2.1 Regulatory quality* | 28.8 | 118 |
| 1.2.2 Rule of law* | 24.2 | 118 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 27.2 | 116 |
| 1.3 Business environment | 57.2 | 111 |
| 1.3.1 Ease of starting a business* | 80.9 | 95 |
| 1.3.2 Ease of resolving insolvency* | 46.2 | 73 |
| 1.3.3 Ease of paying taxes* | 44.5 | 130 ○ |

| | | |
|---|-------------|--------------|
| 2 Human capital & research | 12.8 | 134 ○ |
| 2.1 Education | 20.4 | 136 ○ |
| 2.1.1 Expenditure on education, % GDP | 2.5 | 118 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 10.4 | 99 |
| 2.1.3 School life expectancy, years | 7.8 | 128 ○ |
| 2.1.4 PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary | 21.0 | 87 |
| 2.2 Tertiary education | 7.8 | 128 ○ |
| 2.2.1 Tertiary enrolment, % gross | 9.8 | 113 |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, % | n/a | n/a |
| 2.3 Research & development (R&D) | 10.2 | 68 ● |
| 2.3.1 Researchers, FTE/mn pop. | 166.0 | 70 |
| 2.3.2 Gross expenditure on R&D, % GDP | 0.3 | 79 |
| 2.3.3 QS university ranking, average score top 3* | 22.1 | 51 ● |

| | | |
|---|-------------|------------|
| 3 Infrastructure | 23.1 | 123 |
| 3.1 Information & communication technologies (ICTs) | 25.0 | 114 |
| 3.1.1 ICT access* | 30.3 | 116 |
| 3.1.2 ICT use* | 4.2 | 125 |
| 3.1.3 Government's online service* | 32.3 | 95 |
| 3.1.4 E-participation* | 33.3 | 92 |
| 3.2 General infrastructure | 15.5 | 131 ○ |
| 3.2.1 Electricity output, kWh/cap | 536.5 | 106 |
| 3.2.2 Logistics performance* | 33.9 | 69 |
| 3.2.3 Gross capital formation, % GDP | 14.0 | 130 ○ |
| 3.3 Ecological sustainability | 28.8 | 99 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 8.1 | 50 ● |
| 3.3.2 Environmental performance* | 34.6 | 123 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 0.3 | 99 |

| | | |
|--|-------------|------------|
| 4 Market sophistication | 35.8 | 129 |
| 4.1 Credit | 11.9 | 129 |
| 4.1.1 Ease of getting credit* | 30.0 | 113 |
| 4.1.2 Domestic credit to private sector, % GDP | 16.0 | 125 |
| 4.1.3 Microfinance gross loans, % GDP | 0.1 | 61 |

| | | |
|--|------|------|
| 4.2 Investment | 29.9 | 97 |
| 4.2.1 Ease of protecting investors* | 66.7 | 21 ● |
| 4.2.2 Market capitalization, % GDP | 19.5 | 71 |
| 4.2.3 Total value of stocks traded, % GDP | 5.3 | 48 ● |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.0 | 73 ○ |
| 4.3 Trade & competition | 65.5 | 116 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 9.5 | 117 |
| 4.3.2 Intensity of local competition [†] | 64.5 | 81 |

| | | |
|---|-------------|--------------|
| 5 Business sophistication | 22.5 | 131 ○ |
| 5.1 Knowledge workers | 18.2 | 125 |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 19.5 | 74 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 6.7 | 107 ○ |
| 5.1.3 GERD performed by business, % of GDP | n/a | n/a |
| 5.1.4 GERD financed by business, % | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total | n/a | n/a |
| 5.2 Innovation linkages | 20.2 | 123 |
| 5.2.1 University/industry research collaboration [†] | 36.9 | 95 |
| 5.2.2 State of cluster development [†] | 49.0 | 55 ● |
| 5.2.3 GERD financed by abroad, % | 1.3 | 86 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 79 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓔ] | 0.0 | 104 |
| 5.3 Knowledge absorption | 28.9 | 97 |
| 5.3.1 Royalty & license fees payments, % total trade | 0.3 | 71 |
| 5.3.2 High-tech imports less re-imports, % total trade | 7.3 | 60 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade | 1.0 | 60 |
| 5.3.4 FDI net inflows, % GDP | 0.6 | 121 |

| | | |
|---|-------------|------------|
| 6 Knowledge & technology outputs | 20.2 | 101 |
| 6.1 Knowledge creation | 8.4 | 82 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | 0.2 | 91 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 7.8 | 75 |
| 6.1.5 Citable documents H index | 130.0 | 55 ● |
| 6.2 Knowledge impact | 29.0 | 107 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 0.9 | 75 |
| 6.2.2 New businesses/th pop. 15–64 | 0.0 | 104 ○ |
| 6.2.3 Computer software spending, % GDP | 0.3 | 51 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 2.8 | 86 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 23.7 | 49 ● |
| 6.3 Knowledge diffusion | 23.1 | 100 |
| 6.3.1 Royalty & license fees receipts, % total trade | 0.0 | 88 |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.9 | 67 |
| 6.3.3 Comm., computer & info. services exp., % total trade | 2.3 | 34 ● |
| 6.3.4 FDI net outflows, % GDP | 0.1 | 90 |

| | | |
|---|-------------|------------|
| 7 Creative outputs | 19.6 | 121 |
| 7.1 Intangible assets | 34.3 | 118 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | 18.8 | 84 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 50.3 | 91 |
| 7.1.4 ICTs & organizational model creation [†] | 43.3 | 101 |
| 7.2 Creative goods & services | 9.0 | 100 |
| 7.2.1 Cultural & creative services exports, % total trade | 0.0 | 77 |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓔ] | 0.3 | 102 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69 | 0.0 | 59 ○ |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 0.3 | 96 ○ |
| 7.2.5 Creative goods exports, % total trade | 1.1 | 37 ● |
| 7.3 Online creativity | 0.9 | 114 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 0.7 | 111 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 0.2 | 115 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 244.8 | 104 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------------------|
| Population (millions)..... | 3.9 |
| GDP (US\$ billions)..... | 43.8 |
| GDP per capita, PPP\$..... | 17,809.9 |
| Income group..... | Upper-middle income |
| Region..... | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 36.8 | 62 |
| Innovation Output Sub-Index..... | 32.2 | 53 |
| Innovation Input Sub-Index..... | 41.4 | 72 |
| Innovation Efficiency Ratio..... | 0.8 | 36 |
| Global Innovation Index 2014 (out of 143)..... | 38.3 | 52 |

| | | |
|--|-------------|-----------|
| 1 Institutions..... | 59.4 | 73 |
| 1.1 Political environment..... | 55.5 | 57 |
| 1.1.1 Political stability*..... | 60.9 | 75 |
| 1.1.2 Government effectiveness*..... | 50.1 | 53 |
| 1.2 Regulatory environment..... | 64.7 | 78 |
| 1.2.1 Regulatory quality*..... | 57.7 | 58 |
| 1.2.2 Rule of law*..... | 41.3 | 73 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 18.1 | 83 |
| 1.3 Business environment..... | 58.1 | 110 |
| 1.3.1 Ease of starting a business*..... | 91.9 | 33 |
| 1.3.2 Ease of resolving insolvency*..... | 33.7 | 115 |
| 1.3.3 Ease of paying taxes*..... | 48.6 | 127 ○ |
| 2 Human capital & research..... | 26.2 | 83 |
| 2.1 Education..... | 35.4 | 98 |
| 2.1.1 Expenditure on education, % GDP..... | 3.3 | 102 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 9.7 | 103 ○ |
| 2.1.3 School life expectancy, years..... | 13.3 | 75 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 14.2 | 55 |
| 2.2 Tertiary education..... | 41.3 | 40 |
| 2.2.1 Tertiary enrolment, % gross..... | 43.5 | 61 |
| 2.2.2 Graduates in science & engineering, % [Ⓐ] | 22.0 | 38 |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 1.8 | 103 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓐ] | 117.1 | 81 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓐ] | 0.2 | 93 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 43.1 | 55 |
| 3.1 Information & communication technologies (ICTs)..... | 42.1 | 80 |
| 3.1.1 ICT access*..... | 55.3 | 71 |
| 3.1.2 ICT use*..... | 27.0 | 77 |
| 3.1.3 Government's online service*..... | 37.0 | 87 |
| 3.1.4 E-participation*..... | 49.0 | 64 |
| 3.2 General infrastructure..... | 39.5 | 41 |
| 3.2.1 Electricity output, kWh/cap..... | 2264.7 | 73 |
| 3.2.2 Logistics performance*..... | 52.7 | 43 |
| 3.2.3 Gross capital formation, % GDP..... | 29.8 | 22 ● |
| 3.3 Ecological sustainability..... | 47.7 | 36 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 13.5 | 7 ● |
| 3.3.2 Environmental performance*..... | 56.8 | 54 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.3 | 105 |
| 4 Market sophistication..... | 43.8 | 92 |
| 4.1 Credit..... | 34.0 | 56 |
| 4.1.1 Ease of getting credit*..... | 75.0 | 16 ● |
| 4.1.2 Domestic credit to private sector, % GDP..... | 70.7 | 46 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.4 | 47 |

| | | |
|--|------|-----|
| 4.2 Investment..... | 26.7 | 109 |
| 4.2.1 Ease of protecting investors*..... | 55.8 | 70 |
| 4.2.2 Market capitalization, % GDP..... | 33.0 | 54 |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.3 | 85 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 57 |
| 4.3 Trade & competition..... | 70.8 | 92 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓐ] | 7.6 | 105 |
| 4.3.2 Intensity of local competition [†] | 68.4 | 65 |

| | | |
|---|-------------|-----------|
| 5 Business sophistication..... | 34.5 | 69 |
| 5.1 Knowledge workers..... | 25.0 | 104 |
| 5.1.1 Knowledge-intensive employment, % [Ⓐ] | 24.4 | 59 |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 11.0 | 104 ○ |
| 5.1.3 GERD performed by business, % of GDP [Ⓐ] | 0.0 | 84 ○ |
| 5.1.4 GERD financed by business, % [Ⓐ] | 18.9 | 63 |
| 5.1.5 Females employed w/advanced degrees, % total [Ⓐ] | 16.6 | 33 |
| 5.2 Innovation linkages..... | 32.2 | 63 |
| 5.2.1 University/industry research collaboration [†] | 50.6 | 39 |
| 5.2.2 State of cluster development [†] | 50.3 | 49 |
| 5.2.3 GERD financed by abroad, % [Ⓐ] | 20.7 | 19 ● |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 55 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.1 | 47 |
| 5.3 Knowledge absorption..... | 46.1 | 23 ● |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.3 | 76 |
| 5.3.2 High-tech imports less re-imports, % total trade [Ⓐ] | 20.2 | 7 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.3 | 114 ○ |
| 5.3.4 FDI net inflows, % GDP..... | 11.8 | 9 ● |

| | | |
|---|-------------|-----------|
| 6 Knowledge & technology outputs..... | 24.7 | 79 |
| 6.1 Knowledge creation..... | 3.6 | 121 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 0.1 | 95 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.2 | 48 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | 0.0 | 60 ○ |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 4.6 | 101 |
| 6.1.5 Citable documents H index..... | 119.0 | 60 |
| 6.2 Knowledge impact..... | 30.4 | 101 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | 14.1 | 5 ● |
| 6.2.3 Computer software spending, % GDP..... | 0.2 | 62 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 2.0 | 91 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓐ] | 5.2 | 89 ○ |
| 6.3 Knowledge diffusion..... | 40.0 | 35 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.0 | 72 |
| 6.3.2 High-tech exports less re-exports, % total trade [Ⓐ] | 18.4 | 6 ● |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.3 | 68 |
| 6.3.4 FDI net outflows, % GDP..... | 1.6 | 41 |

| | | |
|---|-------------|-----------|
| 7 Creative outputs..... | 39.7 | 42 |
| 7.1 Intangible assets..... | 53.0 | 36 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 63.0 | 35 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 64.5 | 33 |
| 7.1.4 ICTs & organizational model creation [†] | 59.8 | 41 |
| 7.2 Creative goods & services..... | 30.1 | 37 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.1 | 57 |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓐ] | 0.4 | 97 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓐ] | 5.3 | 6 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.0 | 124 ○ |
| 7.3 Online creativity..... | 22.7 | 61 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 56.0 | 16 ● |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 1.6 | 79 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 1416.5 | 69 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Paraguay

Key indicators

| | |
|-----------------------------|---------------------------------|
| Population (millions) | 6.9 |
| GDP (US\$ billions) | 29.7 |
| GDP per capita, PPP\$ | 7,134.4 |
| Income group | Lower-middle income |
| Region | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 30.7 | 88 |
| Innovation Output Sub-Index | 26.2 | 83 |
| Innovation Input Sub-Index | 35.2 | 103 |
| Innovation Efficiency Ratio | 0.7 | 54 ● |
| Global Innovation Index 2014 (out of 143) | 31.6 | 89 |

| | | |
|---|-------------|------------|
| 1 Institutions | 47.9 | 112 |
| 1.1 Political environment | 32.6 | 116 |
| 1.1.1 Political stability* | 47.6 | 103 |
| 1.1.2 Government effectiveness* | 17.6 | 122 |
| 1.2 Regulatory environment | 48.4 | 117 |
| 1.2.1 Regulatory quality* | 39.3 | 93 |
| 1.2.2 Rule of law* | 25.7 | 113 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 26.1 | 113 |
| 1.3 Business environment | 62.6 | 94 |
| 1.3.1 Ease of starting a business* | 77.5 | 103 |
| 1.3.2 Ease of resolving insolvency* | 40.9 | 98 |
| 1.3.3 Ease of paying taxes* | 69.5 | 87 |
| 2 Human capital & research | 23.9 | 90 |
| 2.1 Education | 41.5 | 81 |
| 2.1.1 Expenditure on education, % GDP | 5.0 | 60 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 17.6 | 72 |
| 2.1.3 School life expectancy, years [Ⓐ] | 11.9 | 93 |
| 2.1.4 PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓐ] | 8.9 | 16 ● |
| 2.2 Tertiary education | 29.1 | 76 |
| 2.2.1 Tertiary enrolment, % gross [Ⓐ] | 34.5 | 71 |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, % | n/a | n/a |
| 2.3 Research & development (R&D) | 1.2 | 113 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓐ] | 161.6 | 73 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓐ] | 0.1 | 108 ○ |
| 2.3.3 QS university ranking, average score top 3* | 0.0 | 73 ○ |
| 3 Infrastructure | 28.8 | 103 |
| 3.1 Information & communication technologies (ICTs) | 27.1 | 108 |
| 3.1.1 ICT access* | 44.9 | 90 |
| 3.1.2 ICT use* | 15.0 | 102 |
| 3.1.3 Government's online service* | 22.8 | 118 |
| 3.1.4 E-participation* | 25.5 | 110 |
| 3.2 General infrastructure | 27.8 | 82 |
| 3.2.1 Electricity output, kWh/cap | 9003.6 | 16 ● |
| 3.2.2 Logistics performance* | 31.6 | 75 |
| 3.2.3 Gross capital formation, % GDP | 15.7 | 119 |
| 3.3 Ecological sustainability | 31.5 | 91 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 8.6 | 45 ● |
| 3.3.2 Environmental performance* | 39.3 | 110 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 0.3 | 108 |
| 4 Market sophistication | 45.5 | 80 |
| 4.1 Credit | 40.1 | 44 ● |
| 4.1.1 Ease of getting credit* | 50.0 | 65 |
| 4.1.2 Domestic credit to private sector, % GDP | 45.8 | 73 |
| 4.1.3 Microfinance gross loans, % GDP | 4.7 | 11 ● |

| | | |
|---|------|-------|
| 4.2 Investment | 19.8 | 138 ○ |
| 4.2.1 Ease of protecting investors* | 38.3 | 132 ○ |
| 4.2.2 Market capitalization, % GDP | 3.9 | 105 ○ |
| 4.2.3 Total value of stocks traded, % GDP | 0.2 | 90 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | n/a | n/a |
| 4.3 Trade & competition | 76.5 | 67 |
| 4.3.1 Applied tariff rate, weighted mean, % | 4.3 | 72 |
| 4.3.2 Intensity of local competition [†] | 67.9 | 66 |

| | | |
|---|-------------|-----------|
| 5 Business sophistication | 29.7 | 97 |
| 5.1 Knowledge workers | 33.7 | 83 |
| 5.1.1 Knowledge-intensive employment, % | 18.9 | 78 |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 54.9 | 19 ● |
| 5.1.3 GERD performed by business, % of GDP [Ⓐ] | 0.0 | 88 ○ |
| 5.1.4 GERD financed by business, % [Ⓐ] | 0.8 | 85 ○ |
| 5.1.5 Females employed w/advanced degrees, % total | 12.4 | 51 |
| 5.2 Innovation linkages | 23.2 | 109 |
| 5.2.1 University/industry research collaboration [†] | 28.3 | 121 |
| 5.2.2 State of cluster development [†] | 34.3 | 116 |
| 5.2.3 GERD financed by abroad, % [Ⓐ] | 7.7 | 51 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | n/a | n/a |
| 5.3 Knowledge absorption | 32.3 | 73 |
| 5.3.1 Royalty & license fees payments, % total trade | 0.3 | 77 |
| 5.3.2 High-tech imports less re-imports, % total trade | 16.0 | 11 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade | 0.0 | 123 ○ |
| 5.3.4 FDI net inflows, % GDP | 1.2 | 109 |

| | | |
|---|-------------|------------|
| 6 Knowledge & technology outputs | 16.2 | 121 |
| 6.1 Knowledge creation | 2.6 | 131 ○ |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP [Ⓐ] | 0.4 | 79 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 1.0 | 133 ○ |
| 6.1.5 Citable documents H index | 48.0 | 118 |
| 6.2 Knowledge impact | 15.7 | 123 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64 | n/a | n/a |
| 6.2.3 Computer software spending, % GDP | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 4.7 | 66 ● |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓐ] | 15.1 | 64 |
| 6.3 Knowledge diffusion | 30.3 | 56 ● |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓐ] | 3.1 | 6 ● |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.5 | 76 |
| 6.3.3 Comm., computer & info. services exp., % total trade | 0.1 | 117 ○ |
| 6.3.4 FDI net outflows, % GDP | -0.1 | 112 |

| | | |
|---|-------------|-----------|
| 7 Creative outputs | 36.3 | 51 |
| 7.1 Intangible assets | 66.7 | 4 ● |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP [Ⓐ] | 296.3 | 1 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 52.1 | 82 |
| 7.1.4 ICTs & organizational model creation [†] | 48.1 | 87 |
| 7.2 Creative goods & services | 8.3 | 103 |
| 7.2.1 Cultural & creative services exports, % total trade | 0.0 | 85 ○ |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓐ] | 1.3 | 70 |
| 7.2.3 Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓐ] | 1.4 | 52 |
| 7.2.5 Creative goods exports, % total trade | 0.0 | 113 |
| 7.3 Online creativity | 3.3 | 101 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 1.9 | 89 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 1.4 | 82 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 872.4 | 82 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------------------|
| Population (millions) | 30.8 |
| GDP (US\$ billions) | 202.9 |
| GDP per capita, PPP\$ | 11,735.3 |
| Income group | Upper-middle income |
| Region | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-------------|
| Global Innovation Index (out of 141)..... | 34.9 | 71 |
| Innovation Output Sub-Index | 26.2 | 82 |
| Innovation Input Sub-Index..... | 43.5 | 60 |
| Innovation Efficiency Ratio..... | 0.6 | 113 |
| Global Innovation Index 2014 (out of 143) | 34.7 | 73 |
| 1 Institutions..... | 60.4 | 69 |
| 1.1 Political environment..... | 41.3 | 97 |
| 1.1.1 Political stability*..... | 45.1 | 111 |
| 1.1.2 Government effectiveness*..... | 37.5 | 80 |
| 1.2 Regulatory environment | 69.4 | 56 |
| 1.2.1 Regulatory quality*..... | 59.8 | 52 |
| 1.2.2 Rule of law*..... | 31.4 | 99 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 11.4 | 43 |
| 1.3 Business environment..... | 70.4 | 64 |
| 1.3.1 Ease of starting a business*..... | 85.1 | 74 |
| 1.3.2 Ease of resolving insolvency*..... | 46.6 | 71 |
| 1.3.3 Ease of paying taxes*..... | 79.4 | 48 |
| 2 Human capital & research..... | 26.8 | 77 |
| 2.1 Education | 32.3 | 107 |
| 2.1.1 Expenditure on education, % GDP | 3.3 | 104 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 10.4 | 98 ○ |
| 2.1.3 School life expectancy, years [Ⓔ] | 13.1 | 79 |
| 2.1.4 PISA scales in reading, maths, & science..... | 375.1 | 61 ○ |
| 2.1.5 Pupil-teacher ratio, secondary..... | 15.5 | 67 |
| 2.2 Tertiary education..... | 34.4 | 61 |
| 2.2.1 Tertiary enrolment, % gross [Ⓔ] | 40.6 | 65 |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 13.8 | 60 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.2 | 95 ○ |
| 2.3.3 QS university ranking, average score top 3*..... | 24.1 | 50 |
| 3 Infrastructure..... | 42.0 | 59 |
| 3.1 Information & communication technologies (ICTs)..... | 49.0 | 62 |
| 3.1.1 ICT access*..... | 45.4 | 89 |
| 3.1.2 ICT use*..... | 16.9 | 95 |
| 3.1.3 Government's online service*..... | 63.0 | 41 |
| 3.1.4 E-participation*..... | 70.6 | 24 ● |
| 3.2 General infrastructure..... | 31.6 | 66 |
| 3.2.1 Electricity output, kWh/cap..... | 1330.7 | 90 |
| 3.2.2 Logistics performance*..... | 34.7 | 68 |
| 3.2.3 Gross capital formation, % GDP..... | 27.8 | 32 ● |
| 3.3 Ecological sustainability | 45.5 | 43 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 14.3 | 4 ● |
| 3.3.2 Environmental performance*..... | 45.1 | 94 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 1.0 | 65 |
| 4 Market sophistication | 56.6 | 28 ● |
| 4.1 Credit..... | 49.4 | 26 ● |
| 4.1.1 Ease of getting credit*..... | 80.0 | 11 ● |
| 4.1.2 Domestic credit to private sector, % GDP..... | 31.4 | 96 |
| 4.1.3 Microfinance gross loans, % GDP | 5.0 | 9 ● |

| | | |
|--|------|------|
| 4.2 Investment | 39.1 | 55 |
| 4.2.1 Ease of protecting investors*..... | 61.7 | 38 ● |
| 4.2.2 Market capitalization, % GDP..... | 50.3 | 39 |
| 4.2.3 Total value of stocks traded, % GDP..... | 2.6 | 58 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition | 81.4 | 44 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 1.5 | 40 |
| 4.3.2 Intensity of local competition [†] | 67.8 | 67 |

5 Business sophistication **31.6** **85**

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 40.1 | 63 |
| 5.1.1 Knowledge-intensive employment, %..... | 15.0 | 93 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 60.1 | 12 ● |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 0.0 | 72 ○ |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | 13.9 | 44 |
| 5.2 Innovation linkages | 22.5 | 113 ○ |
| 5.2.1 University/industry research collaboration [†] | 35.0 | 106 |
| 5.2.2 State of cluster development [†] | 37.7 | 105 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 86 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓔ] | 0.0 | 101 ○ |
| 5.3 Knowledge absorption..... | 32.2 | 74 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 0.5 | 57 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 8.8 | 51 |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 0.8 | 69 |
| 5.3.4 FDI net inflows, % GDP..... | 5.0 | 34 ● |

6 Knowledge & technology outputs **19.2** **107**

| | | |
|---|-------|-------|
| 6.1 Knowledge creation..... | 4.6 | 108 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 0.2 | 89 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.0 | 84 ○ |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | 0.3 | 41 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 2.4 | 122 ○ |
| 6.1.5 Citable documents H index..... | 126.0 | 56 |
| 6.2 Knowledge impact..... | 36.3 | 76 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 3.9 | 15 ● |
| 6.2.2 New businesses/th pop. 15–64..... | 3.8 | 31 |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 57 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 2.9 | 83 |
| 6.2.5 High- & medium-high-tech manufactures, % | 9.2 | 79 |
| 6.3 Knowledge diffusion..... | 16.6 | 124 ○ |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓔ] | 0.0 | 81 |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.4 | 79 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 0.4 | 102 ○ |
| 6.3.4 FDI net outflows, % GDP | 0.1 | 94 |

7 Creative outputs **33.3** **64**

| | | |
|---|--------|------|
| 7.1 Intangible assets..... | 45.2 | 67 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP [Ⓔ] | 54.3 | 41 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 54.0 | 74 |
| 7.1.4 ICTs & organizational model creation [†] | 52.1 | 71 |
| 7.2 Creative goods & services..... | 18.9 | 70 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.1 | 56 |
| 7.2.2 National feature films/mn pop. 15–69..... | 0.6 | 90 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | 2.7 | 15 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.3 | 67 |
| 7.3 Online creativity..... | 23.8 | 56 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 5.7 | 56 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 1.7 | 78 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 1929.6 | 54 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 73.7 | 48 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Philippines

Key indicators

| | |
|-----------------------------|-----------------------------|
| Population (millions) | 100.1 |
| GDP (US\$ billions) | 284.9 |
| GDP per capita, PPP\$ | 4,961.7 |
| Income group | Lower-middle income |
| Region | South East Asia and Oceania |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 31.1 | 83 |
| Innovation Output Sub-Index | 26.9 | 77 |
| Innovation Input Sub-Index | 35.2 | 101 |
| Innovation Efficiency Ratio | 0.8 | 44 ● |
| Global Innovation Index 2014 (out of 143) | 29.9 | 100 |

1 Institutions 51.8 102

| | | |
|--|------|-------|
| 1.1 Political environment | 40.5 | 100 |
| 1.1.1 Political stability* | 38.0 | 116 |
| 1.1.2 Government effectiveness* | 43.0 | 65 |
| 1.2 Regulatory environment | 51.3 | 110 |
| 1.2.1 Regulatory quality* | 45.9 | 74 |
| 1.2.2 Rule of law* | 36.3 | 86 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 27.4 | 118 |
| 1.3 Business environment | 63.5 | 90 |
| 1.3.1 Ease of starting a business* | 67.2 | 128 ○ |
| 1.3.2 Ease of resolving insolvency* | 56.7 | 48 ● |
| 1.3.3 Ease of paying taxes* | 66.5 | 101 |

2 Human capital & research 14.8 123

| | | |
|--|------|-------|
| 2.1 Education | 21.3 | 132 ○ |
| 2.1.1 Expenditure on education, % GDP [Ⓔ] | 2.7 | 115 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓔ] | 9.1 | 104 ○ |
| 2.1.3 School life expectancy, years [Ⓔ] | 11.3 | 102 |
| 2.1.4 PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓔ] | 34.8 | 116 ○ |
| 2.2 Tertiary education | 12.0 | 120 |
| 2.2.1 Tertiary enrolment, % gross [Ⓔ] | 28.2 | 80 |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, % [Ⓔ] | 0.1 | 110 ○ |
| 2.3 Research & development (R&D) | 11.0 | 66 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 78.3 | 85 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.1 | 105 ○ |
| 2.3.3 QS university ranking, average score top 3* | 29.9 | 45 ● |

3 Infrastructure 35.8 83

| | | |
|---|-------|------|
| 3.1 Information & communication technologies (ICTs) | 42.7 | 79 |
| 3.1.1 ICT access* | 43.0 | 96 |
| 3.1.2 ICT use* | 22.8 | 87 |
| 3.1.3 Government's online service* | 48.0 | 66 |
| 3.1.4 E-participation* | 56.9 | 51 |
| 3.2 General infrastructure | 23.6 | 105 |
| 3.2.1 Electricity output, kWh/cap | 754.0 | 98 |
| 3.2.2 Logistics performance* | 43.0 | 55 |
| 3.2.3 Gross capital formation, % GDP | 19.1 | 99 |
| 3.3 Ecological sustainability | 41.2 | 53 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 12.2 | 13 ● |
| 3.3.2 Environmental performance* | 44.0 | 98 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 1.0 | 66 |

4 Market sophistication 42.1 101

| | | |
|--|------|-----|
| 4.1 Credit | 17.6 | 120 |
| 4.1.1 Ease of getting credit* | 40.0 | 93 |
| 4.1.2 Domestic credit to private sector, % GDP | 35.8 | 89 |
| 4.1.3 Microfinance gross loans, % GDP | 0.2 | 58 |

| | | |
|---|-------|-------|
| 4.2 Investment | 32.4 | 81 |
| 4.2.1 Ease of protecting investors* | 41.7 | 123 ○ |
| 4.2.2 Market capitalization, % GDP | 105.6 | 12 ● |
| 4.2.3 Total value of stocks traded, % GDP | 13.9 | 32 ● |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.0 | 50 |

| | | |
|--|------|----|
| 4.3 Trade & competition | 76.3 | 69 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 4.8 | 79 |
| 4.3.2 Intensity of local competition [†] | 69.2 | 59 |

5 Business sophistication 31.7 81

| | | |
|---|------|------|
| 5.1 Knowledge workers | 39.6 | 67 |
| 5.1.1 Knowledge-intensive employment, % | 23.7 | 63 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 31.1 | 62 |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 0.1 | 68 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 62.0 | 6 ● |
| 5.1.5 Females employed w/advanced degrees, % total [Ⓔ] | 14.1 | 41 |
| 5.2 Innovation linkages | 25.4 | 97 |
| 5.2.1 University/industry research collaboration [†] | 46.6 | 53 |
| 5.2.2 State of cluster development [†] | 50.5 | 48 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 4.1 | 70 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 46 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 0.0 | 77 |
| 5.3 Knowledge absorption | 30.2 | 91 |
| 5.3.1 Royalty & license fees payments, % total trade | 0.7 | 44 ● |
| 5.3.2 High-tech imports less re-imports, % total trade | n/a | n/a |
| 5.3.3 Comm., computer & info. services imp., % total trade | 0.7 | 75 |
| 5.3.4 FDI net inflows, % GDP | 1.4 | 100 |

6 Knowledge & technology outputs 28.9 53

| | | |
|---|-------|-------|
| 6.1 Knowledge creation | 9.1 | 77 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | 0.3 | 82 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | 0.1 | 79 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | 1.2 | 23 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 1.6 | 131 ○ |
| 6.1.5 Citable documents H index | 131.0 | 54 |
| 6.2 Knowledge impact | 36.0 | 80 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 4.6 | 10 ● |
| 6.2.2 New businesses/th pop. 15–64 | 0.3 | 93 ○ |
| 6.2.3 Computer software spending, % GDP | 0.3 | 53 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 3.0 | 81 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 16.3 | 62 |
| 6.3 Knowledge diffusion | 41.7 | 31 ● |
| 6.3.1 Royalty & license fees receipts, % total trade | 0.0 | 98 |
| 6.3.2 High-tech exports less re-exports, % total trade | n/a | n/a |
| 6.3.3 Comm., computer & info. services exp., % total trade | 4.6 | 10 ● |
| 6.3.4 FDI net outflows, % GDP | 1.4 | 45 |

7 Creative outputs 24.8 101

| | | |
|---|--------|------|
| 7.1 Intangible assets | 38.5 | 96 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | 26.0 | 76 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | 0.1 | 57 |
| 7.1.3 ICTs & business model creation [†] | 60.5 | 48 |
| 7.1.4 ICTs & organizational model creation [†] | 60.3 | 38 ● |
| 7.2 Creative goods & services | 3.6 | 117 |
| 7.2.1 Cultural & creative services exports, % total trade | 0.1 | 60 |
| 7.2.2 National feature films/mn pop. 15–69 | 0.8 | 81 |
| 7.2.3 Global ent. & media output/th pop. 15–69 | 2.1 | 49 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 0.4 | 95 ○ |
| 7.2.5 Creative goods exports, % total trade | n/a | n/a |
| 7.3 Online creativity | 18.6 | 68 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 1.4 | 99 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 0.5 | 103 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 1298.3 | 71 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 62.9 | 60 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|-------------|
| Population (millions) | 38.2 |
| GDP (US\$ billions) | 546.6 |
| GDP per capita, PPP\$ | 22,201.1 |
| Income group | High income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 40.2 | 46 |
| Innovation Output Sub-Index | 31.9 | 56 |
| Innovation Input Sub-Index | 48.4 | 39 |
| Innovation Efficiency Ratio | 0.7 | 93 |
| Global Innovation Index 2014 (out of 143) | 40.6 | 45 |

1 Institutions 75.3 34

| | | |
|--|------|------|
| 1.1 Political environment | 74.1 | 35 |
| 1.1.1 Political stability* | 87.6 | 20 ● |
| 1.1.2 Government effectiveness* | 60.5 | 40 |
| 1.2 Regulatory environment | 75.4 | 42 |
| 1.2.1 Regulatory quality* | 75.7 | 28 |
| 1.2.2 Rule of law* | 68.5 | 36 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 18.8 | 85 |
| 1.3 Business environment | 76.3 | 39 |
| 1.3.1 Ease of starting a business* | 85.8 | 71 |
| 1.3.2 Ease of resolving insolvency* | 69.7 | 30 |
| 1.3.3 Ease of paying taxes* | 73.5 | 69 |

2 Human capital & research 37.2 45

| | | |
|---|--------|------|
| 2.1 Education | 53.6 | 36 |
| 2.1.1 Expenditure on education, % GDP | 4.9 | 61 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 24.2 | 42 |
| 2.1.3 School life expectancy, years | 15.5 | 33 |
| 2.1.4 PISA scales in reading, maths, & science | 520.5 | 9 ● |
| 2.1.5 Pupil-teacher ratio, secondary | 8.7 | 14 ● |
| 2.2 Tertiary education | 32.8 | 66 |
| 2.2.1 Tertiary enrolment, % gross | 73.2 | 21 ● |
| 2.2.2 Graduates in science & engineering, % | 16.8 | 68 |
| 2.2.3 Tertiary inbound mobility, % | 1.2 | 80 ○ |
| 2.3 Research & development (R&D) | 25.3 | 38 |
| 2.3.1 Researchers, FTE/mn pop. | 1870.2 | 36 |
| 2.3.2 Gross expenditure on R&D, % GDP | 0.9 | 39 |
| 2.3.3 QS university ranking, average score top 3* | 32.8 | 42 |

3 Infrastructure 45.5 47

| | | |
|---|--------|----|
| 3.1 Information & communication technologies (ICTs) | 55.8 | 46 |
| 3.1.1 ICT access* | 70.4 | 44 |
| 3.1.2 ICT use* | 49.4 | 40 |
| 3.1.3 Government's online service* | 54.3 | 57 |
| 3.1.4 E-participation* | 49.0 | 64 |
| 3.2 General infrastructure | 36.0 | 53 |
| 3.2.1 Electricity output, kWh/cap | 4255.9 | 50 |
| 3.2.2 Logistics performance* | 68.0 | 30 |
| 3.2.3 Gross capital formation, % GDP | 20.6 | 79 |
| 3.3 Ecological sustainability | 44.7 | 46 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 7.4 | 58 |
| 3.3.2 Environmental performance* | 69.5 | 30 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 2.4 | 43 |

4 Market sophistication 49.0 60

| | | |
|--|------|------|
| 4.1 Credit | 31.0 | 69 |
| 4.1.1 Ease of getting credit* | 75.0 | 16 ● |
| 4.1.2 Domestic credit to private sector, % GDP | 53.9 | 61 |
| 4.1.3 Microfinance gross loans, % GDP | 0.1 | 67 ○ |

| | | |
|---|------|------|
| 4.2 Investment | 32.0 | 84 |
| 4.2.1 Ease of protecting investors* | 62.5 | 34 |
| 4.2.2 Market capitalization, % GDP | 35.8 | 53 |
| 4.2.3 Total value of stocks traded, % GDP | 13.6 | 33 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.0 | 53 ○ |
| 4.3 Trade & competition | 83.9 | 33 |
| 4.3.1 Applied tariff rate, weighted mean, % | 1.0 | 9 |
| 4.3.2 Intensity of local competition† | 71.2 | 49 |

5 Business sophistication 35.2 66

| | | |
|--|------|-------|
| 5.1 Knowledge workers | 45.3 | 45 |
| 5.1.1 Knowledge-intensive employment, % | 35.9 | 32 |
| 5.1.2 Firms offering formal training, % firms | 34.6 | 53 |
| 5.1.3 GERD performed by business, % of GDP | 0.4 | 40 |
| 5.1.4 GERD financed by business, % | 37.3 | 42 |
| 5.1.5 Females employed w/advanced degrees, % total | 18.2 | 27 |
| 5.2 Innovation linkages | 24.8 | 102 ○ |
| 5.2.1 University/industry research collaboration† | 41.7 | 71 |
| 5.2.2 State of cluster development† | 41.4 | 89 |
| 5.2.3 GERD financed by abroad, % | 13.1 | 34 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 76 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 0.1 | 49 |
| 5.3 Knowledge absorption | 35.6 | 60 |
| 5.3.1 Royalty & license fees payments, % total trade | 1.1 | 23 ● |
| 5.3.2 High-tech imports less re-imports, % total trade | 9.2 | 45 |
| 5.3.3 Comm., computer & info. services imp., % total trade | 1.2 | 49 |
| 5.3.4 FDI net inflows, % GDP | -0.9 | 134 ○ |

6 Knowledge & technology outputs 28.3 56

| | | |
|--|-------|-------|
| 6.1 Knowledge creation | 24.4 | 40 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP | 4.7 | 23 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP | 0.4 | 45 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP | 1.1 | 25 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 24.7 | 36 |
| 6.1.5 Citable documents H index | 336.0 | 24 ● |
| 6.2 Knowledge impact | 35.7 | 81 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 1.2 | 67 |
| 6.2.2 New businesses/th pop. 15–64 ^a | 0.5 | 86 ○ |
| 6.2.3 Computer software spending, % GDP | 0.3 | 50 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 11.6 | 36 |
| 6.2.5 High- & medium-high-tech manufactures, % | 33.6 | 31 |
| 6.3 Knowledge diffusion | 24.9 | 89 |
| 6.3.1 Royalty & license fees receipts, % total trade | 0.1 | 49 |
| 6.3.2 High-tech exports less re-exports, % total trade | 5.6 | 30 |
| 6.3.3 Comm., computer & info. services exp., % total trade | 1.4 | 63 |
| 6.3.4 FDI net outflows, % GDP | -0.8 | 119 ○ |

7 Creative outputs 35.4 53

| | | |
|---|--------|-------|
| 7.1 Intangible assets | 36.9 | 108 ○ |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP | 50.1 | 51 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | 0.4 | 43 |
| 7.1.3 ICTs & business model creation† | 49.4 | 95 ○ |
| 7.1.4 ICTs & organizational model creation† | 47.7 | 89 |
| 7.2 Creative goods & services | 31.0 | 36 |
| 7.2.1 Cultural & creative services exports, % total trade | 1.0 | 14 ● |
| 7.2.2 National feature films/mn pop. 15–69 | 0.9 | 80 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69 | 9.7 | 34 |
| 7.2.4 Printing & publishing output manufactures, % | 1.1 | 71 ○ |
| 7.2.5 Creative goods exports, % total trade | 3.9 | 12 ● |
| 7.3 Online creativity | 36.8 | 37 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 8.2 | 48 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 37.2 | 21 ● |
| 7.3.3 Wikipedia edits/pop. 15–69 | 2614.2 | 46 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 82.4 | 29 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

^a indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Portugal

Key indicators

| | |
|----------------------------|-------------|
| Population (millions)..... | 10.6 |
| GDP (US\$ billions)..... | 230.0 |
| GDP per capita, PPP\$..... | 23,671.0 |
| Income group..... | High income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 46.6 | 30 |
| Innovation Output Sub-Index..... | 39.4 | 33 |
| Innovation Input Sub-Index..... | 53.8 | 28 |
| Innovation Efficiency Ratio..... | 0.7 | 62 |
| Global Innovation Index 2014 (out of 143)..... | 45.6 | 32 |
| 1 Institutions..... | 80.6 | 25 |
| 1.1 Political environment..... | 78.5 | 25 |
| 1.1.1 Political stability*..... | 82.5 | 36 |
| 1.1.2 Government effectiveness*..... | 74.6 | 26 |
| 1.2 Regulatory environment..... | 77.1 | 37 |
| 1.2.1 Regulatory quality*..... | 68.8 | 36 |
| 1.2.2 Rule of law*..... | 75.1 | 26 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 17.0 | 77 |
| 1.3 Business environment..... | 86.1 | 14 ● |
| 1.3.1 Ease of starting a business*..... | 96.3 | 10 ● |
| 1.3.2 Ease of resolving insolvency*..... | 84.2 | 9 ● |
| 1.3.3 Ease of paying taxes*..... | 77.8 | 52 |
| 2 Human capital & research..... | 47.6 | 25 |
| 2.1 Education..... | 57.1 | 18 ● |
| 2.1.1 Expenditure on education, % GDP..... | 5.3 | 46 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 33.5 | 14 ● |
| 2.1.3 School life expectancy, years..... | 16.3 | 20 |
| 2.1.4 PISA scales in reading, maths, & science..... | 488.0 | 29 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 8.2 | 7 ● |
| 2.2 Tertiary education..... | 44.8 | 32 |
| 2.2.1 Tertiary enrolment, % gross..... | 68.9 | 27 |
| 2.2.2 Graduates in science & engineering, %..... | 25.0 | 24 |
| 2.2.3 Tertiary inbound mobility, %..... | 4.7 | 36 |
| 2.3 Research & development (R&D)..... | 40.8 | 25 |
| 2.3.1 Researchers, FTE/mn pop..... | 4083.8 | 20 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 1.4 | 26 |
| 2.3.3 QS university ranking, average score top 3*..... | 40.4 | 35 |
| 3 Infrastructure..... | 50.3 | 33 |
| 3.1 Information & communication technologies (ICTs)..... | 62.8 | 39 |
| 3.1.1 ICT access*..... | 76.7 | 31 |
| 3.1.2 ICT use*..... | 46.1 | 46 |
| 3.1.3 Government's online service*..... | 63.8 | 39 |
| 3.1.4 E-participation*..... | 64.7 | 33 |
| 3.2 General infrastructure..... | 32.2 | 63 |
| 3.2.1 Electricity output, kWh/cap..... | 4818.8 | 44 |
| 3.2.2 Logistics performance*..... | 71.4 | 25 |
| 3.2.3 Gross capital formation, % GDP..... | 15.7 | 120 ○ |
| 3.3 Ecological sustainability..... | 55.7 | 15 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 9.9 | 25 |
| 3.3.2 Environmental performance*..... | 75.8 | 17 ● |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 4.8 | 21 |
| 4 Market sophistication..... | 55.4 | 34 |
| 4.1 Credit..... | 50.4 | 21 |
| 4.1.1 Ease of getting credit*..... | 45.0 | 80 ○ |
| 4.1.2 Domestic credit to private sector, % GDP..... | 169.8 | 8 ● |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|------|------|
| 4.2 Investment..... | 32.9 | 78 ○ |
| 4.2.1 Ease of protecting investors*..... | 59.2 | 49 |
| 4.2.2 Market capitalization, % GDP..... | 30.1 | 56 |
| 4.2.3 Total value of stocks traded, % GDP..... | 12.2 | 36 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.1 | 19 |
| 4.3 Trade & competition..... | 82.9 | 38 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition [†] | 69.1 | 61 |

| | | |
|---|-------------|-----------|
| 5 Business sophistication..... | 35.2 | 65 |
| 5.1 Knowledge workers..... | 45.1 | 47 |
| 5.1.1 Knowledge-intensive employment, %..... | 34.8 | 38 |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 31.9 | 59 ○ |
| 5.1.3 GERD performed by business, % of GDP..... | 0.7 | 31 |
| 5.1.4 GERD financed by business, % [Ⓐ] | 46.0 | 26 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 14.9 | 37 |
| 5.2 Innovation linkages..... | 28.4 | 88 ○ |
| 5.2.1 University/industry research collaboration [†] | 61.4 | 22 |
| 5.2.2 State of cluster development [†] | 53.2 | 39 |
| 5.2.3 GERD financed by abroad, % [Ⓐ] | 5.2 | 63 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 83 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.1 | 41 |
| 5.3 Knowledge absorption..... | 32.2 | 75 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.5 | 54 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 6.3 | 77 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.3 | 46 |
| 5.3.4 FDI net inflows, % GDP..... | 3.6 | 47 |

| | | |
|---|-------------|-----------|
| 6 Knowledge & technology outputs..... | 33.2 | 42 |
| 6.1 Knowledge creation..... | 21.9 | 44 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 2.4 | 43 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.6 | 37 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 0.3 | 40 ○ |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 45.0 | 12 ● |
| 6.1.5 Citable documents H index..... | 269.0 | 31 |
| 6.2 Knowledge impact..... | 47.3 | 29 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.3 | 89 ○ |
| 6.2.2 New businesses/th pop. 15–64 [Ⓐ] | 3.6 | 32 |
| 6.2.3 Computer software spending, % GDP..... | 0.7 | 10 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 25.7 | 13 ● |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 27.0 | 43 |
| 6.3 Knowledge diffusion..... | 30.3 | 55 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.0 | 73 ○ |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 2.4 | 48 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.5 | 60 |
| 6.3.4 FDI net outflows, % GDP..... | 2.7 | 24 |

| | | |
|--|-------------|-----------|
| 7 Creative outputs..... | 45.7 | 25 |
| 7.1 Intangible assets..... | 57.7 | 16 ● |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 91.7 | 17 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.9 | 33 |
| 7.1.3 ICTs & business model creation [†] | 71.7 | 17 ● |
| 7.1.4 ICTs & organizational model creation [†] | 68.6 | 18 |
| 7.2 Creative goods & services..... | 25.4 | 51 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.6 | 33 |
| 7.2.2 National feature films/mn pop. 15–69..... | 1.7 | 62 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 26.3 | 24 |
| 7.2.4 Printing & publishing output manufactures, %..... | 1.5 | 51 |
| 7.2.5 Creative goods exports, % total trade..... | 1.6 | 31 |
| 7.3 Online creativity..... | 41.8 | 29 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 20.8 | 30 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 38.2 | 18 ● |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 3156.4 | 42 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 85.0 | 24 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|----------------------------------|
| Population (millions)..... | 2.3 |
| GDP (US\$ billions)..... | 210.0 |
| GDP per capita, PPP\$..... | 96,992.9 |
| Income group..... | High income |
| Region..... | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 39.0 | 50 |
| Innovation Output Sub-Index..... | 29.6 | 62 |
| Innovation Input Sub-Index..... | 48.4 | 40 |
| Innovation Efficiency Ratio..... | 0.6 | 110 |
| Global Innovation Index 2014 (out of 143)..... | 40.3 | 47 |

1 Institutions.....77.7 30

| | | |
|---|------|------|
| 1.1 Political environment..... | 82.3 | 20 |
| 1.1.1 Political stability*..... | 94.3 | 10 ● |
| 1.1.2 Government effectiveness*..... | 70.3 | 32 |
| 1.2 Regulatory environment..... | 70.6 | 51 |
| 1.2.1 Regulatory quality*..... | 67.5 | 39 |
| 1.2.2 Rule of law*..... | 75.4 | 25 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 23.2 | 107 |
| 1.3 Business environment..... | 80.3 | 27 |
| 1.3.1 Ease of starting a business*..... | 83.1 | 83 |
| 1.3.2 Ease of resolving insolvency*..... | 58.3 | 45 |
| 1.3.3 Ease of paying taxes*..... | 99.4 | 1 ● |

2 Human capital & research.....35.3 51

| | | |
|--|-------|-------|
| 2.1 Education..... | 34.4 | 104 |
| 2.1.1 Expenditure on education, % GDP [Ⓢ] | 2.4 | 120 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓢ] | 10.3 | 100 ○ |
| 2.1.3 School life expectancy, years [Ⓢ] | 13.8 | 63 |
| 2.1.4 PISA scales in reading, maths, & science..... | 382.5 | 60 ○ |
| 2.1.5 Pupil-teacher ratio, secondary..... | 9.7 | 26 |
| 2.2 Tertiary education..... | 62.6 | 3 ● |
| 2.2.1 Tertiary enrolment, % gross..... | 14.3 | 101 |
| 2.2.2 Graduates in science & engineering, %..... | 33.6 | 7 ● |
| 2.2.3 Tertiary inbound mobility, %..... | 40.7 | 1 ● |
| 2.3 Research & development (R&D)..... | 8.8 | 71 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓢ] | 586.9 | 56 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓢ] | 0.5 | 65 |
| 2.3.3 QS university ranking, average score top 3*..... | 8.6 | 62 |

3 Infrastructure.....55.5 22

| | | |
|--|---------|-----|
| 3.1 Information & communication technologies (ICTs)..... | 66.6 | 31 |
| 3.1.1 ICT access*..... | 80.9 | 21 |
| 3.1.2 ICT use*..... | 59.5 | 27 |
| 3.1.3 Government's online service*..... | 65.4 | 37 |
| 3.1.4 E-participation*..... | 60.8 | 45 |
| 3.2 General infrastructure..... | 61.8 | 6 ● |
| 3.2.1 Electricity output, kWh/cap..... | 16969.3 | 6 ● |
| 3.2.2 Logistics performance*..... | 69.1 | 28 |
| 3.2.3 Gross capital formation, % GDP..... | 29.0 | 26 |
| 3.3 Ecological sustainability..... | 37.9 | 70 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.5 | 78 |
| 3.3.2 Environmental performance*..... | 63.0 | 43 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.8 | 72 |

4 Market sophistication.....45.9 78

| | | |
|---|------|-------|
| 4.1 Credit..... | 20.8 | 110 |
| 4.1.1 Ease of getting credit*..... | 30.0 | 113 ○ |
| 4.1.2 Domestic credit to private sector, % GDP..... | 39.3 | 86 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|------|-----|
| 4.2 Investment..... | 34.8 | 70 |
| 4.2.1 Ease of protecting investors*..... | 45.8 | 107 |
| 4.2.2 Market capitalization, % GDP..... | 66.4 | 26 |
| 4.2.3 Total value of stocks traded, % GDP..... | 8.1 | 43 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 82.2 | 40 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 4.1 | 67 |
| 4.3.2 Intensity of local competition [†] | 78.8 | 16 |

5 Business sophistication.....27.7 106

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 21.7 | 117 |
| 5.1.1 Knowledge-intensive employment, %..... | 18.2 | 80 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP [Ⓢ] | 0.1 | 57 |
| 5.1.4 GERD financed by business, % [Ⓢ] | 24.2 | 56 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 4.5 | 76 |
| 5.2 Innovation linkages..... | 40.6 | 40 |
| 5.2.1 University/industry research collaboration [†] | 74.0 | 8 ● |
| 5.2.2 State of cluster development [†] | 70.2 | 10 ● |
| 5.2.3 GERD financed by abroad, % [Ⓢ] | 2.4 | 78 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 11 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓢ] | 0.0 | 97 |
| 5.3 Knowledge absorption..... | 20.7 | 136 ○ |
| 5.3.1 Royalty & license fees payments, % total trade..... | n/a | n/a |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 2.3 | 128 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP..... | -0.4 | 130 ○ |

6 Knowledge & technology outputs.....24.5 80

| | | |
|---|------|-------|
| 6.1 Knowledge creation..... | 2.8 | 128 ○ |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 0.0 | 110 ○ |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.1 | 75 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 3.9 | 108 |
| 6.1.5 Citable documents H index..... | 60.0 | 105 |
| 6.2 Knowledge impact..... | 28.6 | 111 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.4 | 85 |
| 6.2.2 New businesses/th pop. 15–64..... | 1.7 | 50 |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 58 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 2.2 | 89 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓢ] | 20.8 | 54 |
| 6.3 Knowledge diffusion..... | 42.2 | 30 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.0 | 129 ○ |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | 3.9 | 15 |

7 Creative outputs.....34.7 58

| | | |
|---|--------|-------|
| 7.1 Intangible assets..... | 50.6 | 44 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 2.7 | 103 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 77.4 | 4 ● |
| 7.1.4 ICTs & organizational model creation [†] | 74.4 | 7 ● |
| 7.2 Creative goods & services..... | 13.3 | 88 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 31.1 | 21 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓢ] | 1.2 | 66 |
| 7.2.5 Creative goods exports, % total trade..... | 0.0 | 121 ○ |
| 7.3 Online creativity..... | 24.2 | 53 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 4.9 | 61 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 4.1 | 58 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 2058.2 | 53 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 72.6 | 53 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓢ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Romania

Key indicators

| | |
|-----------------------|---------------------|
| Population (millions) | 21.6 |
| GDP (US\$ billions) | 200.0 |
| GDP per capita, PPP\$ | 13,932.0 |
| Income group | Upper-middle income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 38.2 | 54 |
| Innovation Output Sub-Index | 32.4 | 52 |
| Innovation Input Sub-Index | 44.0 | 57 |
| Innovation Efficiency Ratio | 0.7 | 58 |
| Global Innovation Index 2014 (out of 143) | 38.1 | 55 |

1 Institutions 69.7 46

| | | |
|--|------|------|
| 1.1 Political environment | 53.7 | 61 |
| 1.1.1 Political stability* | 67.9 | 57 |
| 1.1.2 Government effectiveness* | 39.4 | 72 |
| 1.2 Regulatory environment | 78.5 | 32 ● |
| 1.2.1 Regulatory quality* | 63.5 | 46 |
| 1.2.2 Rule of law* | 50.5 | 58 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 8.0 | 1 ● |
| 1.3 Business environment | 76.9 | 37 |
| 1.3.1 Ease of starting a business* | 91.9 | 33 ● |
| 1.3.2 Ease of resolving insolvency* | 58.7 | 44 |
| 1.3.3 Ease of paying taxes* | 80.1 | 45 |

2 Human capital & research 27.8 73

| | | |
|--|-------|-------|
| 2.1 Education | 38.6 | 88 |
| 2.1.1 Expenditure on education, % GDP | 3.1 | 107 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 11.9 | 93 ○ |
| 2.1.3 School life expectancy, years [Ⓜ] | 14.2 | 54 |
| 2.1.4 PISA scales in reading, maths, & science | 440.3 | 43 |
| 2.1.5 Pupil-teacher ratio, secondary | 12.8 | 45 |
| 2.2 Tertiary education | 32.6 | 67 |
| 2.2.1 Tertiary enrolment, % gross [Ⓜ] | 51.6 | 50 |
| 2.2.2 Graduates in science & engineering, % [Ⓜ] | 20.2 | 55 |
| 2.2.3 Tertiary inbound mobility, % [Ⓜ] | 1.8 | 69 |
| 2.3 Research & development (R&D) | 12.1 | 63 |
| 2.3.1 Researchers, FTE/mn pop. | 862.0 | 49 |
| 2.3.2 Gross expenditure on R&D, % GDP | 0.4 | 69 |
| 2.3.3 QS university ranking, average score top 3* | 17.1 | 55 |

3 Infrastructure 42.4 58

| | | |
|---|--------|------|
| 3.1 Information & communication technologies (ICTs) | 49.0 | 61 |
| 3.1.1 ICT access* | 66.2 | 52 |
| 3.1.2 ICT use* | 38.7 | 58 |
| 3.1.3 Government's online service* | 44.1 | 74 |
| 3.1.4 E-participation* | 47.1 | 70 |
| 3.2 General infrastructure | 25.8 | 96 |
| 3.2.1 Electricity output, kWh/cap | 2927.0 | 64 |
| 3.2.2 Logistics performance* | n/a | n/a |
| 3.2.3 Gross capital formation, % GDP | 22.5 | 59 |
| 3.3 Ecological sustainability | 52.3 | 20 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 6.8 | 72 |
| 3.3.2 Environmental performance* | 50.5 | 77 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 23.2 | 1 ● |

4 Market sophistication 45.3 81

| | | |
|--|------|-----|
| 4.1 Credit | 33.4 | 58 |
| 4.1.1 Ease of getting credit* | 85.0 | 7 ● |
| 4.1.2 Domestic credit to private sector, % GDP | 41.4 | 82 |
| 4.1.3 Microfinance gross loans, % GDP | 0.2 | 54 |

| | | |
|---|------|-------|
| 4.2 Investment | 26.1 | 114 ○ |
| 4.2.1 Ease of protecting investors* | 61.7 | 38 |
| 4.2.2 Market capitalization, % GDP | 9.4 | 90 ○ |
| 4.2.3 Total value of stocks traded, % GDP | 1.3 | 63 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.0 | 67 ○ |
| 4.3 Trade & competition | 76.3 | 70 |
| 4.3.1 Applied tariff rate, weighted mean, % | 1.0 | 9 ● |
| 4.3.2 Intensity of local competition [†] | 56.0 | 115 ○ |

5 Business sophistication 34.7 67

| | | |
|---|------|------|
| 5.1 Knowledge workers | 34.6 | 81 |
| 5.1.1 Knowledge-intensive employment, % | 21.2 | 68 |
| 5.1.2 Firms offering formal training, % firms | 40.8 | 44 |
| 5.1.3 GERD performed by business, % of GDP | 0.1 | 58 |
| 5.1.4 GERD financed by business, % | 31.0 | 47 |
| 5.1.5 Females employed w/advanced degrees, % total | 9.8 | 64 ○ |
| 5.2 Innovation linkages | 29.9 | 81 |
| 5.2.1 University/industry research collaboration [†] | 43.2 | 69 |
| 5.2.2 State of cluster development [†] | 46.4 | 67 |
| 5.2.3 GERD financed by abroad, % | 15.5 | 29 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 0.0 | 78 |
| 5.3 Knowledge absorption | 39.7 | 42 |
| 5.3.1 Royalty & license fees payments, % total trade | 1.1 | 25 ● |
| 5.3.2 High-tech imports less re-imports, % total trade | 9.1 | 47 |
| 5.3.3 Comm., computer & info. services imp., % total trade | 1.5 | 38 |
| 5.3.4 FDI net inflows, % GDP | 2.0 | 86 |

6 Knowledge & technology outputs 32.8 43

| | | |
|--|-------|-------|
| 6.1 Knowledge creation | 11.2 | 66 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | 2.6 | 36 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | 0.1 | 69 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | 0.1 | 49 ○ |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 17.9 | 42 |
| 6.1.5 Citable documents H index | 153.0 | 46 |
| 6.2 Knowledge impact | 54.4 | 11 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 1.7 | 55 |
| 6.2.2 New businesses/th pop. 15–64 | 4.1 | 30 |
| 6.2.3 Computer software spending, % GDP | 0.3 | 37 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 49.0 | 1 ● |
| 6.2.5 High- & medium-high-tech manufactures, % | 36.0 | 26 |
| 6.3 Knowledge diffusion | 32.9 | 48 |
| 6.3.1 Royalty & license fees receipts, % total trade | 0.2 | 45 |
| 6.3.2 High-tech exports less re-exports, % total trade | 4.5 | 34 |
| 6.3.3 Comm., computer & info. services exp., % total trade | 3.3 | 18 ● |
| 6.3.4 FDI net outflows, % GDP | 0.0 | 110 ○ |

7 Creative outputs 32.1 72

| | | |
|---|-------|------|
| 7.1 Intangible assets | 39.3 | 93 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | 64.0 | 33 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | 0.2 | 51 ○ |
| 7.1.3 ICTs & business model creation [†] | 51.8 | 83 |
| 7.1.4 ICTs & organizational model creation [†] | 48.5 | 84 |
| 7.2 Creative goods & services | 21.9 | 61 |
| 7.2.1 Cultural & creative services exports, % total trade | 0.7 | 27 |
| 7.2.2 National feature films/mn pop. 15–69 | 2.3 | 56 |
| 7.2.3 Global ent. & media output/th pop. 15–69 | 4.1 | 46 ○ |
| 7.2.4 Printing & publishing output manufactures, % | 1.1 | 69 |
| 7.2.5 Creative goods exports, % total trade | 1.5 | 32 ● |
| 7.3 Online creativity | 27.7 | 47 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 5.2 | 59 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 19.7 | 34 ● |
| 7.3.3 Wikipedia edits/pop. 15–69 | 934.5 | 78 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 79.1 | 35 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓜ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|-------------|
| Population (millions) | 142.5 |
| GDP (US\$ billions) | 1,857.5 |
| GDP per capita, PPP\$ | 18,407.8 |
| Income group | High income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 39.3 | 48 |
| Innovation Output Sub-Index | 33.3 | 49 |
| Innovation Input Sub-Index..... | 45.3 | 52 |
| Innovation Efficiency Ratio..... | 0.7 | 60 |
| Global Innovation Index 2014 (out of 143) | 39.1 | 49 |
| 1 Institutions..... | 56.6 | 80 |
| 1.1 Political environment..... | 38.6 | 105 ○ |
| 1.1.1 Political stability*..... | 45.6 | 108 ○ |
| 1.1.2 Government effectiveness*..... | 31.6 | 88 |
| 1.2 Regulatory environment | 56.9 | 96 |
| 1.2.1 Regulatory quality*..... | 38.0 | 102 ○ |
| 1.2.2 Rule of law*..... | 26.8 | 112 ○ |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 17.4 | 81 |
| 1.3 Business environment..... | 74.2 | 50 |
| 1.3.1 Ease of starting a business*..... | 92.2 | 29 |
| 1.3.2 Ease of resolving insolvency*..... | 49.7 | 62 |
| 1.3.3 Ease of paying taxes*..... | 80.6 | 43 |
| 2 Human capital & research..... | 47.5 | 26 |
| 2.1 Education | 57.0 | 20 ● |
| 2.1.1 Expenditure on education, % GDP [ⓐ] | 4.1 | 82 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years..... | 14.7 | 45 |
| 2.1.4 PISA scales in reading, maths, & science..... | 481.2 | 35 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 8.8 | 15 ● |
| 2.2 Tertiary education..... | 47.1 | 24 |
| 2.2.1 Tertiary enrolment, % gross..... | 76.1 | 17 ● |
| 2.2.2 Graduates in science & engineering, % [ⓐ] | 28.1 | 13 ● |
| 2.2.3 Tertiary inbound mobility, %..... | 2.2 | 64 |
| 2.3 Research & development (R&D)..... | 38.5 | 28 |
| 2.3.1 Researchers, FTE/mn pop..... | 3084.6 | 27 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 1.1 | 33 |
| 2.3.3 QS university ranking, average score top 3*..... | 52.1 | 25 |
| 3 Infrastructure..... | 40.6 | 65 |
| 3.1 Information & communication technologies (ICTs)..... | 65.4 | 35 |
| 3.1.1 ICT access*..... | 72.5 | 40 |
| 3.1.2 ICT use*..... | 49.7 | 39 |
| 3.1.3 Government's online service*..... | 70.9 | 27 |
| 3.1.4 E-participation*..... | 68.6 | 30 |
| 3.2 General infrastructure..... | 29.8 | 74 |
| 3.2.1 Electricity output, kWh/cap..... | 7450.1 | 27 |
| 3.2.2 Logistics performance*..... | 27.2 | 85 |
| 3.2.3 Gross capital formation, % GDP..... | 20.5 | 81 |
| 3.3 Ecological sustainability | 26.6 | 114 ○ |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 2.9 | 115 ○ |
| 3.3.2 Environmental performance*..... | 53.5 | 65 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.4 | 95 |
| 4 Market sophistication | 43.5 | 94 |
| 4.1 Credit..... | 23.8 | 96 |
| 4.1.1 Ease of getting credit*..... | 55.0 | 56 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 52.5 | 63 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.0 | 81 ○ |

| | | |
|--|------|----|
| 4.2 Investment | 32.3 | 82 |
| 4.2.1 Ease of protecting investors*..... | 50.8 | 88 |
| 4.2.2 Market capitalization, % GDP..... | 43.4 | 46 |
| 4.2.3 Total value of stocks traded, % GDP..... | 36.3 | 23 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 44 |
| 4.3 Trade & competition | 74.4 | 81 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 5.0 | 82 |
| 4.3.2 Intensity of local competition†..... | 66.2 | 71 |

| | | |
|--|-------------|-----------|
| 5 Business sophistication | 38.4 | 44 |
| 5.1 Knowledge workers..... | 59.1 | 26 |
| 5.1.1 Knowledge-intensive employment, %..... | 43.6 | 16 ● |
| 5.1.2 Firms offering formal training, % firms [ⓐ] | 46.1 | 34 |
| 5.1.3 GERD performed by business, % of GDP..... | 0.7 | 29 |
| 5.1.4 GERD financed by business, %..... | 28.2 | 54 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 32.9 | 2 ● |
| 5.2 Innovation linkages | 19.6 | 127 ○ |
| 5.2.1 University/industry research collaboration†..... | 43.9 | 65 |
| 5.2.2 State of cluster development†..... | 35.6 | 114 ○ |
| 5.2.3 GERD financed by abroad, %..... | 3.0 | 74 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 56 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 64 |
| 5.3 Knowledge absorption..... | 36.6 | 55 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.6 | 15 ● |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 7.1 | 63 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.1 | 53 |
| 5.3.4 FDI net inflows, % GDP..... | 3.4 | 51 |

| | | |
|---|-------------|-----------|
| 6 Knowledge & technology outputs | 36.6 | 33 |
| 6.1 Knowledge creation..... | 39.9 | 21 ● |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 8.2 | 9 ● |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.2 | 47 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 3.9 | 8 ● |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 8.2 | 74 |
| 6.1.5 Citable documents H index..... | 355.0 | 21 ● |
| 6.2 Knowledge impact..... | 36.0 | 79 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 1.6 | 56 |
| 6.2.2 New businesses/th pop. 15–64..... | 4.3 | 29 |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 54 ○ |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 3.4 | 74 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 26.0 | 45 |
| 6.3 Knowledge diffusion..... | 33.9 | 42 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.1 | 46 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 1.7 | 53 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 0.8 | 82 |
| 6.3.4 FDI net outflows, % GDP..... | 4.1 | 13 ● |

| | | |
|--|-------------|-----------|
| 7 Creative outputs | 30.1 | 79 |
| 7.1 Intangible assets..... | 37.4 | 104 ○ |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 48.2 | 54 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.4 | 47 |
| 7.1.3 ICTs & business model creation†..... | 50.4 | 90 |
| 7.1.4 ICTs & organizational model creation†..... | 50.3 | 76 |
| 7.2 Creative goods & services..... | 17.0 | 78 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.8 | 19 |
| 7.2.2 National feature films/mn pop. 15–69..... | 0.7 | 87 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 7.1 | 41 ○ |
| 7.2.4 Printing & publishing output manufactures, %..... | 1.2 | 62 |
| 7.2.5 Creative goods exports, % total trade..... | 0.4 | 62 |
| 7.3 Online creativity..... | 28.3 | 46 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 3.8 | 64 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 19.3 | 35 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 1569.0 | 63 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 78.6 | 37 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|--------------------|
| Population (millions)..... | 12.1 |
| GDP (US\$ billions)..... | 8.0 |
| GDP per capita, PPP\$..... | 1,644.3 |
| Income group..... | Low income |
| Region..... | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 30.1 | 94 |
| Innovation Output Sub-Index..... | 17.8 | 128 ○ |
| Innovation Input Sub-Index..... | 42.3 | 66 |
| Innovation Efficiency Ratio..... | 0.4 | 131 ○ |
| Global Innovation Index 2014 (out of 143)..... | 29.3 | 102 |

| | | |
|---|-------------|-----------|
| 1 Institutions..... | 63.2 | 61 |
| 1.1 Political environment..... | 51.7 | 64 |
| 1.1.1 Political stability*..... | 62.1 | 72 |
| 1.1.2 Government effectiveness*..... | 41.4 | 67 |
| 1.2 Regulatory environment..... | 68.2 | 62 |
| 1.2.1 Regulatory quality*..... | 48.7 | 72 |
| 1.2.2 Rule of law*..... | 43.7 | 67 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 13.0 | 50 |
| 1.3 Business environment..... | 69.7 | 65 |
| 1.3.1 Ease of starting a business*..... | 81.7 | 91 |
| 1.3.2 Ease of resolving insolvency*..... | 41.8 | 94 |
| 1.3.3 Ease of paying taxes*..... | 85.8 | 26 ● |

| | | |
|--|-------------|-----------|
| 2 Human capital & research..... | 21.9 | 99 |
| 2.1 Education..... | 41.4 | 82 |
| 2.1.1 Expenditure on education, % GDP..... | 5.1 | 55 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 41.8 | 5 ● |
| 2.1.3 School life expectancy, years..... | 10.3 | 114 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 22.8 | 92 |
| 2.2 Tertiary education..... | 24.3 | 89 |
| 2.2.1 Tertiary enrolment, % gross..... | 6.9 | 121 ○ |
| 2.2.2 Graduates in science & engineering, %..... | 22.5 | 34 ● |
| 2.2.3 Tertiary inbound mobility, %..... | 0.8 | 87 |
| 2.3 Research & development (R&D)..... | 0.0 | 126 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 11.7 | 103 ○ |
| 2.3.2 Gross expenditure on R&D, % GDP..... | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |

| | | |
|--|-------------|-----------|
| 3 Infrastructure..... | 29.9 | 98 |
| 3.1 Information & communication technologies (ICTs)..... | 32.8 | 99 |
| 3.1.1 ICT access*..... | 24.3 | 128 ○ |
| 3.1.2 ICT use*..... | 4.9 | 123 |
| 3.1.3 Government's online service*..... | 51.2 | 63 |
| 3.1.4 E-participation*..... | 51.0 | 63 |
| 3.2 General infrastructure..... | 32.9 | 61 |
| 3.2.1 Electricity output, kWh/cap..... | n/a | n/a |
| 3.2.2 Logistics performance*..... | 30.5 | 77 |
| 3.2.3 Gross capital formation, % GDP..... | 23.9 | 50 |
| 3.3 Ecological sustainability..... | 23.9 | 124 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | n/a | n/a |
| 3.3.2 Environmental performance*..... | 35.4 | 122 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.1 | 124 |

| | | |
|---|-------------|-------------|
| 4 Market sophistication..... | 58.4 | 26 ● |
| 4.1 Credit..... | 53.7 | 19 ● |
| 4.1.1 Ease of getting credit*..... | 90.0 | 4 ● |
| 4.1.2 Domestic credit to private sector, % GDP [Ⓔ] | 11.2 | 135 ○ |
| 4.1.3 Microfinance gross loans, % GDP..... | 5.8 | 6 ● |

| | | |
|---|------|-----|
| 4.2 Investment..... | 46.7 | 33 |
| 4.2.1 Ease of protecting investors*..... | 46.7 | 102 |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 74.7 | 78 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 4.6 | 77 |
| 4.3.2 Intensity of local competition [†] | 65.6 | 75 |

| | | |
|---|-------------|-------------|
| 5 Business sophistication..... | 38.3 | 45 ● |
| 5.1 Knowledge workers..... | 36.9 | 73 |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 3.8 | 113 ○ |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 55.4 | 17 ● |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 47.3 | 20 |
| 5.2.1 University/industry research collaboration [†] | 44.2 | 62 |
| 5.2.2 State of cluster development [†] | 48.9 | 56 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a |
| 5.3 Knowledge absorption..... | 30.6 | 89 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 0.1 | 111 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 10.6 | 28 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 0.8 | 71 |
| 5.3.4 FDI net inflows, % GDP..... | 1.5 | 99 |

| | | |
|---|-------------|------------|
| 6 Knowledge & technology outputs..... | 14.1 | 125 |
| 6.1 Knowledge creation..... | 9.6 | 72 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP [Ⓔ] | 2.4 | 41 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP [Ⓔ] | 0.1 | 74 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP [Ⓔ] | 0.7 | 33 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 8.4 | 72 |
| 6.1.5 Citable documents H index..... | 43.0 | 122 |
| 6.2 Knowledge impact..... | 3.7 | 135 ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | 1.1 | 65 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.2 | 138 ○ |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 29.0 | 64 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓔ] | 2.0 | 9 ● |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.1 | 101 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 1.0 | 78 |
| 6.3.4 FDI net outflows, % GDP..... | n/a | n/a |

| | | |
|--|-------------|------------|
| 7 Creative outputs..... | 21.6 | 115 |
| 7.1 Intangible assets..... | 42.6 | 85 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP [Ⓔ] | 6.7 | 100 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 66.7 | 27 ● |
| 7.1.4 ICTs & organizational model creation [†] | 58.8 | 45 ● |
| 7.2 Creative goods & services..... | 0.9 | 132 ○ |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.0 | 78 |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | 0.0 | 109 |
| 7.3 Online creativity..... | 0.2 | 129 ○ |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.2 | 128 ○ |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.0 | 128 ○ |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 38.6 | 126 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|----------------------------------|
| Population (millions)..... | 29.4 |
| GDP (US\$ billions)..... | 752.5 |
| GDP per capita, PPP\$..... | 32,340.1 |
| Income group..... | High income |
| Region..... | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 40.7 | 43 |
| Innovation Output Sub-Index..... | 34.0 | 44 |
| Innovation Input Sub-Index..... | 47.3 | 45 |
| Innovation Efficiency Ratio..... | 0.7 | 69 |
| Global Innovation Index 2014 (out of 143)..... | 41.6 | 38 |
| 1 Institutions | 60.4 | 68 |
| 1.1 Political environment..... | 48.5 | 73 |
| 1.1.1 Political stability*..... | 54.1 | 89 |
| 1.1.2 Government effectiveness*..... | 43.0 | 64 |
| 1.2 Regulatory environment..... | 64.8 | 77 |
| 1.2.1 Regulatory quality*..... | 49.9 | 68 |
| 1.2.2 Rule of law*..... | 54.7 | 52 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 19.5 | 89 |
| 1.3 Business environment..... | 67.9 | 77 |
| 1.3.1 Ease of starting a business*..... | 82.7 | 89 |
| 1.3.2 Ease of resolving insolvency*..... | 21.7 | 136 ○ |
| 1.3.3 Ease of paying taxes*..... | 99.2 | 3 ● |
| 2 Human capital & research | 39.8 | 39 |
| 2.1 Education..... | 49.5 | 55 |
| 2.1.1 Expenditure on education, % GDP [Ⓧ] | 5.1 | 51 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓧ] | 18.1 | 67 |
| 2.1.3 School life expectancy, years..... | 16.3 | 21 ● |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓧ] | 11.3 | 36 |
| 2.2 Tertiary education..... | 46.6 | 26 ● |
| 2.2.1 Tertiary enrolment, % gross..... | 57.5 | 43 |
| 2.2.2 Graduates in science & engineering, %..... | 29.0 | 11 ● |
| 2.2.3 Tertiary inbound mobility, %..... | 4.6 | 38 |
| 2.3 Research & development (R&D)..... | 23.4 | 41 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓧ] | 0.1 | 110 ○ |
| 2.3.3 QS university ranking, average score top 3*..... | 45.4 | 31 |
| 3 Infrastructure | 50.2 | 34 |
| 3.1 Information & communication technologies (ICTs)..... | 63.0 | 37 |
| 3.1.1 ICT access*..... | 70.4 | 44 |
| 3.1.2 ICT use*..... | 47.7 | 41 |
| 3.1.3 Government's online service*..... | 77.2 | 18 ● |
| 3.1.4 E-participation*..... | 56.9 | 51 |
| 3.2 General infrastructure..... | 49.5 | 17 ● |
| 3.2.1 Electricity output, kWh/cap..... | 9603.4 | 14 ● |
| 3.2.2 Logistics performance*..... | 50.4 | 47 |
| 3.2.3 Gross capital formation, % GDP..... | 30.8 | 20 ● |
| 3.3 Ecological sustainability..... | 38.2 | 67 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.4 | 82 |
| 3.3.2 Environmental performance*..... | 66.7 | 35 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.2 | 116 ○ |
| 4 Market sophistication | 50.3 | 55 |
| 4.1 Credit..... | 31.0 | 68 |
| 4.1.1 Ease of getting credit*..... | 50.0 | 65 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 40.3 | 83 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|------|------|
| 4.2 Investment..... | 40.6 | 50 |
| 4.2.1 Ease of protecting investors*..... | 57.5 | 60 |
| 4.2.2 Market capitalization, % GDP..... | 50.9 | 37 |
| 4.2.3 Total value of stocks traded, % GDP..... | 70.1 | 9 ● |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 72 ○ |
| 4.3 Trade & competition..... | 79.3 | 57 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 4.3 | 73 |
| 4.3.2 Intensity of local competition [†] | 73.5 | 38 |

| | | |
|---|-------------|-----------|
| 5 Business sophistication | 35.8 | 64 |
| 5.1 Knowledge workers..... | 33.8 | 82 |
| 5.1.1 Knowledge-intensive employment, %..... | 26.6 | 53 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total [Ⓧ] | 4.4 | 78 ○ |
| 5.2 Innovation linkages..... | 42.3 | 32 |
| 5.2.1 University/industry research collaboration [†] | 53.3 | 36 |
| 5.2.2 State of cluster development [†] | 61.0 | 21 ● |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 30 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 71 |
| 5.3 Knowledge absorption..... | 31.2 | 84 |
| 5.3.1 Royalty & license fees payments, % total trade..... | n/a | n/a |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 6.0 | 83 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP..... | 1.2 | 105 ○ |

| | | |
|---|-------------|-----------|
| 6 Knowledge & technology outputs | 25.1 | 74 |
| 6.1 Knowledge creation..... | 8.9 | 78 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 0.3 | 83 ○ |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 6.9 | 82 |
| 6.1.5 Citable documents H index..... | 144.0 | 52 |
| 6.2 Knowledge impact..... | 39.8 | 55 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 1.2 | 68 |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 29 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.5 | 105 ○ |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓧ] | 35.9 | 27 |
| 6.3 Knowledge diffusion..... | 26.6 | 75 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.1 | 111 ○ |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | 0.7 | 61 |

| | | |
|---|-------------|-----------|
| 7 Creative outputs | 42.9 | 30 |
| 7.1 Intangible assets..... | 65.0 | 8 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 65.9 | 29 ● |
| 7.1.4 ICTs & organizational model creation [†] | 64.1 | 24 ● |
| 7.2 Creative goods & services..... | 18.2 | 72 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 10.2 | 33 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓧ] | 2.3 | 22 |
| 7.2.5 Creative goods exports, % total trade..... | 0.1 | 88 ○ |
| 7.3 Online creativity..... | 23.5 | 58 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 3.8 | 62 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.8 | 90 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 1469.8 | 67 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 78.5 | 39 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓧ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Senegal

Key indicators

| | |
|-----------------------|---------------------|
| Population (millions) | 14.5 |
| GDP (US\$ billions) | 15.6 |
| GDP per capita, PPP\$ | 2,019.7 |
| Income group | Lower-middle income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|------------|
| Global Innovation Index (out of 141) | 31.0 | 84 |
| Innovation Output Sub-Index | 27.8 | 72 |
| Innovation Input Sub-Index | 34.1 | 110 |
| Innovation Efficiency Ratio | 0.8 | 24 ● |
| Global Innovation Index 2014 (out of 143) | 30.1 | 98 |
| 1 Institutions | 54.3 | 89 |
| 1.1 Political environment | 45.2 | 81 |
| 1.1.1 Political stability* | 62.0 | 73 |
| 1.1.2 Government effectiveness* | 28.5 | 97 |
| 1.2 Regulatory environment | 65.0 | 75 |
| 1.2.1 Regulatory quality* | 46.5 | 73 |
| 1.2.2 Rule of law* | 40.4 | 77 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 14.8 | 63 ● |
| 1.3 Business environment | 52.6 | 129 |
| 1.3.1 Ease of starting a business* | 85.0 | 75 |
| 1.3.2 Ease of resolving insolvency* | 41.9 | 93 |
| 1.3.3 Ease of paying taxes* | 30.9 | 138 ○ |
| 2 Human capital & research | 14.4 | 128 |
| 2.1 Education | 31.5 | 112 |
| 2.1.1 Expenditure on education, % GDP [Ⓞ] | 5.6 | 40 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓞ] | 29.0 | 26 ● |
| 2.1.3 School life expectancy, years [Ⓞ] | 7.9 | 127 ○ |
| 2.1.4 PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓞ] | 27.4 | 101 |
| 2.2 Tertiary education | 5.9 | 131 ○ |
| 2.2.1 Tertiary enrolment, % gross [Ⓞ] | 7.6 | 118 |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, % | n/a | n/a |
| 2.3 Research & development (R&D) | 5.6 | 79 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓞ] | 361.3 | 64 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓞ] | 0.5 | 58 |
| 2.3.3 QS university ranking, average score top 3* | 0.0 | 73 ○ |
| 3 Infrastructure | 27.6 | 108 |
| 3.1 Information & communication technologies (ICTs) | 27.7 | 107 |
| 3.1.1 ICT access* | 32.3 | 111 |
| 3.1.2 ICT use* | 12.5 | 107 |
| 3.1.3 Government's online service* | 30.7 | 101 |
| 3.1.4 E-participation* | 35.3 | 88 |
| 3.2 General infrastructure | 27.0 | 87 |
| 3.2.1 Electricity output, kWh/cap | 251.3 | 113 ○ |
| 3.2.2 Logistics performance* | 23.5 | 96 |
| 3.2.3 Gross capital formation, % GDP | 27.4 | 33 ● |
| 3.3 Ecological sustainability | 28.1 | 105 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 6.5 | 81 |
| 3.3.2 Environmental performance* | 40.8 | 104 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 0.3 | 102 |
| 4 Market sophistication | 46.1 | 75 |
| 4.1 Credit | 24.1 | 92 |
| 4.1.1 Ease of getting credit* | 30.0 | 113 |
| 4.1.2 Domestic credit to private sector, % GDP | 33.0 | 91 |
| 4.1.3 Microfinance gross loans, % GDP | 2.7 | 21 ● |
| 4.2 Investment | 45.8 | 37 |
| 4.2.1 Ease of protecting investors* | 45.8 | 107 |
| 4.2.2 Market capitalization, % GDP | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | n/a | n/a |
| 4.3 Trade & competition | 68.3 | 101 |
| 4.3.1 Applied tariff rate, weighted mean, % | 8.0 | 107 |
| 4.3.2 Intensity of local competition [†] | 64.8 | 78 |
| 5 Business sophistication | 28.3 | 101 |
| 5.1 Knowledge workers | 8.3 | 136 ○ |
| 5.1.1 Knowledge-intensive employment, % | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms [Ⓞ] | 16.3 | 97 |
| 5.1.3 GERD performed by business, % of GDP [Ⓞ] | 0.0 | 85 ○ |
| 5.1.4 GERD financed by business, % [Ⓞ] | 4.1 | 77 |
| 5.1.5 Females employed w/advanced degrees, % total [Ⓞ] | 0.7 | 84 ○ |
| 5.2 Innovation linkages | 45.0 | 24 ● |
| 5.2.1 University/industry research collaboration [†] | 44.0 | 63 |
| 5.2.2 State of cluster development [†] | 38.8 | 100 |
| 5.2.3 GERD financed by abroad, % [Ⓞ] | 40.5 | 11 ● |
| 5.2.4 JV–strategic alliance deals/tr PPP\$ GDP | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | n/a | n/a |
| 5.3 Knowledge absorption | 31.7 | 78 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓞ] | 0.1 | 104 |
| 5.3.2 High-tech imports less re-imports, % total trade | 3.1 | 122 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓞ] | 2.0 | 13 ● |
| 5.3.4 FDI net inflows, % GDP | 2.0 | 85 |
| 6 Knowledge & technology outputs | 22.4 | 91 |
| 6.1 Knowledge creation | 8.1 | 84 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | n/a | n/a |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | 0.1 | 65 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 10.7 | 67 |
| 6.1.5 Citable documents H index | 83.0 | 85 |
| 6.2 Knowledge impact | 26.5 | 116 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 0.9 | 73 |
| 6.2.2 New businesses/th pop. 15–64 | 0.3 | 94 |
| 6.2.3 Computer software spending, % GDP | 0.3 | 60 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 1.7 | 99 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓞ] | 15.3 | 63 |
| 6.3 Knowledge diffusion | 32.6 | 49 ● |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓞ] | 0.1 | 64 |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.1 | 97 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓞ] | 4.6 | 9 ● |
| 6.3.4 FDI net outflows, % GDP [Ⓞ] | 0.3 | 75 |
| 7 Creative outputs | 33.1 | 66 |
| 7.1 Intangible assets | 56.6 | 20 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 59.9 | 51 ● |
| 7.1.4 ICTs & organizational model creation [†] | 53.3 | 62 ● |
| 7.2 Creative goods & services | 9.6 | 98 |
| 7.2.1 Cultural & creative services exports, % total trade | 0.0 | 84 ○ |
| 7.2.2 National feature films/mn pop. 15–69 | 0.4 | 98 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓞ] | 1.5 | 47 |
| 7.2.5 Creative goods exports, % total trade [Ⓞ] | 0.2 | 83 |
| 7.3 Online creativity | 9.7 | 79 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 1.3 | 102 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 0.2 | 112 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 51.4 | 119 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 36.8 | 69 ○ |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

[Ⓞ] indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------|
| Population (millions)..... | 9.5 |
| GDP (US\$ billions)..... | 43.9 |
| GDP per capita, PPP\$..... | 11,553.4 |
| Income group..... | Upper-middle income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 36.5 | 63 |
| Innovation Output Sub-Index..... | 31.2 | 59 |
| Innovation Input Sub-Index..... | 41.8 | 70 |
| Innovation Efficiency Ratio..... | 0.7 | 55 |
| Global Innovation Index 2014 (out of 143)..... | 35.9 | 67 |
| 1 Institutions..... 62.2 64 | | |
| 1.1 Political environment..... | 50.2 | 70 |
| 1.1.1 Political stability*..... | 61.8 | 74 |
| 1.1.2 Government effectiveness*..... | 38.6 | 77 |
| 1.2 Regulatory environment..... | 71.1 | 49 |
| 1.2.1 Regulatory quality*..... | 45.8 | 75 |
| 1.2.2 Rule of law*..... | 38.5 | 80 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.0 | 1 ● |
| 1.3 Business environment..... | 65.2 | 83 |
| 1.3.1 Ease of starting a business*..... | 88.9 | 56 |
| 1.3.2 Ease of resolving insolvency*..... | 57.9 | 46 |
| 1.3.3 Ease of paying taxes*..... | 48.9 | 126 ○ |
| 2 Human capital & research..... 30.1 64 | | |
| 2.1 Education..... | 35.3 | 99 ○ |
| 2.1.1 Expenditure on education, % GDP..... | 0.1 | 130 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 13.9 | 89 ○ |
| 2.1.3 School life expectancy, years..... | 14.4 | 51 |
| 2.1.4 PISA scales in reading, maths, & science..... | 446.6 | 41 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 9.0 | 18 ● |
| 2.2 Tertiary education..... | 40.8 | 42 |
| 2.2.1 Tertiary enrolment, % gross..... | 56.4 | 44 |
| 2.2.2 Graduates in science & engineering, %..... | 24.8 | 27 |
| 2.2.3 Tertiary inbound mobility, %..... | 3.7 | 48 |
| 2.3 Research & development (R&D)..... | 14.0 | 58 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 1235.5 | 44 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 1.0 | 34 |
| 2.3.3 QS university ranking, average score top 3*..... | 4.5 | 70 |
| 3 Infrastructure..... 42.6 56 | | |
| 3.1 Information & communication technologies (ICTs)..... | 49.0 | 60 |
| 3.1.1 ICT access*..... | 72.2 | 41 |
| 3.1.2 ICT use*..... | 43.4 | 50 |
| 3.1.3 Government's online service*..... | 39.4 | 82 |
| 3.1.4 E-participation*..... | 41.2 | 79 |
| 3.2 General infrastructure..... | 30.3 | 71 |
| 3.2.1 Electricity output, kWh/cap..... | 5009.8 | 42 |
| 3.2.2 Logistics performance*..... | 40.9 | 61 |
| 3.2.3 Gross capital formation, % GDP..... | 20.7 | 78 |
| 3.3 Ecological sustainability..... | 48.4 | 34 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 4.8 | 100 ○ |
| 3.3.2 Environmental performance*..... | 69.1 | 31 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 7.9 | 13 ● |
| 4 Market sophistication..... 43.9 90 | | |
| 4.1 Credit..... | 31.1 | 67 |
| 4.1.1 Ease of getting credit*..... | 60.0 | 48 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 43.6 | 77 |
| 4.1.3 Microfinance gross loans, % GDP..... | 1.7 | 30 |
| 4.2 Investment..... | 34.6 | 72 |
| 4.2.1 Ease of protecting investors*..... | 63.3 | 31 |
| 4.2.2 Market capitalization, % GDP..... | 18.3 | 72 |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.7 | 73 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 66.1 | 111 ○ |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 6.0 | 90 |
| 4.3.2 Intensity of local competition [†] | 53.3 | 122 ○ |
| 5 Business sophistication..... 30.2 95 | | |
| 5.1 Knowledge workers..... | 30.9 | 92 |
| 5.1.1 Knowledge-intensive employment, %..... | 28.1 | 49 |
| 5.1.2 Firms offering formal training, % firms..... | 30.6 | 65 |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 0.2 | 46 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 5.8 | 72 ○ |
| 5.1.5 Females employed w/advanced degrees, % total..... | 12.2 | 52 |
| 5.2 Innovation linkages..... | 21.0 | 119 ○ |
| 5.2.1 University/industry research collaboration [†] | 37.3 | 92 |
| 5.2.2 State of cluster development [†] | 36.5 | 111 ○ |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 9.2 | 44 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 63 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 62 |
| 5.3 Knowledge absorption..... | 38.7 | 45 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.0 | 28 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 6.6 | 71 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.7 | 25 ● |
| 5.3.4 FDI net inflows, % GDP..... | 3.2 | 56 |
| 6 Knowledge & technology outputs..... 27.7 59 | | |
| 6.1 Knowledge creation..... | 21.2 | 47 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 2.1 | 46 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.1 | 56 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 0.7 | 32 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 51.6 | 8 ● |
| 6.1.5 Citable documents H index..... | 86.0 | 83 |
| 6.2 Knowledge impact..... | 29.9 | 105 ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | 1.7 | 52 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 24.7 | 16 ● |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 19.7 | 57 |
| 6.3 Knowledge diffusion..... | 32.1 | 50 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.2 | 37 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 2.0 | 50 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 2.7 | 22 ● |
| 6.3.4 FDI net outflows, % GDP..... | 0.8 | 56 |
| 7 Creative outputs..... 34.6 60 | | |
| 7.1 Intangible assets..... | 38.0 | 99 ○ |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 43.7 | 58 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 1.8 | 14 ● |
| 7.1.3 ICTs & business model creation [†] | 46.0 | 106 ○ |
| 7.1.4 ICTs & organizational model creation [†] | 42.6 | 106 ○ |
| 7.2 Creative goods & services..... | 33.3 | 34 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 1.7 | 1 ● |
| 7.2.2 National feature films/mn pop. 15–69..... | 2.6 | 54 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | 1.7 | 38 |
| 7.2.5 Creative goods exports, % total trade..... | 0.7 | 48 |
| 7.3 Online creativity..... | 29.0 | 44 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 1.5 | 95 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 5.1 | 53 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 4693.0 | 29 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 74.9 | 46 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------|
| Population (millions)..... | 0.1 |
| GDP (US\$ billions)..... | 1.4 |
| GDP per capita, PPP\$ | 27,575.9 |
| Income group..... | Upper-middle income |
| Region..... | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 36.4 | 65 |
| Innovation Output Sub-Index | 29.2 | 64 |
| Innovation Input Sub-Index..... | 43.7 | 59 |
| Innovation Efficiency Ratio..... | 0.7 | 88 |
| Global Innovation Index 2014 (out of 143) | 38.6 | 51 |

1 Institutions.....68.7 49

| | | |
|---|------|------|
| 1.1 Political environment..... | 67.3 | 46 ● |
| 1.1.1 Political stability*..... | 85.7 | 30 ● |
| 1.1.2 Government effectiveness*..... | 49.0 | 55 |
| 1.2 Regulatory environment | 68.3 | 61 |
| 1.2.1 Regulatory quality*..... | 40.0 | 90 |
| 1.2.2 Rule of law*..... | 48.8 | 60 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 11.9 | 46 ● |
| 1.3 Business environment..... | 70.4 | 63 |
| 1.3.1 Ease of starting a business*..... | 77.5 | 104 |
| 1.3.2 Ease of resolving insolvency*..... | 52.2 | 58 |
| 1.3.3 Ease of paying taxes*..... | 81.5 | 38 ● |

2 Human capital & research.....24.2 88

| | | |
|--|-------|-------|
| 2.1 Education..... | 36.2 | 93 |
| 2.1.1 Expenditure on education, % GDP..... | 3.6 | 97 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 6.8 | 109 ○ |
| 2.1.3 School life expectancy, years..... | 13.4 | 73 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 12.2 | 42 |
| 2.2 Tertiary education..... | 33.6 | 62 |
| 2.2.1 Tertiary enrolment, % gross..... | 1.3 | 133 ○ |
| 2.2.2 Graduates in science & engineering, % [Ⓔ] | 25.0 | 25 ● |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a |
| 2.3 Research & development (R&D)..... | 2.9 | 95 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 149.3 | 78 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.3 | 77 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |

3 Infrastructure.....46.1 45 ●

| | | |
|--|------|-------|
| 3.1 Information & communication technologies (ICTs)..... | 37.6 | 90 |
| 3.1.1 ICT access*..... | 64.6 | 57 |
| 3.1.2 ICT use*..... | 27.4 | 76 |
| 3.1.3 Government's online service*..... | 33.1 | 93 |
| 3.1.4 E-participation*..... | 25.5 | 110 ○ |
| 3.2 General infrastructure..... | 60.3 | 7 |
| 3.2.1 Electricity output, kWh/cap..... | n/a | n/a |
| 3.2.2 Logistics performance*..... | n/a | n/a |
| 3.2.3 Gross capital formation, % GDP..... | 36.0 | 10 ● |
| 3.3 Ecological sustainability | 40.4 | 56 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | n/a | n/a |
| 3.3.2 Environmental performance*..... | 55.6 | 56 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 1.3 | 55 |

4 Market sophistication31.0 138 ○

| | | |
|---|------|-------|
| 4.1 Credit..... | 7.9 | 134 ○ |
| 4.1.1 Ease of getting credit*..... | 10.0 | 133 ○ |
| 4.1.2 Domestic credit to private sector, % GDP..... | 21.9 | 114 ○ |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|--|------|-----|
| 4.2 Investment..... | 58.3 | 12 |
| 4.2.1 Ease of protecting investors*..... | 58.3 | 54 |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |

4.3 Trade & competition26.9 141 ○

| | | |
|--|------|-------|
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 28.3 | 139 ○ |
| 4.3.2 Intensity of local competition [†] | 53.9 | 121 ○ |

5 Business sophistication48.3 21

| | | |
|---|------|------|
| 5.1 Knowledge workers..... | 43.9 | 49 |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 26.4 | 54 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 52.7 | 10 ● |
| 5.2.1 University/industry research collaboration [†] | 40.0 | 77 |
| 5.2.2 State of cluster development [†] | 48.1 | 60 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓔ] | 2.2 | 8 ● |
| 5.3 Knowledge absorption..... | 48.4 | 18 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 0.1 | 96 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | n/a | n/a |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP..... | 14.0 | 7 ● |

6 Knowledge & technology outputs18.3 113 ○

| | | |
|---|------|-------|
| 6.1 Knowledge creation..... | 16.1 | 54 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 2.1 | 21 ● |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 13.7 | 56 |
| 6.1.5 Citable documents H index..... | 38.0 | 128 ○ |
| 6.2 Knowledge impact..... | 8.0 | 128 ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 3.9 | 70 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 30.7 | 54 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓔ] | 0.2 | 44 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | n/a | n/a |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 1.4 | 62 |
| 6.3.4 FDI net outflows, % GDP..... | 0.5 | 65 |

7 Creative outputs40.2 41

| | | |
|--|-------|-------|
| 7.1 Intangible assets..... | 38.5 | 97 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 46.0 | 56 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 47.6 | 100 |
| 7.1.4 ICTs & organizational model creation [†] | 42.9 | 105 ○ |
| 7.2 Creative goods & services..... | n/a | n/a |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | n/a | n/a |
| 7.3 Online creativity..... | 43.6 | 27 ● |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 100.0 | 1 ● |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 27.3 | 27 ● |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 473.2 | 93 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|-----------------------------|
| Population (millions) | 5.5 |
| GDP (US\$ billions) | 308.1 |
| GDP per capita, PPP\$ | 67,035.4 |
| Income group | High income |
| Region | South East Asia and Oceania |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|----------|
| Global Innovation Index (out of 141) | 59.4 | 7 |
| Innovation Output Sub-Index | 46.6 | 20 |
| Innovation Input Sub-Index | 72.1 | 1 ● |
| Innovation Efficiency Ratio | 0.6 | 100 ○ |
| Global Innovation Index 2014 (out of 143) | 59.2 | 7 |

1 Institutions 95.4 2 ●

| | | |
|--|-------|-----|
| 1.1 Political environment | 97.3 | 2 ● |
| 1.1.1 Political stability* | 97.1 | 5 |
| 1.1.2 Government effectiveness* | 97.5 | 2 ● |
| 1.2 Regulatory environment | 98.5 | 1 ● |
| 1.2.1 Regulatory quality* | 100.0 | 1 ● |
| 1.2.2 Rule of law* | 94.0 | 11 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 8.0 | 1 ● |
| 1.3 Business environment | 90.5 | 3 ● |
| 1.3.1 Ease of starting a business* | 96.5 | 6 |
| 1.3.2 Ease of resolving insolvency* | 77.9 | 17 |
| 1.3.3 Ease of paying taxes* | 97.2 | 5 |

2 Human capital & research 60.9 5

| | | |
|--|--------|-------|
| 2.1 Education | 39.8 | 86 ○ |
| 2.1.1 Expenditure on education, % GDP | 2.9 | 110 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓔ] | 16.7 | 74 ○ |
| 2.1.3 School life expectancy, years | n/a | n/a |
| 2.1.4 PISA scales in reading, maths, & science | 555.7 | 2 ● |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓔ] | 14.9 | 64 ○ |
| 2.2 Tertiary education | 81.7 | 1 ● |
| 2.2.1 Tertiary enrolment, % gross | n/a | n/a |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, % | 19.2 | 6 |
| 2.3 Research & development (R&D) | 61.2 | 13 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 6437.7 | 7 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 2.0 | 18 |
| 2.3.3 QS university ranking, average score top 3* | 58.4 | 20 |

3 Infrastructure 69.5 1 ●

| | | |
|---|--------|-----|
| 3.1 Information & communication technologies (ICTs) | 86.9 | 6 |
| 3.1.1 ICT access* | 86.1 | 13 |
| 3.1.2 ICT use* | 71.9 | 14 |
| 3.1.3 Government's online service* | 99.2 | 2 ● |
| 3.1.4 E-participation* | 90.2 | 10 |
| 3.2 General infrastructure | 57.8 | 9 |
| 3.2.1 Electricity output, kWh/cap | 8835.4 | 17 |
| 3.2.2 Logistics performance* | 94.0 | 5 |
| 3.2.3 Gross capital formation, % GDP | 29.2 | 23 |
| 3.3 Ecological sustainability | 64.0 | 5 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 13.5 | 7 |
| 3.3.2 Environmental performance* | 81.8 | 4 ● |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 4.3 | 24 |

4 Market sophistication 71.6 6

| | | |
|--|-------|-----|
| 4.1 Credit | 58.5 | 13 |
| 4.1.1 Ease of getting credit* | 75.0 | 16 |
| 4.1.2 Domestic credit to private sector, % GDP | 128.9 | 19 |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a |

| | | |
|---|-------|-----|
| 4.2 Investment | 67.4 | 7 |
| 4.2.1 Ease of protecting investors* | 80.0 | 3 ● |
| 4.2.2 Market capitalization, % GDP | 144.3 | 5 |
| 4.2.3 Total value of stocks traded, % GDP | 54.5 | 15 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.4 | 11 |

4.3 Trade & competition 88.9 8

| | | |
|--|------|-----|
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 0.1 | 1 ● |
| 4.3.2 Intensity of local competition [†] | 77.8 | 18 |

5 Business sophistication 63.1 1 ●

| | | |
|---|------|------|
| 5.1 Knowledge workers | 70.2 | 7 |
| 5.1.1 Knowledge-intensive employment, % | 52.7 | 2 ● |
| 5.1.2 Firms offering formal training, % firms | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 1.2 | 17 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 53.4 | 16 |
| 5.1.5 Females employed w/advanced degrees, % total | 22.7 | 14 |
| 5.2 Innovation linkages | 50.5 | 13 |
| 5.2.1 University/industry research collaboration [†] | 76.3 | 5 |
| 5.2.2 State of cluster development [†] | 68.8 | 11 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 5.9 | 62 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 5 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 0.8 | 19 |
| 5.3 Knowledge absorption | 68.6 | 2 ● |
| 5.3.1 Royalty & license fees payments, % total trade | 3.8 | 1 ● |
| 5.3.2 High-tech imports less re-imports, % total trade | 20.7 | 6 |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 0.6 | 85 ○ |
| 5.3.4 FDI net inflows, % GDP | 21.4 | 5 |

6 Knowledge & technology outputs 51.5 12

| | | |
|---|-------|------|
| 6.1 Knowledge creation | 29.0 | 34 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP | 2.6 | 37 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP | 2.1 | 20 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 25.7 | 33 |
| 6.1.5 Citable documents H index | 308.0 | 27 |
| 6.2 Knowledge impact | 56.1 | 7 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 1.6 | 59 ○ |
| 6.2.2 New businesses/th pop. 15–64 | 8.0 | 14 |
| 6.2.3 Computer software spending, % GDP | 0.4 | 21 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 13.8 | 28 |
| 6.2.5 High- & medium-high-tech manufactures, % | 69.2 | 1 ● |
| 6.3 Knowledge diffusion | 69.3 | 3 ● |
| 6.3.1 Royalty & license fees receipts, % total trade | 0.4 | 26 |
| 6.3.2 High-tech exports less re-exports, % total trade | 26.8 | 1 ● |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 0.7 | 90 ○ |
| 6.3.4 FDI net outflows, % GDP | 9.1 | 1 ● |

7 Creative outputs 41.7 33

| | | |
|---|--------|------|
| 7.1 Intangible assets | 46.4 | 64 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP | 17.4 | 91 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | 0.5 | 40 ○ |
| 7.1.3 ICTs & business model creation [†] | 75.6 | 9 |
| 7.1.4 ICTs & organizational model creation [†] | 72.2 | 11 |
| 7.2 Creative goods & services | 34.3 | 30 |
| 7.2.1 Cultural & creative services exports, % total trade | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 | 3.1 | 50 |
| 7.2.3 Global ent. & media output/th pop. 15–69 | 36.7 | 20 |
| 7.2.4 Printing & publishing output manufactures, % | 0.9 | 76 ○ |
| 7.2.5 Creative goods exports, % total trade | 5.0 | 10 |
| 7.3 Online creativity | 39.7 | 31 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 30.9 | 24 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 16.7 | 37 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 2562.1 | 48 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 92.5 | 8 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|-------------|
| Population (millions)..... | 5.5 |
| GDP (US\$ billions)..... | 100.0 |
| GDP per capita, PPP\$..... | 25,524.7 |
| Income group..... | High income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 43.0 | 36 |
| Innovation Output Sub-Index..... | 37.1 | 37 |
| Innovation Input Sub-Index..... | 48.9 | 38 |
| Innovation Efficiency Ratio..... | 0.8 | 48 |
| Global Innovation Index 2014 (out of 143)..... | 41.9 | 37 |
| 1 Institutions..... | 75.1 | 36 |
| 1.1 Political environment..... | 76.9 | 30 |
| 1.1.1 Political stability*..... | 91.4 | 13 ● |
| 1.1.2 Government effectiveness*..... | 62.4 | 39 |
| 1.2 Regulatory environment..... | 72.2 | 46 |
| 1.2.1 Regulatory quality*..... | 72.2 | 33 |
| 1.2.2 Rule of law*..... | 59.5 | 46 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 18.8 | 86 |
| 1.3 Business environment..... | 76.2 | 41 |
| 1.3.1 Ease of starting a business*..... | 87.0 | 65 |
| 1.3.2 Ease of resolving insolvency*..... | 69.9 | 29 |
| 1.3.3 Ease of paying taxes*..... | 71.6 | 78 |
| 2 Human capital & research..... | 33.2 | 53 |
| 2.1 Education..... | 46.0 | 64 |
| 2.1.1 Expenditure on education, % GDP..... | 4.1 | 85 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 18.4 | 64 |
| 2.1.3 School life expectancy, years..... | 15.1 | 42 |
| 2.1.4 PISA scales in reading, maths, & science..... | 471.9 | 37 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 11.3 | 37 |
| 2.2 Tertiary education..... | 36.2 | 56 |
| 2.2.1 Tertiary enrolment, % gross..... | 55.1 | 49 |
| 2.2.2 Graduates in science & engineering, %..... | 20.6 | 52 |
| 2.2.3 Tertiary inbound mobility, %..... | 4.1 | 43 |
| 2.3 Research & development (R&D)..... | 17.4 | 49 |
| 2.3.1 Researchers, FTE/mn pop..... | 2702.2 | 30 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.8 | 40 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 49.3 | 37 |
| 3.1 Information & communication technologies (ICTs)..... | 58.7 | 42 |
| 3.1.1 ICT access*..... | 70.3 | 46 |
| 3.1.2 ICT use*..... | 52.8 | 34 |
| 3.1.3 Government's online service*..... | 48.8 | 65 |
| 3.1.4 E-participation*..... | 62.7 | 40 |
| 3.2 General infrastructure..... | 32.0 | 65 |
| 3.2.1 Electricity output, kWh/cap..... | 5216.6 | 40 |
| 3.2.2 Logistics performance*..... | 55.8 | 41 |
| 3.2.3 Gross capital formation, % GDP..... | 18.6 | 106 ○ |
| 3.3 Ecological sustainability..... | 57.2 | 10 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.8 | 70 |
| 3.3.2 Environmental performance*..... | 74.5 | 21 ● |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 9.8 | 7 ● |
| 4 Market sophistication..... | 50.4 | 53 |
| 4.1 Credit..... | 39.2 | 45 |
| 4.1.1 Ease of getting credit*..... | 65.0 | 34 |
| 4.1.2 Domestic credit to private sector, % GDP [Ⓜ] | 44.1 | 76 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|-------------|-----------|
| 4.2 Investment..... | 26.2 | 112 ○ |
| 4.2.1 Ease of protecting investors*..... | 50.8 | 88 |
| 4.2.2 Market capitalization, % GDP..... | 5.0 | 101 ○ |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.2 | 93 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 85.8 | 22 ● |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition [†] | 75.0 | 30 |
| 5 Business sophistication..... | 36.7 | 58 |
| 5.1 Knowledge workers..... | 45.0 | 48 |
| 5.1.1 Knowledge-intensive employment, %..... | 31.8 | 44 |
| 5.1.2 Firms offering formal training, % firms..... | 44.9 | 36 |
| 5.1.3 GERD performed by business, % of GDP..... | 0.4 | 39 |
| 5.1.4 GERD financed by business, %..... | 40.2 | 37 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 11.9 | 55 |
| 5.2 Innovation linkages..... | 31.3 | 69 |
| 5.2.1 University/industry research collaboration [†] | 39.3 | 81 |
| 5.2.2 State of cluster development [†] | 46.7 | 66 |
| 5.2.3 GERD financed by abroad, %..... | 18.0 | 23 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.1 | 53 |
| 5.3 Knowledge absorption..... | 33.7 | 66 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.2 | 92 ○ |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 14.8 | 14 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.4 | 105 ○ |
| 5.3.4 FDI net inflows, % GDP..... | 2.2 | 76 |
| 6 Knowledge & technology outputs..... | 33.7 | 41 |
| 6.1 Knowledge creation..... | 22.8 | 42 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 1.3 | 59 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.4 | 40 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 2.3 | 14 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 21.5 | 38 |
| 6.1.5 Citable documents H index..... | 165.0 | 41 |
| 6.2 Knowledge impact..... | 50.9 | 19 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.9 | 77 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 5.1 | 21 ● |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 35 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 26.4 | 12 ● |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 55.8 | 4 ● |
| 6.3 Knowledge diffusion..... | 27.5 | 69 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.0 | 96 ○ |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 9.0 | 25 ● |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 0.8 | 84 ○ |
| 6.3.4 FDI net outflows, % GDP..... | 1.1 | 51 |
| 7 Creative outputs..... | 40.4 | 40 |
| 7.1 Intangible assets..... | 43.2 | 81 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 68.5 | 27 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.8 | 37 |
| 7.1.3 ICTs & business model creation [†] | 52.4 | 80 |
| 7.1.4 ICTs & organizational model creation [†] | 51.4 | 72 |
| 7.2 Creative goods & services..... | 40.2 | 17 ● |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.4 | 38 |
| 7.2.2 National feature films/mn pop. 15–69..... | 5.3 | 38 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | 0.6 | 87 ○ |
| 7.2.5 Creative goods exports, % total trade..... | 10.5 | 2 ● |
| 7.3 Online creativity..... | 34.9 | 39 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 3.6 | 66 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 32.5 | 23 ● |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 3369.6 | 38 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 78.8 | 36 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓜ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|-------------|
| Population (millions) | 2.1 |
| GDP (US\$ billions) | 49.5 |
| GDP per capita, PPP\$ | 28,372.8 |
| Income group..... | High income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 48.5 | 28 |
| Innovation Output Sub-Index | 43.8 | 27 |
| Innovation Input Sub-Index..... | 53.2 | 30 |
| Innovation Efficiency Ratio..... | 0.8 | 22 |
| Global Innovation Index 2014 (out of 143) | 47.2 | 28 |

1 Institutions.....79.5 29

| | | |
|---|------|----|
| 1.1 Political environment..... | 77.0 | 29 |
| 1.1.1 Political stability*..... | 85.6 | 31 |
| 1.1.2 Government effectiveness*..... | 68.4 | 33 |
| 1.2 Regulatory environment | 81.7 | 25 |
| 1.2.1 Regulatory quality*..... | 64.0 | 44 |
| 1.2.2 Rule of law*..... | 73.4 | 31 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 10.7 | 40 |
| 1.3 Business environment..... | 79.7 | 29 |
| 1.3.1 Ease of starting a business*..... | 94.4 | 15 |
| 1.3.2 Ease of resolving insolvency*..... | 62.9 | 40 |
| 1.3.3 Ease of paying taxes*..... | 81.9 | 37 |

2 Human capital & research.....48.3 24

| | | |
|--|--------|------|
| 2.1 Education | 58.3 | 12 ● |
| 2.1.1 Expenditure on education, % GDP | 5.7 | 36 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 31.4 | 20 |
| 2.1.3 School life expectancy, years..... | 16.8 | 13 |
| 2.1.4 PISA scales in reading, maths, & science..... | 498.9 | 21 |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓔ] | 9.0 | 17 |
| 2.2 Tertiary education..... | 45.6 | 28 |
| 2.2.1 Tertiary enrolment, % gross..... | 86.0 | 7 ● |
| 2.2.2 Graduates in science & engineering, % | 24.7 | 28 |
| 2.2.3 Tertiary inbound mobility, %..... | 2.3 | 62 |
| 2.3 Research & development (R&D)..... | 40.8 | 24 |
| 2.3.1 Researchers, FTE/mn pop..... | 4202.2 | 17 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 2.7 | 11 ● |
| 2.3.3 QS university ranking, average score top 3*..... | 9.2 | 61 |

3 Infrastructure.....49.4 36

| | | |
|--|--------|------|
| 3.1 Information & communication technologies (ICTs)..... | 53.2 | 50 |
| 3.1.1 ICT access*..... | 79.1 | 23 |
| 3.1.2 ICT use*..... | 52.1 | 36 |
| 3.1.3 Government's online service*..... | 42.5 | 77 |
| 3.1.4 E-participation*..... | 39.2 | 82 ○ |
| 3.2 General infrastructure..... | 38.4 | 47 |
| 3.2.1 Electricity output, kWh/cap..... | 7666.5 | 23 |
| 3.2.2 Logistics performance*..... | 62.3 | 37 |
| 3.2.3 Gross capital formation, % GDP..... | 20.1 | 84 |
| 3.3 Ecological sustainability | 56.5 | 13 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 7.6 | 55 |
| 3.3.2 Environmental performance*..... | 76.4 | 15 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 8.0 | 12 ● |

4 Market sophistication.....46.9 70

| | | |
|---|------|-------|
| 4.1 Credit..... | 28.7 | 79 |
| 4.1.1 Ease of getting credit*..... | 35.0 | 102 ○ |
| 4.1.2 Domestic credit to private sector, % GDP..... | 70.8 | 45 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|------|------|
| 4.2 Investment | 29.5 | 99 ○ |
| 4.2.1 Ease of protecting investors*..... | 68.3 | 14 |
| 4.2.2 Market capitalization, % GDP..... | 14.0 | 79 ○ |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.9 | 69 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 55 ○ |
| 4.3 Trade & competition | 82.6 | 39 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition [†] | 68.6 | 64 |

5 Business sophistication.....42.1 35

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 62.9 | 14 |
| 5.1.1 Knowledge-intensive employment, %..... | 42.2 | 20 |
| 5.1.2 Firms offering formal training, % firms..... | 41.4 | 43 |
| 5.1.3 GERD performed by business, % of GDP..... | 2.0 | 9 |
| 5.1.4 GERD financed by business, %..... | 63.8 | 5 ● |
| 5.1.5 Females employed w/advanced degrees, % total..... | 18.8 | 25 |
| 5.2 Innovation linkages..... | 29.3 | 82 |
| 5.2.1 University/industry research collaboration [†] | 49.3 | 43 |
| 5.2.2 State of cluster development [†] | 40.4 | 93 ○ |
| 5.2.3 GERD financed by abroad, %..... | 8.9 | 46 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.2 | 34 |
| 5.3 Knowledge absorption..... | 34.0 | 64 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.7 | 43 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 5.5 | 90 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.8 | 22 |
| 5.3.4 FDI net inflows, % GDP..... | -0.9 | 135 ○ |

6 Knowledge & technology outputs.....38.1 30

| | | |
|--|-------|-------|
| 6.1 Knowledge creation..... | 33.9 | 28 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP [Ⓔ] | 8.0 | 10 ● |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 2.6 | 17 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP [Ⓔ] | 0.2 | 48 ○ |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 59.4 | 3 ● |
| 6.1.5 Citable documents H index..... | 172.0 | 40 |
| 6.2 Knowledge impact..... | 50.6 | 20 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | -1.0 | 111 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 4.4 | 27 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 34.0 | 7 ● |
| 6.2.5 High- & medium-high-tech manufactures, % | 46.5 | 9 ● |
| 6.3 Knowledge diffusion..... | 29.8 | 59 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.2 | 43 |
| 6.3.2 High-tech exports less re-exports, % total trade | 4.6 | 33 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.8 | 48 |
| 6.3.4 FDI net outflows, % GDP..... | 0.6 | 62 |

7 Creative outputs.....49.4 22

| | | |
|--|--------|------|
| 7.1 Intangible assets..... | 61.0 | 12 ● |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP [Ⓔ] | 111.6 | 8 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 3.1 | 6 ● |
| 7.1.3 ICTs & business model creation [†] | 57.3 | 64 |
| 7.1.4 ICTs & organizational model creation [†] | 56.7 | 54 |
| 7.2 Creative goods & services..... | 35.3 | 27 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 1.0 | 13 |
| 7.2.2 National feature films/mn pop. 15–69..... | 15.1 | 11 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | 1.9 | 29 |
| 7.2.5 Creative goods exports, % total trade..... | 0.7 | 49 |
| 7.3 Online creativity..... | 40.4 | 30 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 24.1 | 29 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 31.9 | 26 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 3298.3 | 39 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 81.2 | 31 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

[Ⓔ] indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------|
| Population (millions)..... | 53.1 |
| GDP (US\$ billions)..... | 350.1 |
| GDP per capita, PPP\$..... | 11,542.9 |
| Income group..... | Upper-middle income |
| Region..... | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 37.4 | 60 |
| Innovation Output Sub-Index..... | 29.7 | 61 |
| Innovation Input Sub-Index..... | 45.2 | 54 |
| Innovation Efficiency Ratio..... | 0.7 | 94 |
| Global Innovation Index 2014 (out of 143)..... | 38.2 | 53 |

1 Institutions.....71.6 43

| | | |
|---|-------------|-------------|
| 1.1 Political environment..... | 57.9 | 53 |
| 1.1.1 Political stability*..... | 62.7 | 71 |
| 1.1.2 Government effectiveness*..... | 53.1 | 48 |
| 1.2 Regulatory environment..... | 76.1 | 38 |
| 1.2.1 Regulatory quality*..... | 58.7 | 56 |
| 1.2.2 Rule of law*..... | 51.0 | 56 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 9.3 | 29 |
| 1.3 Business environment..... | 80.9 | 24 ● |
| 1.3.1 Ease of starting a business*..... | 89.4 | 52 |
| 1.3.2 Ease of resolving insolvency*..... | 64.5 | 37 |
| 1.3.3 Ease of paying taxes*..... | 88.7 | 18 ● |

2 Human capital & research.....27.4 75

| | | |
|--|-------------|--------------|
| 2.1 Education..... | 42.1 | 79 |
| 2.1.1 Expenditure on education, % GDP..... | 6.2 | 26 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 21.6 | 50 |
| 2.1.3 School life expectancy, years..... | 13.6 | 67 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓔ] | 25.0 | 95 ○ |
| 2.2 Tertiary education..... | 17.1 | 109 ○ |
| 2.2.1 Tertiary enrolment, % gross..... | 19.7 | 92 |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | 4.2 | 42 |
| 2.3 Research & development (R&D)..... | 22.9 | 43 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 408.2 | 61 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.8 | 45 |
| 2.3.3 QS university ranking, average score top 3*..... | 46.0 | 30 |

3 Infrastructure.....33.9 89

| | | |
|---|-------------|-----------|
| 3.1 Information & communication technologies (ICTs)..... | 36.9 | 91 |
| 3.1.1 ICT access*..... | 48.2 | 80 |
| 3.1.2 ICT use*..... | 27.5 | 75 |
| 3.1.3 Government's online service*..... | 38.6 | 85 |
| 3.1.4 E-participation*..... | 33.3 | 92 ○ |
| 3.2 General infrastructure..... | 34.6 | 58 |
| 3.2.1 Electricity output, kWh/cap..... | 4878.6 | 43 |
| 3.2.2 Logistics performance*..... | 64.8 | 33 |
| 3.2.3 Gross capital formation, % GDP..... | 19.4 | 97 |
| 3.3 Ecological sustainability..... | 30.1 | 95 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 4.0 | 109 ○ |
| 3.3.2 Environmental performance*..... | 53.5 | 64 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 1.3 | 54 |

4 Market sophistication.....59.1 23 ●

| | | |
|---|-------------|-----------|
| 4.1 Credit..... | 37.1 | 49 |
| 4.1.1 Ease of getting credit*..... | 60.0 | 48 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 156.0 | 12 ● |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.0 | 82 ○ |

| | | |
|---|-------------|------------|
| 4.2 Investment..... | 60.4 | 8 ● |
| 4.2.1 Ease of protecting investors*..... | 67.5 | 17 ● |
| 4.2.2 Market capitalization, % GDP..... | 160.1 | 3 ● |
| 4.2.3 Total value of stocks traded, % GDP..... | 81.5 | 6 ● |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 54 ○ |
| 4.3 Trade & competition..... | 79.8 | 54 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 4.2 | 70 |
| 4.3.2 Intensity of local competition [†] | 74.4 | 34 |

5 Business sophistication.....34.0 73

| | | |
|---|-------------|-----------|
| 5.1 Knowledge workers..... | 37.7 | 70 |
| 5.1.1 Knowledge-intensive employment, %..... | 25.5 | 55 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 36.8 | 48 |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 0.3 | 41 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 38.3 | 40 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 10.3 | 63 ○ |
| 5.2 Innovation linkages..... | 30.3 | 77 |
| 5.2.1 University/industry research collaboration [†] | 58.1 | 30 |
| 5.2.2 State of cluster development [†] | 52.7 | 41 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 13.1 | 35 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 53 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 69 |
| 5.3 Knowledge absorption..... | 33.9 | 65 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.7 | 11 ● |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 10.2 | 31 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.4 | 110 ○ |
| 5.3.4 FDI net inflows, % GDP..... | 2.3 | 75 |

6 Knowledge & technology outputs.....28.3 58

| | | |
|---|-------------|-----------|
| 6.1 Knowledge creation..... | 15.5 | 58 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 0.9 | 64 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.4 | 41 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 15.4 | 50 |
| 6.1.5 Citable documents H index..... | 260.0 | 34 |
| 6.2 Knowledge impact..... | 45.6 | 36 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 3.5 | 23 ● |
| 6.2.2 New businesses/th pop. 15–64..... | 6.5 | 18 ● |
| 6.2.3 Computer software spending, % GDP..... | 0.4 | 25 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 5.2 | 62 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 28.2 | 41 |
| 6.3 Knowledge diffusion..... | 23.7 | 94 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.1 | 69 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 2.3 | 49 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 0.4 | 98 ○ |
| 6.3.4 FDI net outflows, % GDP..... | 1.6 | 43 |

7 Creative outputs.....31.1 76

| | | |
|---|-------------|-----------|
| 7.1 Intangible assets..... | 43.6 | 79 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 30.5 | 70 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 59.0 | 56 |
| 7.1.4 ICTs & organizational model creation [†] | 55.8 | 57 |
| 7.2 Creative goods & services..... | 21.4 | 63 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | 0.7 | 86 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 9.6 | 35 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 2.4 | 19 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.7 | 47 |
| 7.3 Online creativity..... | 16.0 | 71 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 3.8 | 63 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 11.8 | 41 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 363.8 | 98 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 45.9 | 67 ○ |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

[Ⓔ] indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------|-------------|
| Population (millions) | 47.1 |
| GDP (US\$ billions) | 1,406.9 |
| GDP per capita, PPP\$ | 30,637.4 |
| Income group | High income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141) | 49.1 | 27 |
| Innovation Output Sub-Index | 41.1 | 29 |
| Innovation Input Sub-Index | 57.0 | 24 |
| Innovation Efficiency Ratio | 0.7 | 67 ○ |
| Global Innovation Index 2014 (out of 143) | 49.3 | 27 |

| | | |
|--|-------------|-----------|
| 1 Institutions | 75.2 | 35 |
| 1.1 Political environment | 68.4 | 41 |
| 1.1.1 Political stability* | 64.5 | 65 ○ |
| 1.1.2 Government effectiveness* | 72.4 | 29 |
| 1.2 Regulatory environment | 77.4 | 35 |
| 1.2.1 Regulatory quality* | 72.6 | 32 |
| 1.2.2 Rule of law* | 74.1 | 30 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 17.4 | 80 ○ |
| 1.3 Business environment | 79.7 | 30 |
| 1.3.1 Ease of starting a business* | 88.1 | 62 |
| 1.3.2 Ease of resolving insolvency* | 75.9 | 21 |
| 1.3.3 Ease of paying taxes* | 75.3 | 60 |

| | | |
|---|-------------|-----------|
| 2 Human capital & research | 45.9 | 27 |
| 2.1 Education | 55.0 | 30 |
| 2.1.1 Expenditure on education, % GDP | 5.0 | 59 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 26.5 | 31 |
| 2.1.3 School life expectancy, years | 17.3 | 10 ● |
| 2.1.4 PISA scales in reading, maths, & science | 489.6 | 27 |
| 2.1.5 Pupil-teacher ratio, secondary | 11.4 | 38 |
| 2.2 Tertiary education | 43.0 | 35 |
| 2.2.1 Tertiary enrolment, % gross | 84.6 | 8 ● |
| 2.2.2 Graduates in science & engineering, % | 22.2 | 35 |
| 2.2.3 Tertiary inbound mobility, % | 2.8 | 56 ○ |
| 2.3 Research & development (R&D) | 39.8 | 27 |
| 2.3.1 Researchers, FTE/mn pop. | 2633.5 | 31 |
| 2.3.2 Gross expenditure on R&D, % GDP | 1.3 | 28 |
| 2.3.3 QS university ranking, average score top 3* | 57.6 | 21 |

| | | |
|---|-------------|------------|
| 3 Infrastructure | 61.0 | 9 ● |
| 3.1 Information & communication technologies (ICTs) | 77.6 | 15 ● |
| 3.1.1 ICT access* | 77.0 | 30 |
| 3.1.2 ICT use* | 60.4 | 26 |
| 3.1.3 Government's online service* | 94.5 | 4 ● |
| 3.1.4 E-participation* | 78.4 | 19 |
| 3.2 General infrastructure | 38.4 | 46 |
| 3.2.1 Electricity output, kWh/cap | 6118.7 | 32 |
| 3.2.2 Logistics performance* | 79.4 | 18 |
| 3.2.3 Gross capital formation, % GDP | 18.0 | 110 ○ |
| 3.3 Ecological sustainability | 67.0 | 3 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 10.3 | 22 |
| 3.3.2 Environmental performance* | 79.8 | 7 ● |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 10.5 | 6 ● |

| | | |
|--|-------------|-------------|
| 4 Market sophistication | 64.7 | 10 ● |
| 4.1 Credit | 58.3 | 14 ● |
| 4.1.1 Ease of getting credit* | 60.0 | 48 |
| 4.1.2 Domestic credit to private sector, % GDP | 172.0 | 7 ● |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a |

| | | |
|---|------|-----|
| 4.2 Investment | 50.2 | 28 |
| 4.2.1 Ease of protecting investors* | 64.2 | 30 |
| 4.2.2 Market capitalization, % GDP | 73.4 | 21 |
| 4.2.3 Total value of stocks traded, % GDP | 79.4 | 7 ● |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.1 | 25 |
| 4.3 Trade & competition | 85.6 | 24 |
| 4.3.1 Applied tariff rate, weighted mean, % | 1.0 | 9 |
| 4.3.2 Intensity of local competition† | 74.6 | 33 |

| | | |
|--|-------------|-----------|
| 5 Business sophistication | 38.2 | 47 |
| 5.1 Knowledge workers | 54.4 | 30 |
| 5.1.1 Knowledge-intensive employment, % | 33.1 | 40 |
| 5.1.2 Firms offering formal training, % firms ^a | 51.3 | 24 |
| 5.1.3 GERD performed by business, % of GDP | 0.7 | 30 |
| 5.1.4 GERD financed by business, % ^a | 45.6 | 27 |
| 5.1.5 Females employed w/advanced degrees, % total | 21.5 | 18 |
| 5.2 Innovation linkages | 28.5 | 87 ○ |
| 5.2.1 University/industry research collaboration† | 46.2 | 55 |
| 5.2.2 State of cluster development† | 49.7 | 52 |
| 5.2.3 GERD financed by abroad, % ^a | 6.6 | 57 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 50 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 0.2 | 33 |
| 5.3 Knowledge absorption | 31.6 | 79 ○ |
| 5.3.1 Royalty & license fees payments, % total trade | 0.5 | 58 ○ |
| 5.3.2 High-tech imports less re-imports, % total trade | 6.0 | 81 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade | 1.3 | 45 |
| 5.3.4 FDI net inflows, % GDP | 3.3 | 53 |

| | | |
|--|-------------|-----------|
| 6 Knowledge & technology outputs | 39.9 | 25 |
| 6.1 Knowledge creation | 31.3 | 33 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP | 2.0 | 47 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP | 1.1 | 30 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP | 1.7 | 18 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 33.6 | 23 |
| 6.1.5 Citable documents H index | 531.0 | 12 ● |
| 6.2 Knowledge impact | 51.8 | 17 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 1.6 | 58 ○ |
| 6.2.2 New businesses/th pop. 15–64 | 2.7 | 40 |
| 6.2.3 Computer software spending, % GDP | 0.7 | 9 ● |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 28.0 | 10 ● |
| 6.2.5 High- & medium-high-tech manufactures, % | 34.8 | 30 |
| 6.3 Knowledge diffusion | 36.6 | 38 |
| 6.3.1 Royalty & license fees receipts, % total trade | 0.2 | 36 |
| 6.3.2 High-tech exports less re-exports, % total trade | 3.9 | 38 |
| 6.3.3 Comm., computer & info. services exp., % total trade | 2.3 | 32 |
| 6.3.4 FDI net outflows, % GDP | 2.3 | 29 |

| | | |
|---|-------------|-----------|
| 7 Creative outputs | 42.4 | 31 |
| 7.1 Intangible assets | 48.3 | 56 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP | 57.0 | 38 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | 0.8 | 36 ○ |
| 7.1.3 ICTs & business model creation† | 67.2 | 25 |
| 7.1.4 ICTs & organizational model creation† | 60.9 | 34 |
| 7.2 Creative goods & services | 27.0 | 48 |
| 7.2.1 Cultural & creative services exports, % total trade | 0.8 | 21 |
| 7.2.2 National feature films/mn pop. 15–69 | 6.9 | 27 |
| 7.2.3 Global ent. & media output/th pop. 15–69 | 22.9 | 25 |
| 7.2.4 Printing & publishing output manufactures, % | 1.6 | 41 |
| 7.2.5 Creative goods exports, % total trade | 0.8 | 41 |
| 7.3 Online creativity | 45.9 | 26 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 31.8 | 23 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 22.1 | 32 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 5678.2 | 20 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 87.8 | 19 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------------|
| Population (millions)..... | 21.4 |
| GDP (US\$ billions)..... | 74.6 |
| GDP per capita, PPP\$..... | 7,046.3 |
| Income group..... | Lower-middle income |
| Region..... | Central and Southern Asia |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 30.8 | 85 |
| Innovation Output Sub-Index..... | 26.6 | 79 |
| Innovation Input Sub-Index..... | 35.0 | 104 |
| Innovation Efficiency Ratio..... | 0.8 | 46 ● |
| Global Innovation Index 2014 (out of 143)..... | 29.0 | 105 |
| 1 Institutions.....41.7 128 ○ | | |
| 1.1 Political environment..... | 42.1 | 91 |
| 1.1.1 Political stability*..... | 49.2 | 101 |
| 1.1.2 Government effectiveness*..... | 35.1 | 83 |
| 1.2 Regulatory environment..... | 21.0 | 137 ○ |
| 1.2.1 Regulatory quality*..... | 43.5 | 82 |
| 1.2.2 Rule of law*..... | 40.4 | 76 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 58.5 | 138 ○ |
| 1.3 Business environment..... | 61.9 | 96 |
| 1.3.1 Ease of starting a business*..... | 83.0 | 84 |
| 1.3.2 Ease of resolving insolvency*..... | 47.8 | 67 |
| 1.3.3 Ease of paying taxes*..... | 55.0 | 121 ○ |
| 2 Human capital & research.....17.8 112 | | |
| 2.1 Education..... | 30.5 | 117 ○ |
| 2.1.1 Expenditure on education, % GDP..... | 1.7 | 127 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 6.9 | 108 ○ |
| 2.1.3 School life expectancy, years..... | 13.7 | 65 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 17.3 | 75 |
| 2.2 Tertiary education..... | 19.4 | 104 |
| 2.2.1 Tertiary enrolment, % gross..... | 17.0 | 96 |
| 2.2.2 Graduates in science & engineering, %..... | 16.7 | 71 |
| 2.2.3 Tertiary inbound mobility, %..... | 0.1 | 106 ○ |
| 2.3 Research & development (R&D)..... | 3.5 | 88 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓐ] | 103.1 | 82 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓐ] | 0.2 | 97 ○ |
| 2.3.3 QS university ranking, average score top 3*..... | 5.9 | 66 |
| 3 Infrastructure.....42.4 57 | | |
| 3.1 Information & communication technologies (ICTs)..... | 44.9 | 72 |
| 3.1.1 ICT access*..... | 38.5 | 105 |
| 3.1.2 ICT use*..... | 11.0 | 108 |
| 3.1.3 Government's online service*..... | 65.4 | 37 ● |
| 3.1.4 E-participation*..... | 64.7 | 33 ● |
| 3.2 General infrastructure..... | 33.3 | 60 |
| 3.2.1 Electricity output, kWh/cap..... | 585.4 | 105 ○ |
| 3.2.2 Logistics performance*..... | 27.2 | 84 |
| 3.2.3 Gross capital formation, % GDP..... | 32.0 | 15 ● |
| 3.3 Ecological sustainability..... | 49.0 | 32 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 14.3 | 4 ● |
| 3.3.2 Environmental performance*..... | 53.9 | 62 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.9 | 67 |
| 4 Market sophistication.....44.9 84 | | |
| 4.1 Credit..... | 22.2 | 105 |
| 4.1.1 Ease of getting credit*..... | 45.0 | 80 |
| 4.1.2 Domestic credit to private sector, % GDP [Ⓐ] | 31.1 | 98 |
| 4.1.3 Microfinance gross loans, % GDP [Ⓐ] | 1.1 | 37 |
| 4.2 Investment..... | 34.5 | 73 |
| 4.2.1 Ease of protecting investors*..... | 59.2 | 49 |
| 4.2.2 Market capitalization, % GDP..... | 28.7 | 59 |
| 4.2.3 Total value of stocks traded, % GDP..... | 2.8 | 55 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 77.9 | 63 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 6.7 | 99 |
| 4.3.2 Intensity of local competition [†] | 79.4 | 14 ● |
| 5 Business sophistication.....28.3 102 | | |
| 5.1 Knowledge workers..... | 24.2 | 107 |
| 5.1.1 Knowledge-intensive employment, %..... | 15.7 | 91 |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 18.4 | 94 ○ |
| 5.1.3 GERD performed by business, % of GDP [Ⓐ] | 0.1 | 67 |
| 5.1.4 GERD financed by business, % [Ⓐ] | 40.9 | 36 |
| 5.1.5 Females employed w/advanced degrees, % total [Ⓐ] | 7.6 | 69 |
| 5.2 Innovation linkages..... | 21.3 | 118 ○ |
| 5.2.1 University/industry research collaboration [†] | 34.6 | 107 |
| 5.2.2 State of cluster development [†] | 47.3 | 64 |
| 5.2.3 GERD financed by abroad, % [Ⓐ] | 2.7 | 76 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 66 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 60 |
| 5.3 Knowledge absorption..... | 39.4 | 43 ● |
| 5.3.1 Royalty & license fees payments, % total trade..... | n/a | n/a |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 5.3 | 94 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 2.0 | 15 ● |
| 5.3.4 FDI net inflows, % GDP..... | 1.4 | 102 |
| 6 Knowledge & technology outputs.....26.8 64 | | |
| 6.1 Knowledge creation..... | 6.6 | 91 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 1.6 | 50 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.1 | 64 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 2.9 | 116 ○ |
| 6.1.5 Citable documents H index..... | 96.0 | 74 |
| 6.2 Knowledge impact..... | 39.2 | 60 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 6.2 | 3 ● |
| 6.2.2 New businesses/th pop. 15–64..... | 0.5 | 88 ○ |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 30 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 3.3 | 76 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓐ] | 8.9 | 81 |
| 6.3 Knowledge diffusion..... | 34.6 | 40 ● |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.4 | 81 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 3.9 | 12 ● |
| 6.3.4 FDI net outflows, % GDP..... | 0.1 | 91 |
| 7 Creative outputs.....26.3 92 | | |
| 7.1 Intangible assets..... | 43.5 | 80 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 27.5 | 74 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 58.3 | 61 |
| 7.1.4 ICTs & organizational model creation [†] | 57.8 | 49 ● |
| 7.2 Creative goods & services..... | 16.7 | 79 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | 1.0 | 74 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓐ] | 1.8 | 31 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.4 | 64 |
| 7.3 Online creativity..... | 1.7 | 110 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.9 | 106 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.2 | 110 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 536.6 | 91 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------|
| Population (millions) | 38.8 |
| GDP (US\$ billions) | 73.8 |
| GDP per capita, PPP\$ | 2,673.2 |
| Income group | Lower-middle income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank | |
|--|-------------------------------------|------------|---|
| Global Innovation Index (out of 141)..... | 15.0 | 141 | ○ |
| Innovation Output Sub-Index | 8.0 | 140 | ○ |
| Innovation Input Sub-Index..... | 21.9 | 141 | ○ |
| Innovation Efficiency Ratio..... | 0.4 | 136 | |
| Global Innovation Index 2014 (out of 143) | 12.7 | 143 | |
| 1 Institutions..... | 32.5 | 138 | ○ |
| 1.1 Political environment..... | 4.9 | 141 | ○ |
| 1.1.1 Political stability*..... | 9.7 | 139 | ○ |
| 1.1.2 Government effectiveness*..... | 0.0 | 141 | ○ |
| 1.2 Regulatory environment | 38.1 | 130 | |
| 1.2.1 Regulatory quality*..... | 9.4 | 136 | |
| 1.2.2 Rule of law*..... | 14.3 | 137 | ○ |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 26.0 | 111 | |
| 1.3 Business environment..... | 54.5 | 118 | |
| 1.3.1 Ease of starting a business*..... | 74.7 | 112 | |
| 1.3.2 Ease of resolving insolvency*..... | 26.5 | 131 | |
| 1.3.3 Ease of paying taxes*..... | 62.3 | 106 | ● |
| 2 Human capital & research..... | 15.1 | 121 | |
| 2.1 Education | 17.2 | 137 | ○ |
| 2.1.1 Expenditure on education, % GDP [Ⓢ] | 2.2 | 124 | |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a | |
| 2.1.3 School life expectancy, years..... | 7.0 | 130 | ○ |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a | |
| 2.1.5 Pupil-teacher ratio, secondary..... | 31.1 | 108 | |
| 2.2 Tertiary education..... | 24.7 | 86 | ● |
| 2.2.1 Tertiary enrolment, % gross..... | 17.2 | 95 | ● |
| 2.2.2 Graduates in science & engineering, % | 16.0 | 76 | ● |
| 2.2.3 Tertiary inbound mobility, %..... | n/a | n/a | |
| 2.3 Research & development (R&D)..... | 3.4 | 90 | ● |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a | |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓢ] | 0.3 | 78 | ● |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 | ○ |
| 3 Infrastructure..... | 19.7 | 132 | |
| 3.1 Information & communication technologies (ICTs)..... | 26.9 | 110 | |
| 3.1.1 ICT access*..... | 34.6 | 108 | |
| 3.1.2 ICT use*..... | 16.5 | 99 | ● |
| 3.1.3 Government's online service*..... | 29.1 | 109 | |
| 3.1.4 E-participation*..... | 27.5 | 108 | |
| 3.2 General infrastructure..... | 10.4 | 138 | ○ |
| 3.2.1 Electricity output, kWh/cap..... | 196.5 | 115 | |
| 3.2.2 Logistics performance*..... | 0.0 | 131 | ○ |
| 3.2.3 Gross capital formation, % GDP..... | 17.5 | 113 | |
| 3.3 Ecological sustainability | 21.8 | 129 | |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.7 | 75 | ● |
| 3.3.2 Environmental performance*..... | 24.6 | 137 | ○ |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.1 | 128 | |
| 4 Market sophistication | 28.6 | 140 | ○ |
| 4.1 Credit..... | 5.9 | 138 | ○ |
| 4.1.1 Ease of getting credit*..... | 15.0 | 129 | |
| 4.1.2 Domestic credit to private sector, % GDP..... | 10.4 | 136 | ○ |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.1 | 70 | |

| | | | |
|--|------|-----|---|
| 4.2 Investment | 31.7 | 88 | |
| 4.2.1 Ease of protecting investors*..... | 31.7 | 135 | ○ |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a | |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a | |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a | |
| 4.3 Trade & competition | 48.1 | 139 | ○ |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓢ] | 14.7 | 134 | |
| 4.3.2 Intensity of local competition [†] | n/a | n/a | |

5 Business sophistication **13.7** **140** ○

| | | | |
|---|------|-----|---|
| 5.1 Knowledge workers..... | 2.9 | 140 | ○ |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a | |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a | |
| 5.1.3 GERD performed by business, % of GDP [Ⓢ] | 0.1 | 59 | ● |
| 5.1.4 GERD financed by business, %..... | n/a | n/a | |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a | |
| 5.2 Innovation linkages | n/a | n/a | |
| 5.2.1 University/industry research collaboration [†] | n/a | n/a | |
| 5.2.2 State of cluster development [†] | n/a | n/a | |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a | |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a | |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a | |
| 5.3 Knowledge absorption..... | 24.4 | 120 | |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.0 | 126 | ○ |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 9.0 | 48 | ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.2 | 116 | |
| 5.3.4 FDI net inflows, % GDP..... | 3.3 | 54 | ● |

6 Knowledge & technology outputs **14.7** **122**

| | | | |
|---|------|-----|---|
| 6.1 Knowledge creation..... | 2.6 | 132 | |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | n/a | n/a | |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.0 | 88 | |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a | |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 2.0 | 127 | |
| 6.1.5 Citable documents H index..... | 58.0 | 109 | |
| 6.2 Knowledge impact..... | 38.8 | 62 | |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.9 | 74 | ● |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a | |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a | |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.7 | 120 | |
| 6.2.5 High- & medium-high-tech manufactures, % | n/a | n/a | |
| 6.3 Knowledge diffusion..... | 2.7 | 134 | |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓢ] | 0.0 | 84 | ● |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.0 | 117 | |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓢ] | 0.3 | 108 | |
| 6.3.4 FDI net outflows, % GDP..... | n/a | n/a | |

7 Creative outputs **1.3** **139** ○

| | | | |
|---|------|-----|---|
| 7.1 Intangible assets..... | 1.6 | 138 | ○ |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP [Ⓢ] | 5.9 | 101 | ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.1 | 60 | |
| 7.1.3 ICTs & business model creation [†] | n/a | n/a | |
| 7.1.4 ICTs & organizational model creation [†] | n/a | n/a | |
| 7.2 Creative goods & services..... | 1.8 | 127 | |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a | |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a | |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a | |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a | |
| 7.2.5 Creative goods exports, % total trade [Ⓢ] | 0.1 | 103 | |
| 7.3 Online creativity..... | 0.1 | 133 | |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.1 | 135 | |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.0 | 136 | |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 48.9 | 122 | |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a | |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓢ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------|
| Population (millions)..... | 1.3 |
| GDP (US\$ billions)..... | 3.7 |
| GDP per capita, PPP\$..... | 6,366.5 |
| Income group..... | Lower-middle income |
| Region..... | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 25.4 | 123 |
| Innovation Output Sub-Index..... | 15.0 | 132 ○ |
| Innovation Input Sub-Index..... | 35.7 | 98 |
| Innovation Efficiency Ratio..... | 0.4 | 132 ○ |
| Global Innovation Index 2014 (out of 143)..... | 25.3 | 127 |

| | | |
|---|-------------|-----------|
| 1 Institutions..... | 56.2 | 82 |
| 1.1 Political environment..... | 41.4 | 96 |
| 1.1.1 Political stability*..... | 53.4 | 92 |
| 1.1.2 Government effectiveness*..... | 29.4 | 93 |
| 1.2 Regulatory environment..... | 62.1 | 82 |
| 1.2.1 Regulatory quality*..... | 38.2 | 100 |
| 1.2.2 Rule of law*..... | 36.4 | 85 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 14.6 | 62 ● |
| 1.3 Business environment..... | 65.0 | 84 |
| 1.3.1 Ease of starting a business*..... | 73.5 | 116 |
| 1.3.2 Ease of resolving insolvency*..... | 45.8 | 75 |
| 1.3.3 Ease of paying taxes*..... | 75.8 | 59 ● |

| | | |
|--|-------------|-----------|
| 2 Human capital & research..... | 22.8 | 96 |
| 2.1 Education..... | 51.1 | 47 ● |
| 2.1.1 Expenditure on education, % GDP..... | 7.8 | 8 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 38.7 | 7 ● |
| 2.1.3 School life expectancy, years ^d | 11.3 | 100 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 16.3 | 72 |
| 2.2 Tertiary education..... | 17.3 | 107 |
| 2.2.1 Tertiary enrolment, % gross..... | 5.3 | 123 ○ |
| 2.2.2 Graduates in science & engineering, %..... | 16.8 | 70 |
| 2.2.3 Tertiary inbound mobility, %..... | 0.5 | 95 |
| 2.3 Research & development (R&D)..... | 0.0 | 128 ○ |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP..... | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |

| | | |
|--|-------------|------------|
| 3 Infrastructure..... | 17.1 | 138 |
| 3.1 Information & communication technologies (ICTs)..... | 17.3 | 126 |
| 3.1.1 ICT access*..... | 30.2 | 117 |
| 3.1.2 ICT use*..... | 9.9 | 111 |
| 3.1.3 Government's online service*..... | 13.4 | 131 ○ |
| 3.1.4 E-participation*..... | 15.7 | 126 ○ |
| 3.2 General infrastructure..... | 7.2 | 140 ○ |
| 3.2.1 Electricity output, kWh/cap..... | n/a | n/a |
| 3.2.2 Logistics performance*..... | n/a | n/a |
| 3.2.3 Gross capital formation, % GDP..... | 11.5 | 137 ○ |
| 3.3 Ecological sustainability..... | 26.8 | 113 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | n/a | n/a |
| 3.3.2 Environmental performance*..... | 37.4 | 115 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.7 | 73 ● |

| | | |
|--|-------------|------------|
| 4 Market sophistication..... | 39.6 | 113 |
| 4.1 Credit..... | 27.2 | 81 |
| 4.1.1 Ease of getting credit*..... | 55.0 | 56 ● |
| 4.1.2 Domestic credit to private sector, % GDP..... | 25.3 | 109 |
| 4.1.3 Microfinance gross loans, % GDP ^d | 1.6 | 31 ● |

| | | |
|--|------|-------|
| 4.2 Investment..... | 24.7 | 126 |
| 4.2.1 Ease of protecting investors*..... | 47.5 | 97 |
| 4.2.2 Market capitalization, % GDP ^d | 6.7 | 95 |
| 4.2.3 Total value of stocks traded, % GDP ^d | 0.0 | 109 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 67.0 | 107 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 7.0 | 102 |
| 4.3.2 Intensity of local competition [†] | 58.4 | 111 |

| | | |
|---|-------------|-----------|
| 5 Business sophistication..... | 42.9 | 34 |
| 5.1 Knowledge workers..... | 62.8 | 15 |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms ^d | 51.0 | 26 ● |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 34.6 | 61 ● |
| 5.2.1 University/industry research collaboration [†] | 39.1 | 82 |
| 5.2.2 State of cluster development [†] | 39.5 | 97 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP ^d | 0.1 | 36 ● |
| 5.3 Knowledge absorption..... | 31.2 | 82 |
| 5.3.1 Royalty & license fees payments, % total trade ^d | 2.0 | 7 ● |
| 5.3.2 High-tech imports less re-imports, % total trade..... | n/a | n/a |
| 5.3.3 Comm., computer & info. services imp., % total trade ^d | 0.2 | 119 ○ |
| 5.3.4 FDI net inflows, % GDP..... | 1.8 | 92 |

| | | |
|---|------------|------------|
| 6 Knowledge & technology outputs..... | 9.7 | 136 |
| 6.1 Knowledge creation..... | 3.5 | 122 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP ^d | 0.4 | 80 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 3.8 | 109 |
| 6.1.5 Citable documents H index..... | 35.0 | 131 ○ |
| 6.2 Knowledge impact..... | 4.1 | 134 ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 2.0 | 92 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 21.4 | 106 |
| 6.3.1 Royalty & license fees receipts, % total trade ^d | 0.1 | 67 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | n/a | n/a |
| 6.3.3 Comm., computer & info. services exp., % total trade ^d | 0.4 | 104 |
| 6.3.4 FDI net outflows, % GDP..... | 0.0 | 99 |

| | | |
|--|-------------|------------|
| 7 Creative outputs..... | 20.4 | 120 |
| 7.1 Intangible assets..... | 38.4 | 98 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 38.9 | 123 ○ |
| 7.1.4 ICTs & organizational model creation [†] | 37.8 | 123 ○ |
| 7.2 Creative goods & services..... | 4.2 | 116 |
| 7.2.1 Cultural & creative services exports, % total trade ^d | 0.1 | 62 |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | n/a | n/a |
| 7.3 Online creativity..... | 0.6 | 116 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.6 | 112 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.6 | 96 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 64.0 | 117 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

^d indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|-------------|
| Population (millions)..... | 9.6 |
| GDP (US\$ billions)..... | 570.1 |
| GDP per capita, PPP\$..... | 42,624.1 |
| Income group..... | High income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 62.4 | 3 ● |
| Innovation Output Sub-Index..... | 57.8 | 4 ● |
| Innovation Input Sub-Index..... | 67.0 | 7 |
| Innovation Efficiency Ratio..... | 0.9 | 16 |
| Global Innovation Index 2014 (out of 143)..... | 62.3 | 3 |
| 1 Institutions..... | 90.0 | 9 |
| 1.1 Political environment..... | 92.3 | 6 ● |
| 1.1.1 Political stability*..... | 92.0 | 11 |
| 1.1.2 Government effectiveness*..... | 92.5 | 4 ● |
| 1.2 Regulatory environment..... | 93.1 | 13 |
| 1.2.1 Regulatory quality*..... | 98.1 | 3 ● |
| 1.2.2 Rule of law*..... | 99.6 | 2 ● |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 14.4 | 61 ○ |
| 1.3 Business environment..... | 84.7 | 17 |
| 1.3.1 Ease of starting a business*..... | 92.3 | 28 |
| 1.3.2 Ease of resolving insolvency*..... | 78.4 | 16 |
| 1.3.3 Ease of paying taxes*..... | 83.3 | 31 |
| 2 Human capital & research..... | 61.7 | 4 ● |
| 2.1 Education..... | 58.2 | 13 |
| 2.1.1 Expenditure on education, % GDP..... | 6.8 | 15 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 32.7 | 18 |
| 2.1.3 School life expectancy, years..... | 15.8 | 26 |
| 2.1.4 PISA scales in reading, maths, & science..... | 482.1 | 34 ○ |
| 2.1.5 Pupil-teacher ratio, secondary..... | 9.5 | 22 |
| 2.2 Tertiary education..... | 49.2 | 21 |
| 2.2.1 Tertiary enrolment, % gross..... | 70.0 | 25 |
| 2.2.2 Graduates in science & engineering, %..... | 27.2 | 16 |
| 2.2.3 Tertiary inbound mobility, %..... | 6.3 | 27 |
| 2.3 Research & development (R&D)..... | 77.6 | 4 ● |
| 2.3.1 Researchers, FTE/mn pop..... | 6508.5 | 6 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 3.4 | 5 ● |
| 2.3.3 QS university ranking, average score top 3*..... | 73.5 | 13 |
| 3 Infrastructure..... | 62.8 | 7 |
| 3.1 Information & communication technologies (ICTs)..... | 75.8 | 18 |
| 3.1.1 ICT access*..... | 89.3 | 9 |
| 3.1.2 ICT use*..... | 82.9 | 2 ● |
| 3.1.3 Government's online service*..... | 70.1 | 28 |
| 3.1.4 E-participation*..... | 60.8 | 45 |
| 3.2 General infrastructure..... | 55.5 | 11 |
| 3.2.1 Electricity output, kWh/cap..... | 15884.2 | 7 |
| 3.2.2 Logistics performance*..... | 91.8 | 6 ● |
| 3.2.3 Gross capital formation, % GDP..... | 19.2 | 98 ○ |
| 3.3 Ecological sustainability..... | 57.0 | 12 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 7.0 | 63 ○ |
| 3.3.2 Environmental performance*..... | 78.1 | 9 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 8.5 | 9 |
| 4 Market sophistication..... | 63.7 | 14 |
| 4.1 Credit..... | 49.6 | 25 |
| 4.1.1 Ease of getting credit*..... | 55.0 | 56 ○ |
| 4.1.2 Domestic credit to private sector, % GDP..... | 135.3 | 17 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |
| 4.2 Investment..... | 56.5 | 15 |
| 4.2.1 Ease of protecting investors*..... | 63.3 | 31 |
| 4.2.2 Market capitalization, % GDP..... | 103.1 | 14 |
| 4.2.3 Total value of stocks traded, % GDP..... | 69.2 | 10 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.3 | 13 |
| 4.3 Trade & competition..... | 85.1 | 28 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.0 | 9 |
| 4.3.2 Intensity of local competition†..... | 73.5 | 39 |
| 5 Business sophistication..... | 56.9 | 7 |
| 5.1 Knowledge workers..... | 76.8 | 2 ● |
| 5.1.1 Knowledge-intensive employment, %..... | 49.4 | 4 ● |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP..... | 2.4 | 5 |
| 5.1.4 GERD financed by business, %..... | 61.0 | 8 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 23.3 | 10 |
| 5.2 Innovation linkages..... | 45.5 | 23 |
| 5.2.1 University/industry research collaboration†..... | 72.1 | 11 |
| 5.2.2 State of cluster development†..... | 62.3 | 19 |
| 5.2.3 GERD financed by abroad, %..... | 6.8 | 56 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 27 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 1.9 | 9 |
| 5.3 Knowledge absorption..... | 48.5 | 16 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.0 | 33 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 9.2 | 46 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 2.8 | 6 ● |
| 5.3.4 FDI net inflows, % GDP..... | -0.9 | 136 ○ |
| 6 Knowledge & technology outputs..... | 60.5 | 2 ● |
| 6.1 Knowledge creation..... | 70.6 | 2 ● |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 5.4 | 19 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 8.8 | 1 ● |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 53.7 | 6 ● |
| 6.1.5 Citable documents H index..... | 567.0 | 11 |
| 6.2 Knowledge impact..... | 47.7 | 28 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 1.4 | 65 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 6.4 | 19 |
| 6.2.3 Computer software spending, % GDP..... | 0.6 | 15 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 10.7 | 39 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 31.8 | 34 |
| 6.3 Knowledge diffusion..... | 63.0 | 6 ● |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 2.6 | 7 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 9.4 | 22 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 4.7 | 8 |
| 6.3.4 FDI net outflows, % GDP..... | 3.5 | 18 |
| 7 Creative outputs..... | 55.1 | 11 |
| 7.1 Intangible assets..... | 56.2 | 22 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 52.9 | 44 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 1.6 | 19 |
| 7.1.3 ICTs & business model creation†..... | 76.1 | 6 ● |
| 7.1.4 ICTs & organizational model creation†..... | 73.4 | 10 |
| 7.2 Creative goods & services..... | 37.4 | 23 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.8 | 24 |
| 7.2.2 National feature films/mn pop. 15–69..... | 9.1 | 18 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 65.5 | 5 |
| 7.2.4 Printing & publishing output manufactures, %..... | 1.4 | 55 ○ |
| 7.2.5 Creative goods exports, % total trade..... | 1.8 | 24 |
| 7.3 Online creativity..... | 70.6 | 9 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 50.3 | 18 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 84.2 | 10 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 7625.1 | 12 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 91.4 | 13 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓜ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Switzerland

Key indicators

| | |
|----------------------------|-------------|
| Population (millions)..... | 8.2 |
| GDP (US\$ billions)..... | 712.1 |
| GDP per capita, PPP\$..... | 47,863.0 |
| Income group..... | High income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 68.3 | 1 ● |
| Innovation Output Sub-Index..... | 68.6 | 1 ● |
| Innovation Input Sub-Index..... | 68.0 | 2 ● |
| Innovation Efficiency Ratio..... | 1.0 | 2 ● |
| Global Innovation Index 2014 (out of 143)..... | 64.8 | 1 |
| 1 Institutions..... | 89.6 | 10 |
| 1.1 Political environment..... | 94.2 | 5 |
| 1.1.1 Political stability*..... | 98.1 | 2 ● |
| 1.1.2 Government effectiveness*..... | 90.2 | 6 |
| 1.2 Regulatory environment..... | 94.5 | 11 |
| 1.2.1 Regulatory quality*..... | 91.3 | 13 |
| 1.2.2 Rule of law*..... | 95.3 | 8 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 10.1 | 37 |
| 1.3 Business environment..... | 80.2 | 28 |
| 1.3.1 Ease of starting a business*..... | 88.4 | 59 ○ |
| 1.3.2 Ease of resolving insolvency*..... | 63.1 | 39 |
| 1.3.3 Ease of paying taxes*..... | 89.1 | 17 |
| 2 Human capital & research..... | 59.2 | 6 |
| 2.1 Education..... | 55.5 | 28 |
| 2.1.1 Expenditure on education, % GDP..... | 5.3 | 44 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 27.5 | 29 |
| 2.1.3 School life expectancy, years..... | 15.8 | 27 |
| 2.1.4 PISA scales in reading, maths, & science..... | 518.4 | 11 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 9.3 | 21 |
| 2.2 Tertiary education..... | 49.8 | 19 |
| 2.2.1 Tertiary enrolment, % gross..... | 55.6 | 45 |
| 2.2.2 Graduates in science & engineering, % [Ⓔ] | 20.8 | 50 ○ |
| 2.2.3 Tertiary inbound mobility, %..... | 16.5 | 9 |
| 2.3 Research & development (R&D)..... | 72.4 | 7 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 4495.2 | 12 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 3.1 | 6 |
| 2.3.3 QS university ranking, average score top 3*..... | 89.0 | 3 ● |
| 3 Infrastructure..... | 58.6 | 15 |
| 3.1 Information & communication technologies (ICTs)..... | 62.2 | 41 |
| 3.1.1 ICT access*..... | 93.6 | 2 ● |
| 3.1.2 ICT use*..... | 67.5 | 18 |
| 3.1.3 Government's online service*..... | 50.4 | 64 ○ |
| 3.1.4 E-participation*..... | 37.3 | 87 ○ |
| 3.2 General infrastructure..... | 46.6 | 26 |
| 3.2.1 Electricity output, kWh/cap..... | 8540.3 | 19 |
| 3.2.2 Logistics performance*..... | 85.8 | 14 |
| 3.2.3 Gross capital formation, % GDP..... | 21.1 | 73 ○ |
| 3.3 Ecological sustainability..... | 67.1 | 2 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 12.0 | 14 |
| 3.3.2 Environmental performance*..... | 87.7 | 1 ● |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 6.6 | 15 |
| 4 Market sophistication..... | 72.3 | 5 |
| 4.1 Credit..... | 57.8 | 15 |
| 4.1.1 Ease of getting credit*..... | 60.0 | 48 ○ |
| 4.1.2 Domestic credit to private sector, % GDP..... | 169.0 | 9 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|-------------|------------|
| 4.2 Investment..... | 71.6 | 4 |
| 4.2.1 Ease of protecting investors*..... | 55.0 | 72 ○ |
| 4.2.2 Market capitalization, % GDP..... | 162.0 | 1 ● |
| 4.2.3 Total value of stocks traded, % GDP..... | 96.2 | 4 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.6 | 7 |
| 4.3 Trade & competition..... | 87.6 | 14 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 1.0 | 7 |
| 4.3.2 Intensity of local competition [†] | 78.5 | 17 |
| 5 Business sophistication..... | 60.0 | 3 ● |
| 5.1 Knowledge workers..... | 73.0 | 4 |
| 5.1.1 Knowledge-intensive employment, %..... | 51.0 | 3 ● |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 2.2 | 6 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 60.8 | 10 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 17.0 | 30 |
| 5.2 Innovation linkages..... | 56.8 | 7 |
| 5.2.1 University/industry research collaboration [†] | 79.8 | 3 ● |
| 5.2.2 State of cluster development [†] | 72.5 | 5 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 12.1 | 37 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 12 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 3.3 | 4 |
| 5.3 Knowledge absorption..... | 50.1 | 14 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 8.4 | 1 ● |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 9.9 | 32 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP..... | -1.3 | 137 ○ |
| 6 Knowledge & technology outputs..... | 72.4 | 1 ● |
| 6.1 Knowledge creation..... | 69.2 | 3 ● |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 3.3 | 28 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 8.7 | 1 ● |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 55.7 | 4 |
| 6.1.5 Citable documents H index..... | 6290 | 9 |
| 6.2 Knowledge impact..... | 57.8 | 5 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.4 | 86 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 2.5 | 41 ○ |
| 6.2.3 Computer software spending, % GDP..... | 0.8 | 2 ● |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 26.3 | 13 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 64.0 | 2 ● |
| 6.3 Knowledge diffusion..... | 90.3 | 1 ● |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓔ] | 7.2 | 1 ● |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 17.1 | 7 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | 8.3 | 6 |
| 7 Creative outputs..... | 64.8 | 3 ● |
| 7.1 Intangible assets..... | 65.8 | 6 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 76.3 | 21 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 6.6 | 1 ● |
| 7.1.3 ICTs & business model creation [†] | 74.0 | 13 |
| 7.1.4 ICTs & organizational model creation [†] | 64.0 | 25 |
| 7.2 Creative goods & services..... | 52.6 | 3 ● |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | 17.5 | 9 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 79.0 | 2 ● |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 1.7 | 37 |
| 7.2.5 Creative goods exports, % total trade..... | 4.0 | 11 |
| 7.3 Online creativity..... | 75.2 | 5 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 75.4 | 11 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 100.0 | 1 ● |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 4555.6 | 32 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 91.7 | 12 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------------|
| Population (millions)..... | 8.4 |
| GDP (US\$ billions)..... | 9.2 |
| GDP per capita, PPP\$..... | 2,486.0 |
| Income group..... | Low income |
| Region..... | Central and Southern Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 27.5 | 114 |
| Innovation Output Sub-Index..... | 21.5 | 106 |
| Innovation Input Sub-Index..... | 33.4 | 115 |
| Innovation Efficiency Ratio..... | 0.6 | 101 |
| Global Innovation Index 2014 (out of 143)..... | 23.7 | 137 |

| | | |
|--|-------------|--------------|
| 1 Institutions..... | 42.7 | 127 |
| 1.1 Political environment..... | 24.2 | 130 |
| 1.1.1 Political stability*..... | 36.0 | 119 |
| 1.1.2 Government effectiveness*..... | 12.3 | 132 |
| 1.2 Regulatory environment..... | 51.0 | 112 |
| 1.2.1 Regulatory quality*..... | 19.4 | 131 |
| 1.2.2 Rule of law*..... | 14.7 | 136 ○ |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 15.5 | 69 |
| 1.3 Business environment..... | 52.8 | 128 |
| 1.3.1 Ease of starting a business*..... | 83.0 | 86 |
| 1.3.2 Ease of resolving insolvency*..... | 29.3 | 126 |
| 1.3.3 Ease of paying taxes*..... | 46.1 | 128 |
| 2 Human capital & research..... | 25.5 | 86 |
| 2.1 Education..... | 43.4 | 75 |
| 2.1.1 Expenditure on education, % GDP..... | 4.0 | 86 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years..... | 11.2 | 103 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓔ] | 15.4 | 66 |
| 2.2 Tertiary education..... | 32.0 | 70 |
| 2.2.1 Tertiary enrolment, % gross..... | 22.5 | 88 |
| 2.2.2 Graduates in science & engineering, %..... | 25.5 | 21 ● |
| 2.2.3 Tertiary inbound mobility, %..... | 1.6 | 73 |
| 2.3 Research & development (R&D)..... | 1.2 | 112 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.1 | 104 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 18.0 | 135 ○ |
| 3.1 Information & communication technologies (ICTs)..... | 9.0 | 138 ○ |
| 3.1.1 ICT access*..... | n/a | n/a |
| 3.1.2 ICT use*..... | n/a | n/a |
| 3.1.3 Government's online service*..... | 6.3 | 137 ○ |
| 3.1.4 E-participation*..... | 11.8 | 132 ○ |
| 3.2 General infrastructure..... | 12.2 | 136 ○ |
| 3.2.1 Electricity output, kWh/cap..... | 2119.1 | 76 |
| 3.2.2 Logistics performance*..... | 18.7 | 105 |
| 3.2.3 Gross capital formation, % GDP..... | 12.6 | 136 ○ |
| 3.3 Ecological sustainability..... | 32.7 | 88 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 7.3 | 59 ● |
| 3.3.2 Environmental performance*..... | 31.3 | 125 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 4.7 | 22 ● |
| 4 Market sophistication..... | 53.3 | 40 ● |
| 4.1 Credit..... | 33.1 | 61 ● |
| 4.1.1 Ease of getting credit*..... | 35.0 | 102 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 17.9 | 119 |
| 4.1.3 Microfinance gross loans, % GDP..... | 5.0 | 8 ● |

| | | |
|---|------|------|
| 4.2 Investment..... | 58.3 | 12 |
| 4.2.1 Ease of protecting investors*..... | 58.3 | 54 ● |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 68.5 | 100 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 5.2 | 86 |
| 4.3.2 Intensity of local competition [†] | 55.3 | 117 |

5 Business sophistication.....27.4 108

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 27.3 | 99 |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms..... | 33.6 | 55 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, % [Ⓔ] | 1.6 | 82 |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 24.8 | 101 |
| 5.2.1 University/industry research collaboration [†] | 37.9 | 88 |
| 5.2.2 State of cluster development [†] | 38.6 | 103 |
| 5.2.3 GERD financed by abroad, %..... | 0.2 | 98 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 26 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a |
| 5.3 Knowledge absorption..... | 30.1 | 92 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 0.0 | 124 ○ |
| 5.3.2 High-tech imports less re-imports, % total trade..... | n/a | n/a |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 1.1 | 54 ● |
| 5.3.4 FDI net inflows, % GDP..... | 1.3 | 104 |

6 Knowledge & technology outputs.....26.1 70

| | | |
|---|------|-------|
| 6.1 Knowledge creation..... | 21.3 | 46 ● |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 0.1 | 100 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | 3.2 | 10 ● |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 2.1 | 126 |
| 6.1.5 Citable documents H index..... | 24.0 | 137 ○ |
| 6.2 Knowledge impact..... | 33.7 | 91 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 4.5 | 12 ● |
| 6.2.2 New businesses/th pop. 15–64..... | 0.3 | 95 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.2 | 136 ○ |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 2.4 | 95 |
| 6.3 Knowledge diffusion..... | 23.2 | 98 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓔ] | 0.0 | 89 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | n/a | n/a |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 2.6 | 26 ● |
| 6.3.4 FDI net outflows, % GDP..... | n/a | n/a |

7 Creative outputs.....17.0 130

| | | |
|---|------|-------|
| 7.1 Intangible assets..... | 30.3 | 127 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 12.0 | 94 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.0 | 61 |
| 7.1.3 ICTs & business model creation [†] | 51.2 | 87 |
| 7.1.4 ICTs & organizational model creation [†] | 48.9 | 81 |
| 7.2 Creative goods & services..... | 7.0 | 111 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | 1.8 | 60 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 0.6 | 89 |
| 7.2.5 Creative goods exports, % total trade..... | n/a | n/a |
| 7.3 Online creativity..... | 0.4 | 117 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.1 | 133 ○ |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.6 | 101 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 97.5 | 115 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Tanzania, United Republic of

Key indicators

| | |
|----------------------------|--------------------|
| Population (millions)..... | 50.8 |
| GDP (US\$ billions)..... | 47.9 |
| GDP per capita, PPP\$..... | 1,812.7 |
| Income group..... | Low income |
| Region..... | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 27.0 | 117 |
| Innovation Output Sub-Index..... | 23.6 | 95 |
| Innovation Input Sub-Index..... | 30.5 | 124 |
| Innovation Efficiency Ratio..... | 0.8 | 38 ● |
| Global Innovation Index 2014 (out of 143)..... | 25.6 | 123 |

| | | |
|--|-------------|--------------|
| 1 Institutions..... | 56.1 | 83 |
| 1.1 Political environment..... | 41.8 | 93 |
| 1.1.1 Political stability*..... | 60.4 | 76 |
| 1.1.2 Government effectiveness*..... | 23.2 | 110 |
| 1.2 Regulatory environment..... | 66.9 | 67 ● |
| 1.2.1 Regulatory quality*..... | 38.7 | 95 |
| 1.2.2 Rule of law*..... | 34.2 | 90 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 9.3 | 29 ● |
| 1.3 Business environment..... | 59.6 | 105 |
| 1.3.1 Ease of starting a business*..... | 78.9 | 101 |
| 1.3.2 Ease of resolving insolvency*..... | 41.1 | 97 |
| 1.3.3 Ease of paying taxes*..... | 59.0 | 114 |
| 2 Human capital & research..... | 12.9 | 133 ○ |
| 2.1 Education..... | 31.1 | 116 |
| 2.1.1 Expenditure on education, % GDP [Ⓔ] | 6.2 | 28 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓔ] | 16.2 | 77 |
| 2.1.3 School life expectancy, years..... | 9.2 | 119 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 26.4 | 99 |
| 2.2 Tertiary education..... | 2.7 | 136 ○ |
| 2.2.1 Tertiary enrolment, % gross..... | 3.9 | 129 ○ |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, % [Ⓔ] | 0.6 | 88 |
| 2.3 Research & development (R&D)..... | 5.1 | 82 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 35.6 | 99 ○ |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.5 | 61 |
| 2.3.3 QS university ranking, average score top 3*..... | 2.8 | 71 ● |
| 3 Infrastructure..... | 23.8 | 120 |
| 3.1 Information & communication technologies (ICTs)..... | 23.8 | 115 |
| 3.1.1 ICT access*..... | 23.7 | 129 ○ |
| 3.1.2 ICT use*..... | 2.4 | 129 ○ |
| 3.1.3 Government's online service*..... | 29.9 | 106 |
| 3.1.4 E-participation*..... | 39.2 | 82 |
| 3.2 General infrastructure..... | 27.6 | 83 |
| 3.2.1 Electricity output, kWh/cap..... | 121.3 | 120 ○ |
| 3.2.2 Logistics performance*..... | 8.7 | 122 ○ |
| 3.2.3 Gross capital formation, % GDP..... | 31.5 | 18 ● |
| 3.3 Ecological sustainability..... | 20.0 | 134 ○ |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 3.1 | 114 |
| 3.3.2 Environmental performance*..... | 36.2 | 120 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.3 | 101 |
| 4 Market sophistication..... | 33.6 | 136 ○ |
| 4.1 Credit..... | 25.0 | 88 |
| 4.1.1 Ease of getting credit*..... | 25.0 | 125 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 17.2 | 121 |
| 4.1.3 Microfinance gross loans, % GDP..... | 3.8 | 15 ● |

| | | |
|---|------|-------|
| 4.2 Investment..... | 18.5 | 139 ○ |
| 4.2.1 Ease of protecting investors*..... | 43.3 | 119 |
| 4.2.2 Market capitalization, % GDP..... | 6.4 | 97 |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.1 | 99 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 56 |
| 4.3 Trade & competition..... | 57.4 | 133 ○ |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 11.5 | 127 |
| 4.3.2 Intensity of local competition [†] | 55.3 | 118 |

| | | |
|---|-------------|------------|
| 5 Business sophistication..... | 25.8 | 120 |
| 5.1 Knowledge workers..... | 13.4 | 133 ○ |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 2.6 | 115 ○ |
| 5.1.2 Firms offering formal training, % firms..... | 30.7 | 64 |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, % [Ⓔ] | 0.1 | 91 ○ |
| 5.1.5 Females employed w/advanced degrees, % total..... | 0.7 | 85 ○ |
| 5.2 Innovation linkages..... | 38.8 | 45 ● |
| 5.2.1 University/industry research collaboration [†] | 39.5 | 80 |
| 5.2.2 State of cluster development [†] | 40.3 | 95 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 42.0 | 10 ● |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 71 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a |
| 5.3 Knowledge absorption..... | 25.2 | 114 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.0 | 117 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 6.8 | 68 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.5 | 97 |
| 5.3.4 FDI net inflows, % GDP..... | 5.6 | 28 ● |

| | | |
|---|-------------|------------|
| 6 Knowledge & technology outputs..... | 17.4 | 117 |
| 6.1 Knowledge creation..... | 9.8 | 70 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 6.8 | 83 |
| 6.1.5 Citable documents H index..... | 102.0 | 70 ● |
| 6.2 Knowledge impact..... | 38.4 | 64 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 3.7 | 18 ● |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.5 | 126 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 0.1 | 101 ○ |
| 6.3 Knowledge diffusion..... | 4.2 | 132 ○ |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.5 | 77 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 0.4 | 96 |
| 6.3.4 FDI net outflows, % GDP..... | n/a | n/a |

| | | |
|---|-------------|-----------|
| 7 Creative outputs..... | 29.7 | 81 |
| 7.1 Intangible assets..... | 44.9 | 71 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 45.7 | 110 |
| 7.1.4 ICTs & organizational model creation [†] | 44.2 | 99 |
| 7.2 Creative goods & services..... | 28.7 | 42 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 3.4 | 9 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.1 | 95 |
| 7.3 Online creativity..... | 0.2 | 128 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.2 | 126 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.1 | 117 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 38.6 | 125 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|---------------------|
| Population (millions)..... | 2.1 |
| GDP (US\$ billions)..... | 11.3 |
| GDP per capita, PPP\$..... | 11,395.3 |
| Income group..... | Upper-middle income |
| Region..... | Europe |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 38.0 | 56 |
| Innovation Output Sub-Index..... | 32.1 | 55 |
| Innovation Input Sub-Index..... | 44.0 | 56 |
| Innovation Efficiency Ratio..... | 0.7 | 64 |
| Global Innovation Index 2014 (out of 143)..... | 36.9 | 60 |

1 Institutions.....67.7 55

| | | |
|---|------|------|
| 1.1 Political environment..... | 47.3 | 77 |
| 1.1.1 Political stability*..... | 54.9 | 87 |
| 1.1.2 Government effectiveness*..... | 39.7 | 71 |
| 1.2 Regulatory environment..... | 69.8 | 55 |
| 1.2.1 Regulatory quality*..... | 56.4 | 59 |
| 1.2.2 Rule of law*..... | 42.3 | 70 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 13.0 | 50 |
| 1.3 Business environment..... | 86.1 | 15 ● |
| 1.3.1 Ease of starting a business*..... | 98.1 | 3 ● |
| 1.3.2 Ease of resolving insolvency*..... | 65.9 | 33 ● |
| 1.3.3 Ease of paying taxes*..... | 94.2 | 7 ● |

2 Human capital & research.....32.7 55

| | | |
|--|-------|------|
| 2.1 Education..... | 66.2 | 5 |
| 2.1.1 Expenditure on education, % GDP..... | n/a | n/a |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years..... | 13.4 | 74 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | 10.5 | 31 |
| 2.2 Tertiary education..... | 28.8 | 78 |
| 2.2.1 Tertiary enrolment, % gross..... | 38.5 | 67 |
| 2.2.2 Graduates in science & engineering, %..... | 19.1 | 60 |
| 2.2.3 Tertiary inbound mobility, %..... | 2.2 | 65 |
| 2.3 Research & development (R&D)..... | 3.0 | 93 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓣ] | 331.1 | 65 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓣ] | 0.2 | 85 ○ |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |

3 Infrastructure.....31.4 94

| | | |
|--|--------|-------|
| 3.1 Information & communication technologies (ICTs)..... | 38.4 | 88 |
| 3.1.1 ICT access*..... | 65.5 | 56 |
| 3.1.2 ICT use*..... | 42.2 | 54 |
| 3.1.3 Government's online service*..... | 24.4 | 113 ○ |
| 3.1.4 E-participation*..... | 21.6 | 119 ○ |
| 3.2 General infrastructure..... | 16.3 | 126 ○ |
| 3.2.1 Electricity output, kWh/cap..... | 2967.8 | 63 |
| 3.2.2 Logistics performance*..... | 17.2 | 108 ○ |
| 3.2.3 Gross capital formation, % GDP..... | n/a | n/a |
| 3.3 Ecological sustainability..... | 39.6 | 60 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.6 | 76 |
| 3.3.2 Environmental performance*..... | 50.4 | 79 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 5.0 | 20 ● |

4 Market sophistication.....52.3 46

| | | |
|---|------|------|
| 4.1 Credit..... | 39.1 | 46 |
| 4.1.1 Ease of getting credit*..... | 65.0 | 34 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 49.2 | 68 |
| 4.1.3 Microfinance gross loans, % GDP..... | 3.1 | 17 ● |

| | | |
|---|------|------|
| 4.2 Investment..... | 34.2 | 75 |
| 4.2.1 Ease of protecting investors*..... | 66.7 | 21 ● |
| 4.2.2 Market capitalization, % GDP..... | 5.8 | 99 ○ |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.3 | 84 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 83.4 | 35 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.9 | 44 |
| 4.3.2 Intensity of local competition [†] | 73.2 | 41 |

5 Business sophistication.....35.9 62

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 40.0 | 64 |
| 5.1.1 Knowledge-intensive employment, %..... | 27.9 | 50 |
| 5.1.2 Firms offering formal training, % firms..... | 46.0 | 35 |
| 5.1.3 GERD performed by business, % of GDP [Ⓣ] | 0.0 | 75 ○ |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | 11.4 | 56 |
| 5.2 Innovation linkages..... | 31.8 | 66 |
| 5.2.1 University/industry research collaboration [†] | 45.2 | 58 |
| 5.2.2 State of cluster development [†] | 41.0 | 92 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 108 ○ |
| 5.3 Knowledge absorption..... | 35.8 | 59 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.6 | 48 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 6.1 | 80 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.6 | 35 |
| 5.3.4 FDI net inflows, % GDP..... | 3.7 | 45 |

6 Knowledge & technology outputs.....26.3 69

| | | |
|---|------|------|
| 6.1 Knowledge creation..... | 9.6 | 73 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 1.6 | 52 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.1 | 57 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 12.6 | 62 |
| 6.1.5 Citable documents H index..... | 67.0 | 98 ○ |
| 6.2 Knowledge impact..... | 40.1 | 54 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 1.1 | 70 |
| 6.2.2 New businesses/th pop. 15–64..... | 3.6 | 33 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 15.2 | 25 ● |
| 6.2.5 High- & medium-high-tech manufactures, %..... | 19.6 | 58 |
| 6.3 Knowledge diffusion..... | 29.0 | 63 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.1 | 47 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 1.9 | 51 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 2.5 | 28 ● |
| 6.3.4 FDI net outflows, % GDP..... | 0.4 | 69 |

7 Creative outputs.....37.9 46

| | | |
|--|--------|------|
| 7.1 Intangible assets..... | 48.9 | 52 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.6 | 38 |
| 7.1.3 ICTs & business model creation [†] | 60.1 | 50 |
| 7.1.4 ICTs & organizational model creation [†] | 54.9 | 60 |
| 7.2 Creative goods & services..... | 27.3 | 47 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.7 | 30 |
| 7.2.2 National feature films/mn pop. 15–69..... | 8.2 | 22 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | 2.6 | 16 ● |
| 7.2.5 Creative goods exports, % total trade..... | 0.2 | 80 |
| 7.3 Online creativity..... | 26.5 | 50 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 7.2 | 52 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 1.9 | 72 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 3131.7 | 43 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 73.7 | 48 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓣ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|-----------------------------|
| Population (millions)..... | 67.2 |
| GDP (US\$ billions)..... | 373.8 |
| GDP per capita, PPP\$..... | 10,226.8 |
| Income group..... | Upper-middle income |
| Region..... | South East Asia and Oceania |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 38.1 | 55 |
| Innovation Output Sub-Index..... | 33.0 | 50 |
| Innovation Input Sub-Index..... | 43.2 | 62 |
| Innovation Efficiency Ratio..... | 0.8 | 43 |
| Global Innovation Index 2014 (out of 143)..... | 39.3 | 48 |

1 Institutions.....53.6 92

| | | |
|---|------|-------|
| 1.1 Political environment..... | 39.3 | 103 |
| 1.1.1 Political stability*..... | 31.5 | 131 ○ |
| 1.1.2 Government effectiveness*..... | 47.1 | 57 |
| 1.2 Regulatory environment..... | 46.7 | 119 ○ |
| 1.2.1 Regulatory quality*..... | 53.5 | 64 |
| 1.2.2 Rule of law*..... | 44.1 | 65 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 36.0 | 132 ○ |
| 1.3 Business environment..... | 74.9 | 48 |
| 1.3.1 Ease of starting a business*..... | 88.0 | 63 |
| 1.3.2 Ease of resolving insolvency*..... | 58.7 | 43 |
| 1.3.3 Ease of paying taxes*..... | 78.0 | 51 |

2 Human capital & research.....31.1 60

| | | |
|--|-------|------|
| 2.1 Education..... | 51.1 | 45 |
| 2.1.1 Expenditure on education, % GDP..... | 7.6 | 9 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 37.4 | 10 ● |
| 2.1.3 School life expectancy, years..... | 13.5 | 71 |
| 2.1.4 PISA scales in reading, maths, & science..... | 437.3 | 44 |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓔ] | 19.9 | 84 |
| 2.2 Tertiary education..... | 23.5 | 93 |
| 2.2.1 Tertiary enrolment, % gross..... | 51.2 | 51 |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, %..... | 0.8 | 86 |
| 2.3 Research & development (R&D)..... | 18.5 | 48 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 546.1 | 57 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.4 | 70 |
| 2.3.3 QS university ranking, average score top 3*..... | 40.2 | 36 |

3 Infrastructure.....40.7 64

| | | |
|--|--------|----|
| 3.1 Information & communication technologies (ICTs)..... | 44.7 | 73 |
| 3.1.1 ICT access*..... | 48.8 | 79 |
| 3.1.2 ICT use*..... | 31.2 | 66 |
| 3.1.3 Government's online service*..... | 44.1 | 74 |
| 3.1.4 E-participation*..... | 54.9 | 54 |
| 3.2 General infrastructure..... | 39.8 | 40 |
| 3.2.1 Electricity output, kWh/cap..... | 2494.7 | 70 |
| 3.2.2 Logistics performance*..... | 64.7 | 34 |
| 3.2.3 Gross capital formation, % GDP..... | 27.0 | 36 |
| 3.3 Ecological sustainability..... | 37.5 | 71 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.4 | 84 |
| 3.3.2 Environmental performance*..... | 52.8 | 70 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 3.3 | 29 |

4 Market sophistication.....53.3 41

| | | |
|--|-------|------|
| 4.1 Credit..... | 31.9 | 64 |
| 4.1.1 Ease of getting credit*..... | 45.0 | 80 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 154.4 | 14 ● |
| 4.1.3 Microfinance gross loans, % GDP [Ⓔ] | 0.0 | 90 ○ |

| | | |
|--|-------|------|
| 4.2 Investment..... | 49.6 | 30 |
| 4.2.1 Ease of protecting investors*..... | 65.8 | 25 |
| 4.2.2 Market capitalization, % GDP..... | 104.7 | 13 |
| 4.2.3 Total value of stocks traded, % GDP..... | 62.7 | 13 ● |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 59 ○ |

| | | |
|--|------|----|
| 4.3 Trade & competition..... | 78.3 | 62 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓔ] | 4.9 | 81 |
| 4.3.2 Intensity of local competition [†] | 73.7 | 36 |

5 Business sophistication.....37.3 54

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 47.3 | 39 |
| 5.1.1 Knowledge-intensive employment, %..... | 13.9 | 97 ○ |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 75.3 | 2 ● |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 0.2 | 49 |
| 5.1.4 GERD financed by business, % [Ⓔ] | 51.7 | 17 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 7.5 | 70 ○ |
| 5.2 Innovation linkages..... | 25.6 | 96 |
| 5.2.1 University/industry research collaboration [†] | 49.2 | 44 |
| 5.2.2 State of cluster development [†] | 53.3 | 37 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 2.5 | 77 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 47 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 90 ○ |
| 5.3 Knowledge absorption..... | 38.9 | 44 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.6 | 12 ● |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 14.7 | 15 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.2 | 115 ○ |
| 5.3.4 FDI net inflows, % GDP..... | 3.3 | 55 |

6 Knowledge & technology outputs.....30.3 48

| | | |
|---|-------|-------|
| 6.1 Knowledge creation..... | 15.6 | 57 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 1.6 | 51 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.1 | 67 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 1.6 | 19 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 6.7 | 85 |
| 6.1.5 Citable documents H index..... | 190.0 | 38 |
| 6.2 Knowledge impact..... | 41.9 | 49 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 2.5 | 37 |
| 6.2.2 New businesses/th pop. 15–64..... | 0.9 | 75 |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 26 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 9.2 | 44 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 43.9 | 11 ● |
| 6.3 Knowledge diffusion..... | 33.3 | 45 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 0.1 | 61 |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 13.2 | 14 ● |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 0.2 | 112 ○ |
| 6.3.4 FDI net outflows, % GDP..... | 1.7 | 37 |

7 Creative outputs.....35.8 52

| | | |
|---|-------|-----|
| 7.1 Intangible assets..... | 43.0 | 83 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 28.9 | 72 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 61.2 | 44 |
| 7.1.4 ICTs & organizational model creation [†] | 52.7 | 66 |
| 7.2 Creative goods & services..... | 35.6 | 25 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 [Ⓔ] | 1.0 | 76 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 5.0 | 45 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 1.1 | 67 |
| 7.2.5 Creative goods exports, % total trade..... | 9.3 | 6 ● |
| 7.3 Online creativity..... | 21.6 | 62 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 6.4 | 55 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.5 | 102 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 944.0 | 77 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 72.5 | 54 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

[Ⓔ] indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|--------------------|
| Population (millions)..... | 7.0 |
| GDP (US\$ billions)..... | 4.6 |
| GDP per capita, PPP\$..... | 1,136.5 |
| Income group..... | Low income |
| Region..... | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank | |
|--|-------------------------------------|------------|---|
| Global Innovation Index (out of 141)..... | 18.4 | 140 | ○ |
| Innovation Output Sub-Index..... | 7.2 | 141 | ○ |
| Innovation Input Sub-Index..... | 29.6 | 128 | |
| Innovation Efficiency Ratio..... | 0.2 | 141 | ○ |
| Global Innovation Index 2014 (out of 143)..... | 17.6 | 142 | |

1 Institutions.....47.1 115

| | | | |
|---|------|-----|---|
| 1.1 Political environment..... | 29.0 | 121 | |
| 1.1.1 Political stability*..... | 53.6 | 91 | |
| 1.1.2 Government effectiveness*..... | 4.3 | 139 | ○ |
| 1.2 Regulatory environment..... | 55.8 | 100 | |
| 1.2.1 Regulatory quality*..... | 22.5 | 127 | |
| 1.2.2 Rule of law*..... | 20.8 | 125 | |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 13.1 | 55 | ● |
| 1.3 Business environment..... | 56.7 | 112 | |
| 1.3.1 Ease of starting a business*..... | 76.1 | 109 | |
| 1.3.2 Ease of resolving insolvency*..... | 43.1 | 87 | ● |
| 1.3.3 Ease of paying taxes*..... | 50.8 | 124 | |

2 Human capital & research.....13.6 131

| | | | |
|--|------|-----|---|
| 2.1 Education..... | 32.0 | 108 | |
| 2.1.1 Expenditure on education, % GDP..... | 4.0 | 87 | |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 15.4 | 85 | |
| 2.1.3 School life expectancy, years [Ⓐ] | 12.2 | 91 | |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a | |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓐ] | 26.2 | 98 | |
| 2.2 Tertiary education..... | 7.0 | 130 | |
| 2.2.1 Tertiary enrolment, % gross..... | 10.0 | 111 | |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a | |
| 2.2.3 Tertiary inbound mobility, % [Ⓐ] | 1.4 | 75 | |
| 2.3 Research & development (R&D)..... | 1.8 | 104 | |
| 2.3.1 Researchers, FTE/mn pop. [Ⓐ] | 36.5 | 98 | |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓐ] | 0.2 | 86 | |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 | ○ |

3 Infrastructure.....13.8 140

| | | | |
|--|------|-----|---|
| 3.1 Information & communication technologies (ICTs)..... | 10.4 | 137 | ○ |
| 3.1.1 ICT access*..... | n/a | n/a | |
| 3.1.2 ICT use*..... | n/a | n/a | |
| 3.1.3 Government's online service*..... | 11.0 | 134 | ○ |
| 3.1.4 E-participation*..... | 9.8 | 133 | ○ |
| 3.2 General infrastructure..... | 15.7 | 129 | |
| 3.2.1 Electricity output, kWh/cap..... | 16.7 | 123 | ○ |
| 3.2.2 Logistics performance*..... | 8.0 | 123 | |
| 3.2.3 Gross capital formation, % GDP..... | 20.8 | 77 | ● |
| 3.3 Ecological sustainability..... | 15.3 | 140 | ○ |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 2.4 | 118 | ○ |
| 3.3.2 Environmental performance*..... | 27.9 | 132 | ○ |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.2 | 113 | |

4 Market sophistication.....45.6 79

| | | | |
|---|------|-----|---|
| 4.1 Credit..... | 29.8 | 77 | ● |
| 4.1.1 Ease of getting credit*..... | 30.0 | 113 | |
| 4.1.2 Domestic credit to private sector, % GDP..... | 32.2 | 93 | |
| 4.1.3 Microfinance gross loans, % GDP..... | 4.2 | 13 | ● |

| | | | |
|---|------|-----|--|
| 4.2 Investment..... | 45.8 | 37 | |
| 4.2.1 Ease of protecting investors*..... | 45.8 | 107 | |
| 4.2.2 Market capitalization, % GDP..... | n/a | n/a | |
| 4.2.3 Total value of stocks traded, % GDP..... | n/a | n/a | |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a | |
| 4.3 Trade & competition..... | 61.0 | 126 | |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 11.1 | 126 | |
| 4.3.2 Intensity of local competition [†] | n/a | n/a | |

5 Business sophistication.....28.2 104

| | | | |
|---|------|-----|---|
| 5.1 Knowledge workers..... | 36.4 | 76 | |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a | |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 31.0 | 63 | ● |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a | |
| 5.1.4 GERD financed by business, %..... | n/a | n/a | |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a | |
| 5.2 Innovation linkages..... | 15.2 | 135 | ○ |
| 5.2.1 University/industry research collaboration [†] | n/a | n/a | |
| 5.2.2 State of cluster development [†] | n/a | n/a | |
| 5.2.3 GERD financed by abroad, % [Ⓐ] | 12.1 | 38 | ● |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a | |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a | |
| 5.3 Knowledge absorption..... | 32.9 | 69 | ● |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓐ] | 0.1 | 100 | |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 3.0 | 123 | ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓐ] | 2.2 | 9 | ● |
| 5.3.4 FDI net inflows, % GDP..... | 1.9 | 88 | |

6 Knowledge & technology outputs.....13.9 126

| | | | |
|---|------|-----|---|
| 6.1 Knowledge creation..... | 6.0 | 96 | |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | n/a | n/a | |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | n/a | n/a | |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a | |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 6.7 | 84 | ● |
| 6.1.5 Citable documents H index..... | 33.0 | 133 | |
| 6.2 Knowledge impact..... | 2.2 | 139 | ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | n/a | n/a | |
| 6.2.2 New businesses/th pop. 15–64..... | 0.1 | 100 | |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a | |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.8 | 95 | |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a | |
| 6.3 Knowledge diffusion..... | 33.6 | 44 | ● |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓐ] | 0.0 | 109 | |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.0 | 118 | |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓐ] | 3.8 | 13 | ● |
| 6.3.4 FDI net outflows, % GDP [Ⓐ] | 2.4 | 28 | ● |

7 Creative outputs.....0.5 141

| | | | |
|--|------|-----|---|
| 7.1 Intangible assets..... | n/a | n/a | |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | n/a | n/a | |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a | |
| 7.1.3 ICTs & business model creation [†] | n/a | n/a | |
| 7.1.4 ICTs & organizational model creation [†] | n/a | n/a | |
| 7.2 Creative goods & services..... | 0.7 | 135 | ○ |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a | |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a | |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a | |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a | |
| 7.2.5 Creative goods exports, % total trade [Ⓐ] | 0.0 | 115 | |
| 7.3 Online creativity..... | 0.3 | 123 | |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.8 | 107 | |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.0 | 141 | ○ |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 13.6 | 136 | ○ |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a | |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Trinidad and Tobago

Key indicators

| | |
|----------------------------|---------------------------------|
| Population (millions)..... | 1.3 |
| GDP (US\$ billions)..... | 28.8 |
| GDP per capita, PPP\$..... | 21,096.2 |
| Income group..... | High income |
| Region..... | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 32.2 | 80 |
| Innovation Output Sub-Index..... | 25.6 | 88 |
| Innovation Input Sub-Index..... | 38.8 | 86 |
| Innovation Efficiency Ratio..... | 0.7 | 92 |
| Global Innovation Index 2014 (out of 143)..... | 31.6 | 90 |

| | | |
|--|-------------|------------|
| 1 Institutions..... | 63.0 | 62 |
| 1.1 Political environment..... | 58.7 | 52 ● |
| 1.1.1 Political stability*..... | 66.7 | 59 |
| 1.1.2 Government effectiveness*..... | 50.8 | 52 ● |
| 1.2 Regulatory environment..... | 61.6 | 83 |
| 1.2.1 Regulatory quality*..... | 54.3 | 61 |
| 1.2.2 Rule of law*..... | 41.7 | 72 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 20.5 | 94 |
| 1.3 Business environment..... | 68.8 | 71 |
| 1.3.1 Ease of starting a business*..... | 88.3 | 60 |
| 1.3.2 Ease of resolving insolvency*..... | 49.0 | 63 |
| 1.3.3 Ease of paying taxes*..... | 69.0 | 89 |
| 2 Human capital & research..... | 28.8 | 69 |
| 2.1 Education..... | 46.3 | 63 |
| 2.1.1 Expenditure on education, % GDP..... | n/a | n/a |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years [Ⓐ] | 12.3 | 89 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a |
| 2.2 Tertiary education..... | 39.7 | 46 ● |
| 2.2.1 Tertiary enrolment, % gross [Ⓐ] | 12.0 | 106 |
| 2.2.2 Graduates in science & engineering, % [Ⓐ] | 30.4 | 10 ● |
| 2.2.3 Tertiary inbound mobility, % [Ⓐ] | 5.8 | 30 ● |
| 2.3 Research & development (R&D)..... | 0.4 | 119 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓐ] | 0.0 | 113 ○ |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 28.4 | 106 |
| 3.1 Information & communication technologies (ICTs)..... | 41.0 | 82 |
| 3.1.1 ICT access*..... | 63.6 | 59 |
| 3.1.2 ICT use*..... | 36.0 | 60 |
| 3.1.3 Government's online service*..... | 33.1 | 93 |
| 3.1.4 E-participation*..... | 31.4 | 101 |
| 3.2 General infrastructure..... | 20.2 | 118 |
| 3.2.1 Electricity output, kWh/cap..... | 6814.9 | 29 ● |
| 3.2.2 Logistics performance*..... | n/a | n/a |
| 3.2.3 Gross capital formation, % GDP..... | 14.0 | 131 ○ |
| 3.3 Ecological sustainability..... | 24.0 | 123 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 1.8 | 122 ○ |
| 3.3.2 Environmental performance*..... | 52.3 | 71 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.3 | 104 |
| 4 Market sophistication..... | 43.5 | 95 |
| 4.1 Credit..... | 24.6 | 90 |
| 4.1.1 Ease of getting credit*..... | 65.0 | 34 ● |
| 4.1.2 Domestic credit to private sector, % GDP..... | 31.1 | 97 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.0 | 88 ○ |

| | | |
|--|------|------|
| 4.2 Investment..... | 38.8 | 57 ● |
| 4.2.1 Ease of protecting investors*..... | 57.5 | 60 |
| 4.2.2 Market capitalization, % GDP..... | 64.7 | 27 ● |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.5 | 78 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition..... | 67.0 | 106 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓐ] | 10.0 | 121 |
| 4.3.2 Intensity of local competition [†] | 69.2 | 60 |

| | | |
|---|-------------|-----------|
| 5 Business sophistication..... | 30.3 | 93 |
| 5.1 Knowledge workers..... | 31.0 | 91 |
| 5.1.1 Knowledge-intensive employment, %..... | 27.0 | 51 |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 28.0 | 70 |
| 5.1.3 GERD performed by business, % of GDP [Ⓐ] | 0.0 | 86 ○ |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 31.6 | 68 |
| 5.2.1 University/industry research collaboration [†] | 35.6 | 103 |
| 5.2.2 State of cluster development [†] | 42.6 | 81 |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓐ] | 0.0 | 68 |
| 5.3 Knowledge absorption..... | 28.4 | 98 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓐ] | 0.3 | 68 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 4.9 | 101 |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓐ] | 0.9 | 63 |
| 5.3.4 FDI net inflows, % GDP..... | 7.0 | 19 ● |

| | | |
|---|-------------|-----------|
| 6 Knowledge & technology outputs..... | 24.4 | 81 |
| 6.1 Knowledge creation..... | 3.8 | 115 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.0 | 89 ○ |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 3.7 | 111 |
| 6.1.5 Citable documents H index..... | 67.0 | 98 |
| 6.2 Knowledge impact..... | 42.4 | 48 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 2.2 | 40 ● |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.3 | 109 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓐ] | 24.1 | 48 |
| 6.3 Knowledge diffusion..... | 27.0 | 73 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓐ] | 0.0 | 104 ○ |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.0 | 120 ○ |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓐ] | 0.1 | 119 ○ |
| 6.3.4 FDI net outflows, % GDP [Ⓐ] | 4.5 | 11 ● |

| | | |
|---|-------------|-----------|
| 7 Creative outputs..... | 26.7 | 90 |
| 7.1 Intangible assets..... | 46.0 | 65 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 44.6 | 113 |
| 7.1.4 ICTs & organizational model creation [†] | 47.4 | 91 |
| 7.2 Creative goods & services..... | 9.2 | 99 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓐ] | 1.1 | 70 |
| 7.2.5 Creative goods exports, % total trade [Ⓐ] | 0.1 | 100 |
| 7.3 Online creativity..... | 5.8 | 90 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 5.3 | 58 ● |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 1.8 | 75 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 1399.1 | 70 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|----------------------------------|
| Population (millions) | 11.1 |
| GDP (US\$ billions) | 48.6 |
| GDP per capita, PPP\$ | 10,252.6 |
| Income group | Upper-middle income |
| Region | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 33.5 | 76 |
| Innovation Output Sub-Index | 27.9 | 71 |
| Innovation Input Sub-Index..... | 39.1 | 83 |
| Innovation Efficiency Ratio..... | 0.7 | 71 |
| Global Innovation Index 2014 (out of 143) | 32.9 | 78 |

| | | | |
|----------|--|-------------|--------------|
| 1 | Institutions..... | 59.5 | 72 |
| 1.1 | Political environment..... | 41.5 | 95 |
| 1.1.1 | Political stability*..... | 41.6 | 114 ○ |
| 1.1.2 | Government effectiveness*..... | 41.4 | 68 |
| 1.2 | Regulatory environment | 66.2 | 72 |
| 1.2.1 | Regulatory quality*..... | 38.6 | 96 |
| 1.2.2 | Rule of law*..... | 42.3 | 71 |
| 1.2.3 | Cost of redundancy dismissal, salary weeks..... | 12.1 | 47 |
| 1.3 | Business environment..... | 70.8 | 61 |
| 1.3.1 | Ease of starting a business*..... | 83.6 | 81 |
| 1.3.2 | Ease of resolving insolvency*..... | 54.7 | 52 |
| 1.3.3 | Ease of paying taxes*..... | 74.1 | 64 |
| 2 | Human capital & research..... | 36.7 | 48 |
| 2.1 | Education | 46.7 | 61 |
| 2.1.1 | Expenditure on education, % GDP | 6.2 | 27 ● |
| 2.1.2 | Gov't expenditure/pupil, secondary, % GDP/cap [Ⓔ] | 24.4 | 41 |
| 2.1.3 | School life expectancy, years [Ⓔ] | 14.6 | 47 |
| 2.1.4 | PISA scales in reading, maths, & science..... | 396.6 | 56 ○ |
| 2.1.5 | Pupil-teacher ratio, secondary [Ⓔ] | 13.6 | 48 |
| 2.2 | Tertiary education..... | 52.5 | 15 ● |
| 2.2.1 | Tertiary enrolment, % gross..... | 35.2 | 70 |
| 2.2.2 | Graduates in science & engineering, % | 42.4 | 3 ● |
| 2.2.3 | Tertiary inbound mobility, %..... | 0.5 | 93 ○ |
| 2.3 | Research & development (R&D)..... | 10.9 | 67 |
| 2.3.1 | Researchers, FTE/mn pop. [Ⓔ] | 1393.9 | 41 |
| 2.3.2 | Gross expenditure on R&D, % GDP [Ⓔ] | 0.7 | 50 |
| 2.3.3 | QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 | Infrastructure..... | 38.4 | 73 |
| 3.1 | Information & communication technologies (ICTs)..... | 50.0 | 58 |
| 3.1.1 | ICT access*..... | 45.6 | 87 |
| 3.1.2 | ICT use*..... | 25.9 | 80 |
| 3.1.3 | Government's online service*..... | 63.8 | 39 ● |
| 3.1.4 | E-participation*..... | 64.7 | 33 ● |
| 3.2 | General infrastructure..... | 20.5 | 117 ○ |
| 3.2.1 | Electricity output, kWh/cap..... | 1668.4 | 81 |
| 3.2.2 | Logistics performance*..... | 19.9 | 102 |
| 3.2.3 | Gross capital formation, % GDP..... | 20.6 | 80 |
| 3.3 | Ecological sustainability | 44.7 | 45 ● |
| 3.3.1 | GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 10.3 | 21 ● |
| 3.3.2 | Environmental performance*..... | 59.0 | 49 |
| 3.3.3 | ISO 14001 environmental certificates/bn PPP\$ GDP..... | 1.7 | 52 |
| 4 | Market sophistication | 35.0 | 135 ○ |
| 4.1 | Credit..... | 20.5 | 113 ○ |
| 4.1.1 | Ease of getting credit*..... | 35.0 | 102 |
| 4.1.2 | Domestic credit to private sector, % GDP..... | 75.7 | 41 ● |
| 4.1.3 | Microfinance gross loans, % GDP | 0.2 | 56 |

| | | | |
|-------|--|------|-------|
| 4.2 | Investment | 31.0 | 93 |
| 4.2.1 | Ease of protecting investors*..... | 55.0 | 72 |
| 4.2.2 | Market capitalization, % GDP..... | 19.6 | 70 |
| 4.2.3 | Total value of stocks traded, % GDP..... | 2.8 | 56 |
| 4.2.4 | Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 | Trade & competition | 53.4 | 135 ○ |
| 4.3.1 | Applied tariff rate, weighted mean, % [Ⓔ] | 16.0 | 136 ○ |
| 4.3.2 | Intensity of local competition [†] | 62.9 | 89 |

5 Business sophistication **25.9** **119 ○**

| | | | |
|-------|---|------|-------|
| 5.1 | Knowledge workers..... | 31.3 | 90 |
| 5.1.1 | Knowledge-intensive employment, % [Ⓔ] | 20.9 | 70 |
| 5.1.2 | Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 | GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 | GERD financed by business, % [Ⓔ] | 18.7 | 65 |
| 5.1.5 | Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 | Innovation linkages | 21.7 | 117 ○ |
| 5.2.1 | University/industry research collaboration [†] | 32.0 | 114 ○ |
| 5.2.2 | State of cluster development [†] | 41.8 | 85 |
| 5.2.3 | GERD financed by abroad, % [Ⓔ] | 4.4 | 68 |
| 5.2.4 | JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 | Patent families 3+ offices/bn PPP\$ GDP [Ⓔ] | 0.0 | 80 |
| 5.3 | Knowledge absorption..... | 24.7 | 117 ○ |
| 5.3.1 | Royalty & license fees payments, % total trade [Ⓔ] | 0.1 | 110 ○ |
| 5.3.2 | High-tech imports less re-imports, % total trade..... | 8.1 | 54 |
| 5.3.3 | Comm., computer & info. services imp., % total trade [Ⓔ] | 0.4 | 102 ○ |
| 5.3.4 | FDI net inflows, % GDP..... | 2.3 | 74 |

6 Knowledge & technology outputs **23.3** **87**

| | | | |
|-------|---|------|-------|
| 6.1 | Knowledge creation..... | 13.8 | 62 |
| 6.1.1 | Domestic resident patent app/bn PPP\$ GDP..... | 0.9 | 63 |
| 6.1.2 | PCT resident patent app/bn PPP\$ GDP..... | 0.1 | 70 |
| 6.1.3 | Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 | Scientific & technical articles/bn PPP\$ GDP..... | 25.4 | 35 ● |
| 6.1.5 | Citable documents H index..... | 97.0 | 73 |
| 6.2 | Knowledge impact..... | 37.6 | 68 |
| 6.2.1 | Growth rate of PPP\$ GDP/worker, %..... | 2.1 | 42 |
| 6.2.2 | New businesses/th pop. 15–64 [Ⓔ] | 1.5 | 55 |
| 6.2.3 | Computer software spending, % GDP..... | 0.3 | 36 |
| 6.2.4 | ISO 9001 quality certificates/bn PPP\$ GDP..... | 7.0 | 50 |
| 6.2.5 | High- & medium-high-tech manufactures, % [Ⓔ] | 32.4 | 33 ● |
| 6.3 | Knowledge diffusion..... | 18.5 | 116 ○ |
| 6.3.1 | Royalty & license fees receipts, % total trade [Ⓔ] | 0.1 | 55 |
| 6.3.2 | High-tech exports less re-exports, % total trade | 3.3 | 40 ● |
| 6.3.3 | Comm., computer & info. services exp., % total trade [Ⓔ] | 1.6 | 56 |
| 6.3.4 | FDI net outflows, % GDP | n/a | n/a |

7 Creative outputs **32.4** **71**

| | | | |
|-------|---|-------|------|
| 7.1 | Intangible assets..... | 45.1 | 69 |
| 7.1.1 | Domestic res trademark app/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.2 | Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 | ICTs & business model creation [†] | 47.0 | 103 |
| 7.1.4 | ICTs & organizational model creation [†] | 43.2 | 102 |
| 7.2 | Creative goods & services..... | 23.1 | 57 |
| 7.2.1 | Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 | National feature films/mn pop. 15–69..... | 1.0 | 75 |
| 7.2.3 | Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 | Printing & publishing output manufactures, % [Ⓔ] | 0.7 | 82 ○ |
| 7.2.5 | Creative goods exports, % total trade..... | 2.6 | 16 ● |
| 7.3 | Online creativity..... | 16.5 | 70 |
| 7.3.1 | Generic top-level domains (TLDs)/th pop. 15–69..... | 3.1 | 72 |
| 7.3.2 | Country-code TLDs/th pop. 15–69..... | 0.3 | 109 |
| 7.3.3 | Wikipedia edits/pop. 15–69..... | 499.9 | 92 |
| 7.3.4 | Video uploads on YouTube/pop. 15–69..... | 58.9 | 63 ○ |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|----------------------------------|
| Population (millions)..... | 75.8 |
| GDP (US\$ billions)..... | 806.1 |
| GDP per capita, PPP\$..... | 15,767.3 |
| Income group..... | Upper-middle income |
| Region..... | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 37.8 | 58 |
| Innovation Output Sub-Index..... | 33.9 | 46 |
| Innovation Input Sub-Index..... | 41.7 | 71 |
| Innovation Efficiency Ratio..... | 0.8 | 23 ● |
| Global Innovation Index 2014 (out of 143)..... | 38.2 | 54 |
| 1 Institutions..... | 55.8 | 84 |
| 1.1 Political environment..... | 43.0 | 88 |
| 1.1.1 Political stability*..... | 34.6 | 125 ○ |
| 1.1.2 Government effectiveness*..... | 51.3 | 50 |
| 1.2 Regulatory environment..... | 55.7 | 101 |
| 1.2.1 Regulatory quality*..... | 59.1 | 55 |
| 1.2.2 Rule of law*..... | 49.8 | 59 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 29.8 | 126 ○ |
| 1.3 Business environment..... | 68.9 | 67 |
| 1.3.1 Ease of starting a business*..... | 86.9 | 67 |
| 1.3.2 Ease of resolving insolvency*..... | 40.0 | 101 |
| 1.3.3 Ease of paying taxes*..... | 79.8 | 47 |
| 2 Human capital & research..... | 35.9 | 50 |
| 2.1 Education..... | 47.7 | 58 |
| 2.1.1 Expenditure on education, % GDP [Ⓞ] | 2.9 | 111 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years..... | 14.5 | 49 |
| 2.1.4 PISA scales in reading, maths, & science..... | 462.3 | 40 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 17.9 | 78 |
| 2.2 Tertiary education..... | 36.2 | 57 |
| 2.2.1 Tertiary enrolment, % gross..... | 69.4 | 26 ● |
| 2.2.2 Graduates in science & engineering, %..... | 20.9 | 49 |
| 2.2.3 Tertiary inbound mobility, %..... | 0.9 | 85 |
| 2.3 Research & development (R&D)..... | 23.7 | 40 |
| 2.3.1 Researchers, FTE/mn pop..... | 1188.7 | 45 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | 0.9 | 37 |
| 2.3.3 QS university ranking, average score top 3*..... | 34.5 | 39 |
| 3 Infrastructure..... | 41.0 | 63 |
| 3.1 Information & communication technologies (ICTs)..... | 48.9 | 63 |
| 3.1.1 ICT access*..... | 58.3 | 67 |
| 3.1.2 ICT use*..... | 32.4 | 64 |
| 3.1.3 Government's online service*..... | 55.9 | 53 |
| 3.1.4 E-participation*..... | 49.0 | 64 |
| 3.2 General infrastructure..... | 33.9 | 59 |
| 3.2.1 Electricity output, kWh/cap..... | 3179.4 | 59 |
| 3.2.2 Logistics performance*..... | 68.3 | 29 ● |
| 3.2.3 Gross capital formation, % GDP..... | 19.9 | 85 |
| 3.3 Ecological sustainability..... | 40.1 | 57 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 9.1 | 38 |
| 3.3.2 Environmental performance*..... | 54.9 | 60 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 1.2 | 57 |
| 4 Market sophistication..... | 49.5 | 58 |
| 4.1 Credit..... | 22.4 | 104 |
| 4.1.1 Ease of getting credit*..... | 45.0 | 80 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 70.2 | 48 |
| 4.1.3 Microfinance gross loans, % GDP..... | 0.0 | 87 ○ |

| | | |
|---|-------------|------------|
| 4.2 Investment..... | 39.7 | 51 |
| 4.2.1 Ease of protecting investors*..... | 69.2 | 13 ● |
| 4.2.2 Market capitalization, % GDP..... | 39.1 | 50 |
| 4.2.3 Total value of stocks traded, % GDP..... | 44.2 | 18 ● |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 69 ○ |
| 4.3 Trade & competition..... | 86.4 | 18 ● |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓞ] | 2.7 | 55 |
| 4.3.2 Intensity of local competition [†] | 82.2 | 9 ● |
| 5 Business sophistication..... | 26.3 | 117 |
| 5.1 Knowledge workers..... | 32.6 | 85 |
| 5.1.1 Knowledge-intensive employment, %..... | 19.2 | 76 |
| 5.1.2 Firms offering formal training, % firms..... | 28.4 | 67 |
| 5.1.3 GERD performed by business, % of GDP..... | 0.5 | 34 |
| 5.1.4 GERD financed by business, %..... | 48.9 | 21 ● |
| 5.1.5 Females employed w/advanced degrees, % total..... | 7.4 | 71 |
| 5.2 Innovation linkages..... | 23.2 | 110 |
| 5.2.1 University/industry research collaboration [†] | 44.8 | 59 |
| 5.2.2 State of cluster development [†] | 54.7 | 34 |
| 5.2.3 GERD financed by abroad, %..... | 0.8 | 91 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 81 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 81 ○ |
| 5.3 Knowledge absorption..... | 22.9 | 127 ○ |
| 5.3.1 Royalty & license fees payments, % total trade..... | 0.3 | 70 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 8.1 | 53 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 0.1 | 120 ○ |
| 5.3.4 FDI net inflows, % GDP..... | 1.6 | 95 |
| 6 Knowledge & technology outputs..... | 27.2 | 60 |
| 6.1 Knowledge creation..... | 26.0 | 36 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 3.0 | 31 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.5 | 38 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 2.4 | 13 ● |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 17.2 | 44 |
| 6.1.5 Citable documents H index..... | 237.0 | 36 |
| 6.2 Knowledge impact..... | 35.3 | 83 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | -0.6 | 106 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | 0.8 | 78 |
| 6.2.3 Computer software spending, % GDP..... | 0.7 | 8 ● |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 5.0 | 63 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓞ] | 28.2 | 42 |
| 6.3 Knowledge diffusion..... | 20.4 | 108 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 1.1 | 63 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 0.2 | 115 ○ |
| 6.3.4 FDI net outflows, % GDP..... | 0.4 | 70 |
| 7 Creative outputs..... | 40.6 | 37 |
| 7.1 Intangible assets..... | 57.7 | 17 ● |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 130.5 | 5 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.9 | 34 |
| 7.1.3 ICTs & business model creation [†] | 62.1 | 42 |
| 7.1.4 ICTs & organizational model creation [†] | 56.2 | 56 |
| 7.2 Creative goods & services..... | 24.1 | 52 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.5 | 35 |
| 7.2.2 National feature films/mn pop. 15–69..... | 1.6 | 63 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 5.9 | 42 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓞ] | 1.1 | 68 |
| 7.2.5 Creative goods exports, % total trade..... | 2.6 | 17 ● |
| 7.3 Online creativity..... | 23.0 | 59 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 14.7 | 36 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 2.9 | 64 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 793.9 | 84 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 68.6 | 58 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓞ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|--------------------|
| Population (millions) | 38.8 |
| GDP (US\$ billions) | 27.6 |
| GDP per capita, PPP\$ | 1,551.2 |
| Income group | Low income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 27.6 | 111 |
| Innovation Output Sub-Index | 20.1 | 113 |
| Innovation Input Sub-Index..... | 35.2 | 102 |
| Innovation Efficiency Ratio..... | 0.6 | 118 |
| Global Innovation Index 2014 (out of 143) | 31.1 | 91 |

| | | | |
|----------|--|-------------|------------|
| 1 | Institutions..... | 54.3 | 90 |
| 1.1 | Political environment..... | 34.5 | 114 |
| 1.1.1 | Political stability*..... | 43.4 | 112 |
| 1.1.2 | Government effectiveness*..... | 25.7 | 105 |
| 1.2 | Regulatory environment | 69.3 | 57 |
| 1.2.1 | Regulatory quality*..... | 41.5 | 88 |
| 1.2.2 | Rule of law*..... | 38.1 | 81 |
| 1.2.3 | Cost of redundancy dismissal, salary weeks..... | 8.7 | 24 ● |
| 1.3 | Business environment..... | 59.0 | 109 |
| 1.3.1 | Ease of starting a business*..... | 63.4 | 130 |
| 1.3.2 | Ease of resolving insolvency*..... | 42.3 | 92 |
| 1.3.3 | Ease of paying taxes*..... | 71.3 | 82 |
| 2 | Human capital & research..... | 18.3 | 109 |
| 2.1 | Education | 30.5 | 118 |
| 2.1.1 | Expenditure on education, % GDP | 3.3 | 103 |
| 2.1.2 | Gov't expenditure/pupil, secondary, % GDP/cap..... | 23.4 | 45 ● |
| 2.1.3 | School life expectancy, years [Ⓐ] | 9.8 | 117 |
| 2.1.4 | PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 | Pupil-teacher ratio, secondary..... | 21.3 | 88 |
| 2.2 | Tertiary education..... | 19.9 | 102 |
| 2.2.1 | Tertiary enrolment, % gross [Ⓐ] | 4.4 | 126 ○ |
| 2.2.2 | Graduates in science & engineering, % [Ⓐ] | 9.5 | 98 ○ |
| 2.2.3 | Tertiary inbound mobility, % [Ⓐ] | 10.7 | 15 ● |
| 2.3 | Research & development (R&D)..... | 4.5 | 84 |
| 2.3.1 | Researchers, FTE/mn pop. [Ⓐ] | 37.2 | 97 |
| 2.3.2 | Gross expenditure on R&D, % GDP [Ⓐ] | 0.6 | 57 |
| 2.3.3 | QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 | Infrastructure..... | 26.3 | 113 |
| 3.1 | Information & communication technologies (ICTs)..... | 14.7 | 135 ○ |
| 3.1.1 | ICT access*..... | 21.8 | 132 ○ |
| 3.1.2 | ICT use*..... | 8.3 | 114 |
| 3.1.3 | Government's online service*..... | 15.0 | 128 |
| 3.1.4 | E-participation*..... | 13.7 | 129 ○ |
| 3.2 | General infrastructure..... | 37.4 | 51 |
| 3.2.1 | Electricity output, kWh/cap..... | n/a | n/a |
| 3.2.2 | Logistics performance*..... | n/a | n/a |
| 3.2.3 | Gross capital formation, % GDP..... | 25.4 | 42 ● |
| 3.3 | Ecological sustainability | 26.8 | 112 |
| 3.3.1 | GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | n/a | n/a |
| 3.3.2 | Environmental performance*..... | 39.2 | 112 |
| 3.3.3 | ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.3 | 107 |
| 4 | Market sophistication | 38.9 | 116 |
| 4.1 | Credit..... | 18.3 | 117 |
| 4.1.1 | Ease of getting credit*..... | 30.0 | 113 |
| 4.1.2 | Domestic credit to private sector, % GDP..... | 15.5 | 127 |
| 4.1.3 | Microfinance gross loans, % GDP..... | 1.8 | 29 ● |

| | | | |
|-------|---|------|-------|
| 4.2 | Investment | 24.7 | 127 |
| 4.2.1 | Ease of protecting investors*..... | 47.5 | 97 |
| 4.2.2 | Market capitalization, % GDP..... | 36.4 | 52 |
| 4.2.3 | Total value of stocks traded, % GDP..... | 0.1 | 103 ○ |
| 4.2.4 | Venture capital deals/tr PPP\$ GDP..... | 0.1 | 39 |
| 4.3 | Trade & competition | 73.6 | 83 |
| 4.3.1 | Applied tariff rate, weighted mean, %..... | 6.7 | 98 |
| 4.3.2 | Intensity of local competition [†] | 70.7 | 53 ● |

| | | | |
|----------|---|-------------|-----------|
| 5 | Business sophistication | 38.0 | 49 |
| 5.1 | Knowledge workers..... | 17.8 | 126 |
| 5.1.1 | Knowledge-intensive employment, %..... | 4.1 | 111 ○ |
| 5.1.2 | Firms offering formal training, % firms..... | 34.3 | 54 |
| 5.1.3 | GERD performed by business, % of GDP [Ⓐ] | 0.2 | 50 |
| 5.1.4 | GERD financed by business, % [Ⓐ] | 13.7 | 67 |
| 5.1.5 | Females employed w/advanced degrees, % total..... | 2.7 | 81 ○ |
| 5.2 | Innovation linkages | 55.1 | 8 ● |
| 5.2.1 | University/industry research collaboration [†] | 44.7 | 60 |
| 5.2.2 | State of cluster development [†] | 42.1 | 83 |
| 5.2.3 | GERD financed by abroad, % [Ⓐ] | 57.3 | 3 ● |
| 5.2.4 | JV-strategic alliance deals/tr PPP\$ GDP..... | n/a | n/a |
| 5.2.5 | Patent families 3+ offices/bn PPP\$ GDP..... | n/a | n/a |
| 5.3 | Knowledge absorption..... | 41.3 | 36 ● |
| 5.3.1 | Royalty & license fees payments, % total trade..... | 0.2 | 82 |
| 5.3.2 | High-tech imports less re-imports, % total trade..... | 7.5 | 59 |
| 5.3.3 | Comm., computer & info. services imp., % total trade..... | 2.2 | 10 ● |
| 5.3.4 | FDI net inflows, % GDP..... | 5.3 | 31 ● |

| | | | |
|----------|---|-------------|-----------|
| 6 | Knowledge & technology outputs | 22.4 | 92 |
| 6.1 | Knowledge creation..... | 7.3 | 87 |
| 6.1.1 | Domestic resident patent app/bn PPP\$ GDP..... | 0.1 | 93 |
| 6.1.2 | PCT resident patent app/bn PPP\$ GDP..... | 0.1 | 77 |
| 6.1.3 | Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 | Scientific & technical articles/bn PPP\$ GDP..... | 11.5 | 65 |
| 6.1.5 | Citable documents H index..... | 111.0 | 66 |
| 6.2 | Knowledge impact..... | 33.9 | 90 |
| 6.2.1 | Growth rate of PPP\$ GDP/worker, %..... | 1.7 | 51 |
| 6.2.2 | New businesses/th pop. 15–64..... | 1.2 | 61 |
| 6.2.3 | Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 | ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.0 | 116 |
| 6.2.5 | High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 | Knowledge diffusion..... | 26.0 | 80 |
| 6.3.1 | Royalty & license fees receipts, % total trade..... | 0.2 | 34 ● |
| 6.3.2 | High-tech exports less re-exports, % total trade..... | 0.1 | 99 |
| 6.3.3 | Comm., computer & info. services exp., % total trade..... | 1.7 | 50 |
| 6.3.4 | FDI net outflows, % GDP..... | 0.3 | 77 |

| | | | |
|----------|--|-------------|------------|
| 7 | Creative outputs | 17.9 | 126 |
| 7.1 | Intangible assets..... | 33.6 | 120 |
| 7.1.1 | Domestic res trademark app/bn PPP\$ GDP..... | 10.0 | 95 |
| 7.1.2 | Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 | ICTs & business model creation [†] | 50.2 | 92 |
| 7.1.4 | ICTs & organizational model creation [†] | 46.3 | 96 |
| 7.2 | Creative goods & services..... | 0.8 | 133 ○ |
| 7.2.1 | Cultural & creative services exports, % total trade..... | 0.0 | 83 ○ |
| 7.2.2 | National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 | Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 | Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 | Creative goods exports, % total trade..... | 0.0 | 110 |
| 7.3 | Online creativity..... | 3.5 | 98 |
| 7.3.1 | Generic top-level domains (TLDs)/th pop. 15–69..... | 0.3 | 121 |
| 7.3.2 | Country-code TLDs/th pop. 15–69..... | 0.1 | 123 |
| 7.3.3 | Wikipedia edits/pop. 15–69..... | 46.5 | 123 |
| 7.3.4 | Video uploads on YouTube/pop. 15–69..... | 13.4 | 73 ○ |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

[Ⓐ] indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------|
| Population (millions) | 44.9 |
| GDP (US\$ billions) | 130.7 |
| GDP per capita, PPP\$ | 7,552.4 |
| Income group | Lower-middle income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|------------|
| Global Innovation Index (out of 141) | 36.5 | 64 |
| Innovation Output Sub-Index | 33.9 | 47 |
| Innovation Input Sub-Index | 39.1 | 84 |
| Innovation Efficiency Ratio | 0.9 | 15 ● |
| Global Innovation Index 2014 (out of 143) | 36.3 | 63 |
| 1 Institutions | 52.2 | 98 |
| 1.1 Political environment | 34.6 | 112 |
| 1.1.1 Political stability* | 45.4 | 110 |
| 1.1.2 Government effectiveness* | 23.8 | 109 |
| 1.2 Regulatory environment | 59.2 | 89 |
| 1.2.1 Regulatory quality* | 30.8 | 112 |
| 1.2.2 Rule of law* | 25.7 | 114 ○ |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 13.0 | 53 |
| 1.3 Business environment | 63.0 | 92 |
| 1.3.1 Ease of starting a business* | 87.4 | 64 |
| 1.3.2 Ease of resolving insolvency* | 31.2 | 121 ○ |
| 1.3.3 Ease of paying taxes* | 70.3 | 85 |
| 2 Human capital & research | 40.4 | 36 |
| 2.1 Education | 55.8 | 25 ● |
| 2.1.1 Expenditure on education, % GDP | 6.7 | 18 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 30.1 | 23 |
| 2.1.3 School life expectancy, years | 15.1 | 40 |
| 2.1.4 PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary | 9.3 | 20 ● |
| 2.2 Tertiary education | 45.0 | 31 |
| 2.2.1 Tertiary enrolment, % gross | 79.0 | 13 ● |
| 2.2.2 Graduates in science & engineering, % | 25.6 | 20 |
| 2.2.3 Tertiary inbound mobility, % | 2.3 | 63 |
| 2.3 Research & development (R&D) | 20.4 | 45 |
| 2.3.1 Researchers, FTE/mn pop. | 1163.3 | 46 |
| 2.3.2 Gross expenditure on R&D, % GDP | 0.8 | 44 |
| 2.3.3 QS university ranking, average score top 3* | 29.4 | 46 |
| 3 Infrastructure | 26.3 | 112 |
| 3.1 Information & communication technologies (ICTs) | 38.2 | 89 |
| 3.1.1 ICT access* | 61.6 | 63 |
| 3.1.2 ICT use* | 21.1 | 89 |
| 3.1.3 Government's online service* | 26.8 | 112 ○ |
| 3.1.4 E-participation* | 43.1 | 76 |
| 3.2 General infrastructure | 16.0 | 127 ○ |
| 3.2.1 Electricity output, kWh/cap | 4351.0 | 48 |
| 3.2.2 Logistics performance* | 41.6 | 59 |
| 3.2.3 Gross capital formation, % GDP | 8.2 | 140 ○ |
| 3.3 Ecological sustainability | 24.8 | 121 ○ |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 2.8 | 116 ○ |
| 3.3.2 Environmental performance* | 49.0 | 85 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 0.5 | 82 |
| 4 Market sophistication | 43.9 | 89 |
| 4.1 Credit | 33.3 | 60 |
| 4.1.1 Ease of getting credit* | 75.0 | 16 ● |
| 4.1.2 Domestic credit to private sector, % GDP | 74.0 | 42 |
| 4.1.3 Microfinance gross loans, % GDP | 0.1 | 64 |

| | | |
|--|-------------|-----------|
| 4.2 Investment | 21.4 | 136 ○ |
| 4.2.1 Ease of protecting investors* | 48.3 | 96 |
| 4.2.2 Market capitalization, % GDP | 11.7 | 86 ○ |
| 4.2.3 Total value of stocks traded, % GDP | 0.7 | 75 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.0 | 51 |
| 4.3 Trade & competition | 77.1 | 66 |
| 4.3.1 Applied tariff rate, weighted mean, % | 2.1 | 46 |
| 4.3.2 Intensity of local competition† | 61.3 | 97 |
| 5 Business sophistication | 32.4 | 78 |
| 5.1 Knowledge workers | 42.4 | 52 |
| 5.1.1 Knowledge-intensive employment, % | 33.7 | 39 |
| 5.1.2 Firms offering formal training, % firms | 22.5 | 84 |
| 5.1.3 GERD performed by business, % of GDP | 0.4 | 36 |
| 5.1.4 GERD financed by business, % | 29.0 | 51 |
| 5.1.5 Females employed w/advanced degrees, % total | 28.1 | 4 ● |
| 5.2 Innovation linkages | 24.1 | 105 |
| 5.2.1 University/industry research collaboration† | 41.7 | 72 |
| 5.2.2 State of cluster development† | 33.3 | 122 ○ |
| 5.2.3 GERD financed by abroad, % | 21.6 | 17 ● |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 80 ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 0.0 | 88 |
| 5.3 Knowledge absorption | 30.6 | 88 |
| 5.3.1 Royalty & license fees payments, % total trade | 1.2 | 22 ● |
| 5.3.2 High-tech imports less re-imports, % total trade | 6.5 | 74 |
| 5.3.3 Comm., computer & info. services imp., % total trade | 0.8 | 68 |
| 5.3.4 FDI net inflows, % GDP | 2.1 | 78 |
| 6 Knowledge & technology outputs | 36.4 | 34 |
| 6.1 Knowledge creation | 49.2 | 14 ● |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | 7.3 | 12 ● |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | 0.4 | 44 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | 25.4 | 1 ● |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 13.2 | 58 |
| 6.1.5 Citable documents H index | 159.0 | 43 |
| 6.2 Knowledge impact | 31.3 | 98 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 1.2 | 66 |
| 6.2.2 New businesses/th pop. 15–64 | 0.9 | 70 |
| 6.2.3 Computer software spending, % GDP | 0.3 | 47 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 3.3 | 77 |
| 6.2.5 High- & medium-high-tech manufactures, % | 24.9 | 46 |
| 6.3 Knowledge diffusion | 28.6 | 65 |
| 6.3.1 Royalty & license fees receipts, % total trade | 0.2 | 40 |
| 6.3.2 High-tech exports less re-exports, % total trade | 2.4 | 47 |
| 6.3.3 Comm., computer & info. services exp., % total trade | 2.2 | 36 |
| 6.3.4 FDI net outflows, % GDP | 0.2 | 80 |
| 7 Creative outputs | 31.3 | 75 |
| 7.1 Intangible assets | 43.0 | 82 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | 83.8 | 19 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | 1.2 | 26 |
| 7.1.3 ICTs & business model creation† | 45.9 | 108 ○ |
| 7.1.4 ICTs & organizational model creation† | 44.4 | 98 |
| 7.2 Creative goods & services | 13.5 | 87 |
| 7.2.1 Cultural & creative services exports, % total trade | 0.0 | 65 |
| 7.2.2 National feature films/mn pop. 15–69 | 0.4 | 99 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % | 1.5 | 48 |
| 7.2.5 Creative goods exports, % total trade | 0.6 | 55 |
| 7.3 Online creativity | 25.7 | 51 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 5.1 | 60 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 8.1 | 46 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 1472.1 | 66 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 78.6 | 37 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓜ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|----------------------------------|
| Population (millions)..... | 9.4 |
| GDP (US\$ billions)..... | 401.6 |
| GDP per capita, PPP\$..... | 30,984.6 |
| Income group..... | High income |
| Region..... | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|-----------|
| Global Innovation Index (out of 141)..... | 40.1 | 47 |
| Innovation Output Sub-Index..... | 23.3 | 99 ○ |
| Innovation Input Sub-Index..... | 56.9 | 25 |
| Innovation Efficiency Ratio..... | 0.4 | 133 ○ |
| Global Innovation Index 2014 (out of 143)..... | 43.2 | 36 |
| 1 Institutions..... | 80.3 | 26 |
| 1.1 Political environment..... | 79.9 | 23 |
| 1.1.1 Political stability*..... | 86.9 | 26 |
| 1.1.2 Government effectiveness*..... | 73.0 | 28 |
| 1.2 Regulatory environment..... | 83.3 | 24 |
| 1.2.1 Regulatory quality*..... | 68.5 | 37 |
| 1.2.2 Rule of law*..... | 64.7 | 38 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.0 | 1 ● |
| 1.3 Business environment..... | 77.6 | 33 |
| 1.3.1 Ease of starting a business*..... | 90.0 | 49 |
| 1.3.2 Ease of resolving insolvency*..... | 43.5 | 86 |
| 1.3.3 Ease of paying taxes*..... | 99.4 | 1 ● |
| 2 Human capital & research..... | 53.9 | 15 |
| 2.1 Education..... | 70.6 | 3 |
| 2.1.1 Expenditure on education, % GDP..... | n/a | n/a |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years..... | n/a | n/a |
| 2.1.4 PISA scales in reading, maths, & science..... | 468.7 | 38 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 11.5 | 39 |
| 2.2 Tertiary education..... | 68.3 | 2 ● |
| 2.2.1 Tertiary enrolment, % gross..... | n/a | n/a |
| 2.2.2 Graduates in science & engineering, %..... | 26.0 | 19 |
| 2.2.3 Tertiary inbound mobility, %..... | 44.6 | 1 ● |
| 2.3 Research & development (R&D)..... | 22.9 | 42 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓞ] | 0.5 | 63 |
| 2.3.3 QS university ranking, average score top 3*..... | 34.5 | 40 |
| 3 Infrastructure..... | 56.7 | 19 |
| 3.1 Information & communication technologies (ICTs)..... | 78.6 | 12 ● |
| 3.1.1 ICT access*..... | 76.7 | 31 |
| 3.1.2 ICT use*..... | 65.1 | 21 |
| 3.1.3 Government's online service*..... | 88.2 | 12 ● |
| 3.1.4 E-participation*..... | 84.3 | 13 ● |
| 3.2 General infrastructure..... | 47.1 | 23 |
| 3.2.1 Electricity output, kWh/cap..... | 10958.4 | 10 ● |
| 3.2.2 Logistics performance*..... | 70.3 | 26 |
| 3.2.3 Gross capital formation, % GDP..... | 22.3 | 63 |
| 3.3 Ecological sustainability..... | 44.5 | 48 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.9 | 68 |
| 3.3.2 Environmental performance*..... | 72.9 | 25 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 2.0 | 47 |
| 4 Market sophistication..... | 48.1 | 65 |
| 4.1 Credit..... | 31.7 | 65 |
| 4.1.1 Ease of getting credit*..... | 45.0 | 80 |
| 4.1.2 Domestic credit to private sector, % GDP [Ⓞ] | 59.1 | 56 |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|-------------|--------------|
| 4.2 Investment..... | 27.9 | 105 ○ |
| 4.2.1 Ease of protecting investors*..... | 60.8 | 41 |
| 4.2.2 Market capitalization, % GDP..... | 18.3 | 73 ○ |
| 4.2.3 Total value of stocks traded, % GDP..... | 4.7 | 51 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 48 ○ |
| 4.3 Trade & competition..... | 84.8 | 29 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 3.8 | 62 |
| 4.3.2 Intensity of local competition [†] | 82.6 | 7 ● |
| 5 Business sophistication..... | 45.2 | 29 |
| 5.1 Knowledge workers..... | 41.7 | 57 |
| 5.1.1 Knowledge-intensive employment, % [Ⓞ] | 36.1 | 31 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP [Ⓞ] | 0.1 | 54 |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 62.6 | 2 ● |
| 5.2.1 University/industry research collaboration [†] | 62.1 | 21 |
| 5.2.2 State of cluster development [†] | 74.8 | 3 ● |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.1 | 1 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 93 ○ |
| 5.3 Knowledge absorption..... | 31.2 | 83 |
| 5.3.1 Royalty & license fees payments, % total trade..... | n/a | n/a |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 5.5 | 91 ○ |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP [Ⓞ] | 2.5 | 72 |
| 6 Knowledge & technology outputs..... | 12.0 | 134 ○ |
| 6.1 Knowledge creation..... | 3.8 | 114 ○ |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 0.0 | 109 ○ |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.2 | 54 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 2.7 | 119 ○ |
| 6.1.5 Citable documents H index..... | 100.0 | 71 |
| 6.2 Knowledge impact..... | 31.7 | 97 ○ |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 1.2 | 69 |
| 6.2.2 New businesses/th pop. 15–64..... | 1.4 | 57 |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 59 ○ |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 6.8 | 52 |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | 0.4 | 137 ○ |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 0.1 | 114 ○ |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | n/a | n/a |
| 7 Creative outputs..... | 34.6 | 61 |
| 7.1 Intangible assets..... | 52.6 | 37 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 9.3 | 96 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 79.1 | 2 ● |
| 7.1.4 ICTs & organizational model creation [†] | 74.8 | 5 ● |
| 7.2 Creative goods & services..... | 6.1 | 115 ○ |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 14.1 | 30 |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade [Ⓞ] | 0.1 | 97 ○ |
| 7.3 Online creativity..... | 27.1 | 48 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 12.6 | 40 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 6.0 | 50 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 1889.2 | 55 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 75.9 | 44 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓞ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

United Kingdom

Key indicators

| | |
|-----------------------------|-------------|
| Population (millions) | 63.5 |
| GDP (US\$ billions) | 2,945.1 |
| GDP per capita, PPP\$ | 38,710.5 |
| Income group | High income |
| Region | Europe |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|------------|
| Global Innovation Index (out of 141) | 62.4 | 2 ● |
| Innovation Output Sub-Index | 57.7 | 5 ● |
| Innovation Input Sub-Index | 67.1 | 6 ● |
| Innovation Efficiency Ratio | 0.9 | 18 |
| Global Innovation Index 2014 (out of 143) | 62.4 | 2 |
| 1 Institutions | 87.3 | 14 |
| 1.1 Political environment | 78.6 | 24 |
| 1.1.1 Political stability* | 76.1 | 46 ○ |
| 1.1.2 Government effectiveness* | 81.2 | 19 |
| 1.2 Regulatory environment | 95.4 | 9 |
| 1.2.1 Regulatory quality* | 94.8 | 9 |
| 1.2.2 Rule of law* | 92.2 | 14 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 9.3 | 29 |
| 1.3 Business environment | 87.9 | 10 |
| 1.3.1 Ease of starting a business* | 91.2 | 39 |
| 1.3.2 Ease of resolving insolvency* | 82.0 | 12 |
| 1.3.3 Ease of paying taxes* | 90.5 | 15 |
| 2 Human capital & research | 57.5 | 7 |
| 2.1 Education | 56.2 | 23 |
| 2.1.1 Expenditure on education, % GDP | 6.0 | 30 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 31.5 | 19 |
| 2.1.3 School life expectancy, years | 16.2 | 22 |
| 2.1.4 PISA scales in reading, maths, & science | 502.5 | 17 |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓜ] | 14.3 | 56 ○ |
| 2.2 Tertiary education | 53.0 | 12 |
| 2.2.1 Tertiary enrolment, % gross | 61.9 | 36 |
| 2.2.2 Graduates in science & engineering, % | 21.9 | 39 ○ |
| 2.2.3 Tertiary inbound mobility, % | 17.1 | 8 |
| 2.3 Research & development (R&D) | 63.2 | 11 |
| 2.3.1 Researchers, FTE/mn pop. | 4107.7 | 19 |
| 2.3.2 Gross expenditure on R&D, % GDP | 1.7 | 21 |
| 2.3.3 QS university ranking, average score top 3* | 99.3 | 1 ● |
| 3 Infrastructure | 63.0 | 6 ● |
| 3.1 Information & communication technologies (ICTs) | 89.1 | 3 ● |
| 3.1.1 ICT access* | 91.8 | 6 |
| 3.1.2 ICT use* | 78.8 | 6 |
| 3.1.3 Government's online service* | 89.8 | 11 |
| 3.1.4 E-participation* | 96.1 | 4 ● |
| 3.2 General infrastructure | 38.2 | 48 ○ |
| 3.2.1 Electricity output, kWh/cap | 5519.5 | 35 |
| 3.2.2 Logistics performance* | 94.5 | 4 ● |
| 3.2.3 Gross capital formation, % GDP | 15.0 | 122 ○ |
| 3.3 Ecological sustainability | 61.8 | 7 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 11.1 | 19 |
| 3.3.2 Environmental performance* | 77.4 | 12 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 6.9 | 14 |
| 4 Market sophistication | 74.3 | 3 ● |
| 4.1 Credit | 63.0 | 8 |
| 4.1.1 Ease of getting credit* | 75.0 | 16 |
| 4.1.2 Domestic credit to private sector, % GDP | 155.5 | 13 |
| 4.1.3 Microfinance gross loans, % GDP | n/a | n/a |

| | | |
|---|-------------|------------|
| 4.2 Investment | 69.5 | 6 ● |
| 4.2.1 Ease of protecting investors* | 78.3 | 4 ● |
| 4.2.2 Market capitalization, % GDP | 115.5 | 9 |
| 4.2.3 Total value of stocks traded, % GDP | 95.2 | 5 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.3 | 12 |
| 4.3 Trade & competition | 90.4 | 5 ● |
| 4.3.1 Applied tariff rate, weighted mean, % | 1.0 | 9 |
| 4.3.2 Intensity of local competition [†] | 84.2 | 4 ● |
| 5 Business sophistication | 53.6 | 13 |
| 5.1 Knowledge workers | 63.8 | 13 |
| 5.1.1 Knowledge-intensive employment, % | 47.7 | 6 |
| 5.1.2 Firms offering formal training, % firms | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP | 1.1 | 20 |
| 5.1.4 GERD financed by business, % | 46.5 | 24 |
| 5.1.5 Females employed w/advanced degrees, % total | 21.7 | 17 |
| 5.2 Innovation linkages | 53.4 | 9 |
| 5.2.1 University/industry research collaboration [†] | 77.8 | 4 ● |
| 5.2.2 State of cluster development [†] | 70.6 | 9 |
| 5.2.3 GERD financed by abroad, % | 20.6 | 20 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 18 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 0.9 | 17 |
| 5.3 Knowledge absorption | 43.6 | 30 |
| 5.3.1 Royalty & license fees payments, % total trade | 1.1 | 26 |
| 5.3.2 High-tech imports less re-imports, % total trade | 11.2 | 26 |
| 5.3.3 Comm., computer & info. services imp., % total trade | 1.7 | 30 |
| 5.3.4 FDI net inflows, % GDP | 1.9 | 89 ○ |
| 6 Knowledge & technology outputs | 54.9 | 8 |
| 6.1 Knowledge creation | 58.6 | 7 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | 6.1 | 13 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | 2.1 | 22 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 41.5 | 14 |
| 6.1.5 Citable documents H index | 934.0 | 1 ● |
| 6.2 Knowledge impact | 58.7 | 2 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 0.8 | 78 ○ |
| 6.2.2 New businesses/th pop. 15–64 | 11.0 | 10 |
| 6.2.3 Computer software spending, % GDP | 0.7 | 5 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 18.2 | 21 |
| 6.2.5 High- & medium-high-tech manufactures, % | 42.9 | 17 |
| 6.3 Knowledge diffusion | 47.5 | 23 |
| 6.3.1 Royalty & license fees receipts, % total trade | 1.7 | 11 |
| 6.3.2 High-tech exports less re-exports, % total trade | 9.4 | 23 |
| 6.3.3 Comm., computer & info. services exp., % total trade | 3.5 | 14 |
| 6.3.4 FDI net outflows, % GDP | 0.3 | 78 ○ |
| 7 Creative outputs | 60.5 | 5 ● |
| 7.1 Intangible assets | 54.5 | 31 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | 50.2 | 50 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | 1.2 | 27 ○ |
| 7.1.3 ICTs & business model creation [†] | 75.7 | 8 |
| 7.1.4 ICTs & organizational model creation [†] | 74.3 | 8 |
| 7.2 Creative goods & services | 48.1 | 4 ● |
| 7.2.1 Cultural & creative services exports, % total trade | 1.6 | 3 ● |
| 7.2.2 National feature films/mn pop. 15–69 | 5.4 | 37 ○ |
| 7.2.3 Global ent. & media output/th pop. 15–69 | 58.9 | 8 |
| 7.2.4 Printing & publishing output manufactures, % | 2.2 | 25 |
| 7.2.5 Creative goods exports, % total trade | 2.8 | 14 |
| 7.3 Online creativity | 84.7 | 3 ● |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 72.9 | 12 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 100.0 | 1 ● |
| 7.3.3 Wikipedia edits/pop. 15–69 | 9652.4 | 4 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 94.7 | 4 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓜ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|------------------|
| Population (millions)..... | 322.6 |
| GDP (US\$ billions)..... | 17,418.9 |
| GDP per capita, PPP\$..... | 54,979.9 |
| Income group..... | High income |
| Region..... | Northern America |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|----------|
| Global Innovation Index (out of 141)..... | 60.1 | 5 |
| Innovation Output Sub-Index..... | 52.9 | 9 |
| Innovation Input Sub-Index..... | 67.3 | 5 |
| Innovation Efficiency Ratio..... | 0.8 | 33 |
| Global Innovation Index 2014 (out of 143)..... | 60.1 | 6 |

1 Institutions.....86.8 16

| | | |
|---|------|-----|
| 1.1 Political environment..... | 80.6 | 22 |
| 1.1.1 Political stability*..... | 79.2 | 40 |
| 1.1.2 Government effectiveness*..... | 82.0 | 17 |
| 1.2 Regulatory environment..... | 92.4 | 14 |
| 1.2.1 Regulatory quality*..... | 81.3 | 21 |
| 1.2.2 Rule of law*..... | 88.5 | 18 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 8.0 | 1 ● |
| 1.3 Business environment..... | 87.4 | 11 |
| 1.3.1 Ease of starting a business*..... | 91.2 | 40 |
| 1.3.2 Ease of resolving insolvency*..... | 90.1 | 4 ● |
| 1.3.3 Ease of paying taxes*..... | 80.8 | 42 |

2 Human capital & research.....54.0 14

| | | |
|--|--------|------|
| 2.1 Education..... | 52.1 | 42 |
| 2.1.1 Expenditure on education, % GDP..... | 5.2 | 47 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | 23.9 | 44 |
| 2.1.3 School life expectancy, years..... | 16.4 | 16 |
| 2.1.4 PISA scales in reading, maths, & science..... | 492.1 | 25 |
| 2.1.5 Pupil-teacher ratio, secondary..... | 14.7 | 61 |
| 2.2 Tertiary education..... | 39.0 | 49 |
| 2.2.1 Tertiary enrolment, % gross..... | 94.3 | 3 ● |
| 2.2.2 Graduates in science & engineering, %..... | 16.0 | 75 ○ |
| 2.2.3 Tertiary inbound mobility, %..... | 3.5 | 49 |
| 2.3 Research & development (R&D)..... | 71.1 | 8 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓜ] | 3978.7 | 22 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓜ] | 2.8 | 10 |
| 2.3.3 QS university ranking, average score top 3*..... | 99.2 | 2 ● |

3 Infrastructure.....58.8 14

| | | |
|--|---------|------|
| 3.1 Information & communication technologies (ICTs)..... | 84.9 | 8 |
| 3.1.1 ICT access*..... | 77.8 | 28 |
| 3.1.2 ICT use*..... | 75.0 | 10 |
| 3.1.3 Government's online service*..... | 94.5 | 4 |
| 3.1.4 E-participation*..... | 92.2 | 9 |
| 3.2 General infrastructure..... | 52.4 | 15 |
| 3.2.1 Electricity output, kWh/cap..... | 13492.7 | 8 |
| 3.2.2 Logistics performance*..... | 89.6 | 9 |
| 3.2.3 Gross capital formation, % GDP..... | 19.8 | 89 ○ |
| 3.3 Ecological sustainability..... | 39.2 | 62 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.6 | 76 ○ |
| 3.3.2 Environmental performance*..... | 67.5 | 33 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.4 | 96 ○ |

4 Market sophistication.....81.5 1 ●

| | | |
|---|-------|-----|
| 4.1 Credit..... | 79.2 | 1 ● |
| 4.1.1 Ease of getting credit*..... | 95.0 | 2 ● |
| 4.1.2 Domestic credit to private sector, % GDP..... | 192.3 | 4 ● |
| 4.1.3 Microfinance gross loans, % GDP..... | n/a | n/a |

| | | |
|---|-------|-----|
| 4.2 Investment..... | 76.7 | 2 ● |
| 4.2.1 Ease of protecting investors*..... | 65.8 | 25 |
| 4.2.2 Market capitalization, % GDP..... | 115.5 | 8 |
| 4.2.3 Total value of stocks traded, % GDP..... | 132.2 | 1 ● |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.7 | 6 |
| 4.3 Trade & competition..... | 88.5 | 11 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 1.5 | 41 |
| 4.3.2 Intensity of local competition [†] | 82.3 | 8 |

5 Business sophistication.....55.4 9

| | | |
|---|------|-------|
| 5.1 Knowledge workers..... | 65.5 | 11 |
| 5.1.1 Knowledge-intensive employment, %..... | 38.0 | 26 |
| 5.1.2 Firms offering formal training, % firms..... | n/a | n/a |
| 5.1.3 GERD performed by business, % of GDP [Ⓜ] | 1.9 | 11 |
| 5.1.4 GERD financed by business, % [Ⓜ] | 59.1 | 14 |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages..... | 51.0 | 12 |
| 5.2.1 University/industry research collaboration [†] | 80.8 | 2 ● |
| 5.2.2 State of cluster development [†] | 73.6 | 4 |
| 5.2.3 GERD financed by abroad, % [Ⓜ] | 3.8 | 72 ○ |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 16 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 1.5 | 11 |
| 5.3 Knowledge absorption..... | 49.6 | 15 |
| 5.3.1 Royalty & license fees payments, % total trade..... | 1.6 | 14 |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 16.1 | 10 |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | 1.4 | 41 |
| 5.3.4 FDI net inflows, % GDP..... | 1.4 | 101 ○ |

6 Knowledge & technology outputs.....58.0 4 ●

| | | |
|---|--------|------|
| 6.1 Knowledge creation..... | 68.5 | 4 ● |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 17.2 | 1 ● |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 3.5 | 13 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 20.6 | 39 |
| 6.1.5 Citable documents H index..... | 1518.0 | 1 ● |
| 6.2 Knowledge impact..... | 56.0 | 8 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 0.8 | 79 ○ |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | 1.0 | 1 ● |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 2.1 | 90 ○ |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓜ] | 43.3 | 14 |
| 6.3 Knowledge diffusion..... | 49.5 | 18 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | 5.1 | 3 ● |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 6.8 | 26 |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | 1.3 | 67 |
| 6.3.4 FDI net outflows, % GDP..... | 2.4 | 27 |

7 Creative outputs.....47.8 23

| | | |
|---|--------|------|
| 7.1 Intangible assets..... | 45.6 | 66 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 20.3 | 82 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.4 | 46 ○ |
| 7.1.3 ICTs & business model creation [†] | 71.1 | 18 |
| 7.1.4 ICTs & organizational model creation [†] | 74.0 | 9 |
| 7.2 Creative goods & services..... | 39.7 | 18 |
| 7.2.1 Cultural & creative services exports, % total trade..... | 1.2 | 10 |
| 7.2.2 National feature films/mn pop. 15–69..... | 3.2 | 48 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 67.7 | 4 |
| 7.2.4 Printing & publishing output manufactures, % [Ⓜ] | 1.9 | 30 |
| 7.2.5 Creative goods exports, % total trade..... | 1.7 | 29 |
| 7.3 Online creativity..... | 60.3 | 17 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 100.0 | 1 ● |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 3.3 | 63 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 5148.4 | 25 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 100.0 | 1 ● |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓜ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Uruguay

Key indicators

| | |
|-----------------------------|---------------------------------|
| Population (millions) | 3.4 |
| GDP (US\$ billions) | 55.1 |
| GDP per capita, PPP\$ | 17,390.7 |
| Income group | High income |
| Region | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|--------------|
| Global Innovation Index (out of 141) | 35.8 | 68 |
| Innovation Output Sub-Index | 28.4 | 66 |
| Innovation Input Sub-Index | 43.1 | 63 |
| Innovation Efficiency Ratio | 0.7 | 91 |
| Global Innovation Index 2014 (out of 143) | 34.8 | 72 |
| 1 Institutions | 68.2 | 50 |
| 1.1 Political environment | 68.3 | 43 |
| 1.1.1 Political stability* | 84.2 | 32 ● |
| 1.1.2 Government effectiveness* | 52.3 | 49 |
| 1.2 Regulatory environment | 68.0 | 63 |
| 1.2.1 Regulatory quality* | 61.7 | 48 |
| 1.2.2 Rule of law* | 61.0 | 42 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 20.8 | 96 |
| 1.3 Business environment | 68.5 | 74 |
| 1.3.1 Ease of starting a business* | 89.7 | 51 |
| 1.3.2 Ease of resolving insolvency* | 53.5 | 55 |
| 1.3.3 Ease of paying taxes* | 62.3 | 107 |
| 2 Human capital & research | 29.3 | 67 |
| 2.1 Education | 42.1 | 80 |
| 2.1.1 Expenditure on education, % GDP | 4.4 | 74 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓔ] | 10.7 | 96 ○ |
| 2.1.3 School life expectancy, years [Ⓔ] | 15.5 | 32 ● |
| 2.1.4 PISA scales in reading, maths, & science | 412.2 | 52 ○ |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓔ] | 11.3 | 35 |
| 2.2 Tertiary education | 37.3 | 53 |
| 2.2.1 Tertiary enrolment, % gross [Ⓔ] | 63.2 | 32 ● |
| 2.2.2 Graduates in science & engineering, % [Ⓔ] | 15.6 | 81 ○ |
| 2.2.3 Tertiary inbound mobility, % | n/a | n/a |
| 2.3 Research & development (R&D) | 8.6 | 73 |
| 2.3.1 Researchers, FTE/mn pop. | 529.2 | 59 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.2 | 82 |
| 2.3.3 QS university ranking, average score top 3* | 14.0 | 60 |
| 3 Infrastructure | 49.1 | 38 ● |
| 3.1 Information & communication technologies (ICTs) | 74.8 | 20 ● |
| 3.1.1 ICT access* | 70.5 | 43 |
| 3.1.2 ICT use* | 45.6 | 47 |
| 3.1.3 Government's online service* | 85.0 | 14 ● |
| 3.1.4 E-participation* | 98.0 | 3 ● |
| 3.2 General infrastructure | 26.8 | 89 |
| 3.2.1 Electricity output, kWh/cap | 3117.6 | 60 |
| 3.2.2 Logistics performance* | 26.4 | 86 |
| 3.2.3 Gross capital formation, % GDP | 23.1 | 56 |
| 3.3 Ecological sustainability | 45.8 | 42 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 11.8 | 17 ● |
| 3.3.2 Environmental performance* | 53.6 | 63 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 2.0 | 46 |
| 4 Market sophistication | 38.9 | 117 ○ |
| 4.1 Credit | 22.6 | 103 |
| 4.1.1 Ease of getting credit* | 60.0 | 48 |
| 4.1.2 Domestic credit to private sector, % GDP | 26.8 | 104 |
| 4.1.3 Microfinance gross loans, % GDP [Ⓔ] | 0.0 | 78 ○ |

| | | |
|---|-------------|-----------|
| 4.2 Investment | 20.7 | 137 ○ |
| 4.2.1 Ease of protecting investors* | 47.5 | 97 |
| 4.2.2 Market capitalization, % GDP | 0.4 | 108 ○ |
| 4.2.3 Total value of stocks traded, % GDP | 0.0 | 108 ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.1 | 32 |
| 4.3 Trade & competition | 73.3 | 85 |
| 4.3.1 Applied tariff rate, weighted mean, % | 4.1 | 69 |
| 4.3.2 Intensity of local competition [†] | 61.0 | 99 |
| 5 Business sophistication | 29.7 | 96 |
| 5.1 Knowledge workers | 36.7 | 75 |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 23.1 | 65 |
| 5.1.2 Firms offering formal training, % firms [Ⓔ] | 48.6 | 30 ● |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 0.0 | 73 ○ |
| 5.1.4 GERD financed by business, % [Ⓔ] | 15.0 | 66 |
| 5.1.5 Females employed w/advanced degrees, % total | 13.6 | 46 |
| 5.2 Innovation linkages | 24.7 | 103 |
| 5.2.1 University/industry research collaboration [†] | 43.2 | 68 |
| 5.2.2 State of cluster development [†] | 41.1 | 90 |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 7.6 | 52 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 0.0 | 82 |
| 5.3 Knowledge absorption | 27.8 | 103 |
| 5.3.1 Royalty & license fees payments, % total trade | 0.2 | 81 |
| 5.3.2 High-tech imports less re-imports, % total trade | 8.9 | 50 |
| 5.3.3 Comm., computer & info. services imp., % total trade | 0.4 | 107 ○ |
| 5.3.4 FDI net inflows, % GDP | 5.1 | 33 ● |
| 6 Knowledge & technology outputs | 22.3 | 94 |
| 6.1 Knowledge creation | 10.2 | 68 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP [Ⓔ] | 0.3 | 81 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP [Ⓔ] | 0.6 | 36 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 12.6 | 61 |
| 6.1.5 Citable documents H index | 114.0 | 63 |
| 6.2 Knowledge impact | 36.3 | 77 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 2.8 | 34 |
| 6.2.2 New businesses/th pop. 15–64 | 3.0 | 35 |
| 6.2.3 Computer software spending, % GDP | 0.3 | 61 ○ |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 12.5 | 32 ● |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓔ] | 10.9 | 75 |
| 6.3 Knowledge diffusion | 20.3 | 110 |
| 6.3.1 Royalty & license fees receipts, % total trade | 0.0 | 100 ○ |
| 6.3.2 High-tech exports less re-exports, % total trade | 1.4 | 57 |
| 6.3.3 Comm., computer & info. services exp., % total trade | 1.5 | 59 |
| 6.3.4 FDI net outflows, % GDP | 0.0 | 97 |
| 7 Creative outputs | 34.6 | 59 |
| 7.1 Intangible assets | 52.4 | 38 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | 66.7 | 29 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 60.8 | 46 |
| 7.1.4 ICTs & organizational model creation [†] | 59.7 | 43 |
| 7.2 Creative goods & services | 12.1 | 92 |
| 7.2.1 Cultural & creative services exports, % total trade | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 | 5.2 | 39 |
| 7.2.3 Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓔ] | 1.2 | 65 |
| 7.2.5 Creative goods exports, % total trade | 0.1 | 94 |
| 7.3 Online creativity | 21.6 | 63 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 7.5 | 51 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 12.9 | 39 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 6005.2 | 18 ● |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------------|
| Population (millions) | 29.3 |
| GDP (US\$ billions) | 62.6 |
| GDP per capita, PPP\$ | 4,037.9 |
| Income group..... | Lower-middle income |
| Region..... | Central and Southern Asia |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 25.9 | 122 |
| Innovation Output Sub-Index | 17.9 | 127 |
| Innovation Input Sub-Index..... | 33.9 | 112 |
| Innovation Efficiency Ratio..... | 0.5 | 123 |
| Global Innovation Index 2014 (out of 143) | 25.2 | 128 |

| | | |
|--|-------------|------------|
| 1 Institutions..... | 49.0 | 106 |
| 1.1 Political environment..... | 33.3 | 115 |
| 1.1.1 Political stability*..... | 50.6 | 100 |
| 1.1.2 Government effectiveness*..... | 16.1 | 126 |
| 1.2 Regulatory environment | 45.7 | 121 |
| 1.2.1 Regulatory quality*..... | 4.4 | 139 ○ |
| 1.2.2 Rule of law*..... | 15.6 | 133 ○ |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 17.4 | 81 |
| 1.3 Business environment..... | 67.9 | 76 |
| 1.3.1 Ease of starting a business*..... | 89.0 | 55 ● |
| 1.3.2 Ease of resolving insolvency*..... | 46.5 | 72 ● |
| 1.3.3 Ease of paying taxes*..... | 68.3 | 92 |
| 2 Human capital & research..... | 27.0 | 76 |
| 2.1 Education | 55.2 | 29 |
| 2.1.1 Expenditure on education, % GDP | n/a | n/a |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years [Ⓓ] | 11.5 | 97 |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓓ] | 13.3 | 47 ● |
| 2.2 Tertiary education..... | 22.6 | 95 |
| 2.2.1 Tertiary enrolment, % gross [Ⓓ] | 8.9 | 117 |
| 2.2.2 Graduates in science & engineering, % [Ⓓ] | 21.1 | 47 ● |
| 2.2.3 Tertiary inbound mobility, % [Ⓓ] | 0.1 | 107 ○ |
| 2.3 Research & development (R&D)..... | 3.2 | 92 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓓ] | 533.9 | 58 |
| 2.3.2 Gross expenditure on R&D, % GDP..... | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 29.0 | 101 |
| 3.1 Information & communication technologies (ICTs)..... | 35.6 | 93 |
| 3.1.1 ICT access*..... | 29.5 | 119 |
| 3.1.2 ICT use*..... | 20.9 | 90 |
| 3.1.3 Government's online service*..... | 44.9 | 72 |
| 3.1.4 E-participation*..... | 47.1 | 70 |
| 3.2 General infrastructure..... | 29.8 | 73 |
| 3.2.1 Electricity output, kWh/cap..... | 1762.9 | 79 |
| 3.2.2 Logistics performance*..... | 11.9 | 116 |
| 3.2.3 Gross capital formation, % GDP..... | 30.8 | 19 ● |
| 3.3 Ecological sustainability | 21.5 | 132 ○ |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 2.6 | 117 ○ |
| 3.3.2 Environmental performance*..... | 43.2 | 101 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.1 | 129 ○ |
| 4 Market sophistication | 44.4 | 85 |
| 4.1 Credit..... | 25.2 | 87 |
| 4.1.1 Ease of getting credit*..... | 40.0 | 93 |
| 4.1.2 Domestic credit to private sector, % GDP..... | n/a | n/a |
| 4.1.3 Microfinance gross loans, % GDP [Ⓓ] | 0.9 | 39 ● |

| | | |
|--|------|-------|
| 4.2 Investment | 26.0 | 115 |
| 4.2.1 Ease of protecting investors*..... | 50.8 | 88 |
| 4.2.2 Market capitalization, % GDP [Ⓓ] | 4.2 | 103 ○ |
| 4.2.3 Total value of stocks traded, % GDP [Ⓓ] | 0.2 | 92 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a |
| 4.3 Trade & competition | 82.1 | 42 |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 5.1 | 83 |
| 4.3.2 Intensity of local competition [†] | n/a | n/a |

| | | |
|---|-------------|------------|
| 5 Business sophistication | 20.0 | 138 |
| 5.1 Knowledge workers..... | 9.9 | 135 ○ |
| 5.1.1 Knowledge-intensive employment, %..... | n/a | n/a |
| 5.1.2 Firms offering formal training, % firms..... | 10.9 | 105 ○ |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a |
| 5.1.4 GERD financed by business, %..... | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total..... | n/a | n/a |
| 5.2 Innovation linkages | 5.3 | 138 ○ |
| 5.2.1 University/industry research collaboration [†] | n/a | n/a |
| 5.2.2 State of cluster development [†] | n/a | n/a |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 60 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP [Ⓓ] | 0.0 | 89 |
| 5.3 Knowledge absorption..... | 44.9 | 27 |
| 5.3.1 Royalty & license fees payments, % total trade..... | n/a | n/a |
| 5.3.2 High-tech imports less re-imports, % total trade..... | n/a | n/a |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP..... | 1.9 | 90 |

| | | |
|---|-------------|-----------|
| 6 Knowledge & technology outputs | 27.2 | 61 |
| 6.1 Knowledge creation..... | 9.4 | 75 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP..... | 1.9 | 48 ● |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP..... | 0.0 | 83 |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP..... | 1.1 | 24 ● |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 1.9 | 129 |
| 6.1.5 Citable documents H index..... | 58.0 | 109 |
| 6.2 Knowledge impact..... | 45.0 | 38 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 5.3 | 6 ● |
| 6.2.2 New businesses/th pop. 15–64..... | 0.6 | 83 |
| 6.2.3 Computer software spending, % GDP..... | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 0.4 | 130 ○ |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a |
| 6.3 Knowledge diffusion..... | n/a | n/a |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | n/a | n/a |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | n/a | n/a |

| | | |
|--|------------|------------|
| 7 Creative outputs | 8.5 | 138 |
| 7.1 Intangible assets..... | 11.0 | 136 ○ |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP..... | 31.1 | 69 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.0 | 67 ○ |
| 7.1.3 ICTs & business model creation [†] | n/a | n/a |
| 7.1.4 ICTs & organizational model creation [†] | n/a | n/a |
| 7.2 Creative goods & services..... | 12.0 | 93 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | 3.1 | 49 ● |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade..... | n/a | n/a |
| 7.3 Online creativity..... | 0.2 | 126 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 0.0 | 141 ○ |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 0.4 | 105 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 50.0 | 120 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓓ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Venezuela, Bolivarian Republic of

Key indicators

| | |
|----------------------------|---------------------------------|
| Population (millions)..... | 30.9 |
| GDP (US\$ billions)..... | 205.8 |
| GDP per capita, PPP\$..... | 13,530.5 |
| Income group..... | Upper-middle income |
| Region..... | Latin America and the Caribbean |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 22.8 | 132 |
| Innovation Output Sub-Index..... | 18.4 | 121 |
| Innovation Input Sub-Index..... | 27.1 | 133 |
| Innovation Efficiency Ratio..... | 0.7 | 84 |
| Global Innovation Index 2014 (out of 143)..... | 25.7 | 122 |

| | | | |
|--|-------------|------------|---|
| 1 Institutions..... | 17.0 | 141 | ○ |
| 1.1 Political environment..... | 24.1 | 131 | |
| 1.1.1 Political stability*..... | 37.5 | 117 | |
| 1.1.2 Government effectiveness*..... | 10.7 | 134 | |
| 1.2 Regulatory environment..... | 1.0 | 141 | ○ |
| 1.2.1 Regulatory quality*..... | 4.1 | 140 | ○ |
| 1.2.2 Rule of law*..... | 0.0 | 141 | ○ |
| 1.2.3 Cost of redundancy dismissal, salary weeks [Ⓓ] | 82.3 | 138 | ○ |
| 1.3 Business environment..... | 25.9 | 141 | ○ |
| 1.3.1 Ease of starting a business*..... | 45.2 | 139 | ○ |
| 1.3.2 Ease of resolving insolvency*..... | 19.2 | 137 | |
| 1.3.3 Ease of paying taxes*..... | 13.4 | 140 | ○ |
| 2 Human capital & research..... | 29.7 | 65 | |
| 2.1 Education..... | 40.5 | 84 | |
| 2.1.1 Expenditure on education, % GDP [Ⓓ] | 6.9 | 13 | ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap [Ⓓ] | 16.6 | 76 | |
| 2.1.3 School life expectancy, years [Ⓓ] | 14.2 | 53 | ● |
| 2.1.4 PISA scales in reading, maths, & science [Ⓓ] | 413.4 | 50 | |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a | |
| 2.2 Tertiary education..... | 33.4 | 64 | |
| 2.2.1 Tertiary enrolment, % gross [Ⓓ] | 77.9 | 14 | ● |
| 2.2.2 Graduates in science & engineering, %..... | n/a | n/a | |
| 2.2.3 Tertiary inbound mobility, % [Ⓓ] | 0.1 | 113 | |
| 2.3 Research & development (R&D)..... | 15.0 | 56 | ● |
| 2.3.1 Researchers, FTE/mn pop. [Ⓓ] | 290.0 | 66 | |
| 2.3.2 Gross expenditure on R&D, % GDP..... | n/a | n/a | |
| 2.3.3 QS university ranking, average score top 3*..... | 26.6 | 48 | ● |
| 3 Infrastructure..... | 30.7 | 97 | |
| 3.1 Information & communication technologies (ICTs)..... | 47.3 | 70 | |
| 3.1.1 ICT access*..... | 53.6 | 75 | |
| 3.1.2 ICT use*..... | 23.6 | 86 | |
| 3.1.3 Government's online service*..... | 55.1 | 55 | ● |
| 3.1.4 E-participation*..... | 56.9 | 51 | ● |
| 3.2 General infrastructure..... | 26.4 | 93 | |
| 3.2.1 Electricity output, kWh/cap..... | 4222.8 | 51 | |
| 3.2.2 Logistics performance*..... | 33.0 | 73 | |
| 3.2.3 Gross capital formation, % GDP..... | 19.9 | 87 | |
| 3.3 Ecological sustainability..... | 18.4 | 137 | |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.2 | 88 | |
| 3.3.2 Environmental performance*..... | n/a | n/a | |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 0.2 | 121 | |
| 4 Market sophistication..... | 27.3 | 141 | ○ |
| 4.1 Credit..... | 15.8 | 122 | |
| 4.1.1 Ease of getting credit*..... | 40.0 | 93 | |
| 4.1.2 Domestic credit to private sector, % GDP..... | 25.3 | 108 | |
| 4.1.3 Microfinance gross loans, % GDP [Ⓓ] | 0.0 | 73 | |

| | | | |
|---|------|-----|---|
| 4.2 Investment..... | 15.6 | 140 | ○ |
| 4.2.1 Ease of protecting investors*..... | 29.2 | 139 | ○ |
| 4.2.2 Market capitalization, % GDP..... | 6.6 | 96 | |
| 4.2.3 Total value of stocks traded, % GDP..... | 0.0 | 107 | ○ |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | n/a | n/a | |
| 4.3 Trade & competition..... | 50.4 | 136 | |
| 4.3.1 Applied tariff rate, weighted mean, %..... | 8.6 | 114 | |
| 4.3.2 Intensity of local competition [†] | 31.2 | 132 | ○ |

| | | | |
|---|-------------|-----------|---|
| 5 Business sophistication..... | 31.1 | 88 | |
| 5.1 Knowledge workers..... | 50.2 | 35 | ● |
| 5.1.1 Knowledge-intensive employment, %..... | 19.2 | 75 | |
| 5.1.2 Firms offering formal training, % firms [Ⓓ] | 56.0 | 16 | ● |
| 5.1.3 GERD performed by business, % of GDP..... | n/a | n/a | |
| 5.1.4 GERD financed by business, %..... | n/a | n/a | |
| 5.1.5 Females employed w/advanced degrees, % total [Ⓓ] | 16.7 | 32 | ● |
| 5.2 Innovation linkages..... | 16.7 | 134 | |
| 5.2.1 University/industry research collaboration [†] | 35.4 | 104 | |
| 5.2.2 State of cluster development [†] | 23.3 | 132 | ○ |
| 5.2.3 GERD financed by abroad, %..... | n/a | n/a | |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 88 | ○ |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 100 | |
| 5.3 Knowledge absorption..... | 26.2 | 109 | |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓓ] | 0.5 | 59 | |
| 5.3.2 High-tech imports less re-imports, % total trade..... | n/a | n/a | |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓓ] | 0.5 | 88 | |
| 5.3.4 FDI net inflows, % GDP..... | 1.6 | 94 | |

| | | | |
|---|-------------|------------|---|
| 6 Knowledge & technology outputs..... | 19.3 | 106 | |
| 6.1 Knowledge creation..... | 5.4 | 101 | |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP [Ⓓ] | 0.1 | 105 | |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | n/a | n/a | |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | n/a | n/a | |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 1.5 | 132 | |
| 6.1.5 Citable documents H index..... | 141.0 | 53 | ● |
| 6.2 Knowledge impact..... | 26.7 | 115 | |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | -0.9 | 109 | |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a | |
| 6.2.3 Computer software spending, % GDP..... | 0.2 | 69 | |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 1.1 | 110 | |
| 6.2.5 High- & medium-high-tech manufactures, %..... | n/a | n/a | |
| 6.3 Knowledge diffusion..... | 25.7 | 83 | |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a | |
| 6.3.2 High-tech exports less re-exports, % total trade..... | n/a | n/a | |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓓ] | 0.2 | 113 | |
| 6.3.4 FDI net outflows, % GDP [Ⓓ] | 0.4 | 71 | |

| | | | |
|--|-------------|------------|---|
| 7 Creative outputs..... | 17.5 | 129 | |
| 7.1 Intangible assets..... | 30.1 | 128 | |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP [Ⓓ] | 22.1 | 78 | |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | n/a | n/a | |
| 7.1.3 ICTs & business model creation [†] | 38.2 | 126 | |
| 7.1.4 ICTs & organizational model creation [†] | 40.9 | 114 | |
| 7.2 Creative goods & services..... | 3.5 | 118 | |
| 7.2.1 Cultural & creative services exports, % total trade..... | 0.0 | 79 | |
| 7.2.2 National feature films/mn pop. 15–69..... | 1.0 | 73 | |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 5.9 | 43 | |
| 7.2.4 Printing & publishing output manufactures, %..... | n/a | n/a | |
| 7.2.5 Creative goods exports, % total trade..... | n/a | n/a | |
| 7.3 Online creativity..... | 6.6 | 88 | |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 2.3 | 83 | |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 5.5 | 51 | ● |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 1623.9 | 61 | |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | n/a | n/a | |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓓ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|----------------------------|-----------------------------|
| Population (millions)..... | 92.5 |
| GDP (US\$ billions)..... | 186.0 |
| GDP per capita, PPP\$..... | 4,256.3 |
| Income group..... | Lower-middle income |
| Region..... | South East Asia and Oceania |

| | Score 0–100 or value (hard data) | Rank |
|--|-------------------------------------|------------|
| Global Innovation Index (out of 141)..... | 38.3 | 52 |
| Innovation Output Sub-Index..... | 36.7 | 39 |
| Innovation Input Sub-Index..... | 40.0 | 78 |
| Innovation Efficiency Ratio..... | 0.9 | 9 ● |
| Global Innovation Index 2014 (out of 143)..... | 34.9 | 71 |
| 1 Institutions..... | 51.8 | 101 |
| 1.1 Political environment..... | 51.5 | 67 |
| 1.1.1 Political stability*..... | 69.7 | 53 |
| 1.1.2 Government effectiveness*..... | 33.3 | 86 |
| 1.2 Regulatory environment..... | 49.8 | 113 |
| 1.2.1 Regulatory quality*..... | 30.4 | 113 |
| 1.2.2 Rule of law*..... | 34.7 | 89 |
| 1.2.3 Cost of redundancy dismissal, salary weeks..... | 24.6 | 109 |
| 1.3 Business environment..... | 54.2 | 121 ○ |
| 1.3.1 Ease of starting a business*..... | 77.7 | 102 |
| 1.3.2 Ease of resolving insolvency*..... | 41.3 | 96 |
| 1.3.3 Ease of paying taxes*..... | 43.6 | 131 ○ |
| 2 Human capital & research..... | 26.6 | 78 |
| 2.1 Education..... | 48.3 | 56 |
| 2.1.1 Expenditure on education, % GDP..... | 6.3 | 24 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap..... | n/a | n/a |
| 2.1.3 School life expectancy, years..... | n/a | n/a |
| 2.1.4 PISA scales in reading, maths, & science..... | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary..... | n/a | n/a |
| 2.2 Tertiary education..... | 29.3 | 75 |
| 2.2.1 Tertiary enrolment, % gross..... | 24.6 | 86 |
| 2.2.2 Graduates in science & engineering, %..... | 24.0 | 29 |
| 2.2.3 Tertiary inbound mobility, %..... | 0.2 | 105 ○ |
| 2.3 Research & development (R&D)..... | 2.1 | 100 |
| 2.3.1 Researchers, FTE/mn pop..... | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓜ] | 0.2 | 90 |
| 2.3.3 QS university ranking, average score top 3*..... | 0.0 | 73 ○ |
| 3 Infrastructure..... | 33.9 | 88 |
| 3.1 Information & communication technologies (ICTs)..... | 40.1 | 84 |
| 3.1.1 ICT access*..... | 44.8 | 91 |
| 3.1.2 ICT use*..... | 25.0 | 83 |
| 3.1.3 Government's online service*..... | 41.7 | 79 |
| 3.1.4 E-participation*..... | 49.0 | 64 |
| 3.2 General infrastructure..... | 32.9 | 62 |
| 3.2.1 Electricity output, kWh/cap..... | 1383.9 | 89 |
| 3.2.2 Logistics performance*..... | 50.7 | 46 |
| 3.2.3 Gross capital formation, % GDP..... | 25.2 | 43 |
| 3.3 Ecological sustainability..... | 28.7 | 101 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq..... | 6.0 | 91 |
| 3.3.2 Environmental performance*..... | 38.2 | 113 ○ |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP..... | 1.9 | 48 |
| 4 Market sophistication..... | 47.4 | 67 |
| 4.1 Credit..... | 45.8 | 31 ● |
| 4.1.1 Ease of getting credit*..... | 65.0 | 34 |
| 4.1.2 Domestic credit to private sector, % GDP..... | 96.8 | 32 ● |
| 4.1.3 Microfinance gross loans, % GDP..... | 3.4 | 16 ● |

| | | |
|---|-------------|-------------|
| 4.2 Investment..... | 21.9 | 135 ○ |
| 4.2.1 Ease of protecting investors*..... | 46.7 | 102 |
| 4.2.2 Market capitalization, % GDP..... | 21.1 | 68 |
| 4.2.3 Total value of stocks traded, % GDP..... | 2.2 | 59 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP..... | 0.0 | 60 ○ |
| 4.3 Trade & competition..... | 74.5 | 80 |
| 4.3.1 Applied tariff rate, weighted mean, % [Ⓜ] | 5.7 | 88 |
| 4.3.2 Intensity of local competition [†] | 68.7 | 63 |
| 5 Business sophistication..... | 40.5 | 40 |
| 5.1 Knowledge workers..... | 27.8 | 98 |
| 5.1.1 Knowledge-intensive employment, %..... | 10.0 | 101 ○ |
| 5.1.2 Firms offering formal training, % firms [Ⓜ] | 43.5 | 38 |
| 5.1.3 GERD performed by business, % of GDP [Ⓜ] | 0.0 | 71 |
| 5.1.4 GERD financed by business, % [Ⓜ] | 28.4 | 53 |
| 5.1.5 Females employed w/advanced degrees, % total..... | 6.2 | 73 ○ |
| 5.2 Innovation linkages..... | 21.0 | 120 ○ |
| 5.2.1 University/industry research collaboration [†] | 37.8 | 89 |
| 5.2.2 State of cluster development [†] | 46.0 | 72 |
| 5.2.3 GERD financed by abroad, % [Ⓜ] | 4.0 | 71 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP..... | 0.0 | 67 |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP..... | 0.0 | 96 ○ |
| 5.3 Knowledge absorption..... | 72.7 | 1 |
| 5.3.1 Royalty & license fees payments, % total trade..... | n/a | n/a |
| 5.3.2 High-tech imports less re-imports, % total trade..... | 22.0 | 4 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade..... | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP..... | 5.2 | 32 ● |
| 6 Knowledge & technology outputs..... | 39.0 | 28 ● |
| 6.1 Knowledge creation..... | 6.7 | 89 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP..... | 0.9 | 65 |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP..... | 0.0 | 94 ○ |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP..... | 0.5 | 37 |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP..... | 4.7 | 99 |
| 6.1.5 Citable documents H index..... | 122.0 | 58 |
| 6.2 Knowledge impact..... | 48.3 | 25 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, %..... | 3.8 | 17 ● |
| 6.2.2 New businesses/th pop. 15–64..... | n/a | n/a |
| 6.2.3 Computer software spending, % GDP..... | 0.3 | 31 |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP..... | 12.0 | 33 ● |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓜ] | 26.2 | 44 |
| 6.3 Knowledge diffusion..... | 62.1 | 7 |
| 6.3.1 Royalty & license fees receipts, % total trade..... | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade..... | 23.6 | 1 ● |
| 6.3.3 Comm., computer & info. services exp., % total trade..... | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP..... | 1.1 | 50 |
| 7 Creative outputs..... | 34.3 | 62 |
| 7.1 Intangible assets..... | 44.4 | 74 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP..... | 76.3 | 22 ● |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP..... | 0.1 | 53 |
| 7.1.3 ICTs & business model creation [†] | 59.4 | 52 |
| 7.1.4 ICTs & organizational model creation [†] | 52.2 | 69 |
| 7.2 Creative goods & services..... | 29.1 | 40 |
| 7.2.1 Cultural & creative services exports, % total trade..... | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69..... | 1.3 | 68 |
| 7.2.3 Global ent. & media output/th pop. 15–69..... | 0.2 | 57 ○ |
| 7.2.4 Printing & publishing output manufactures, % [Ⓜ] | 1.3 | 59 |
| 7.2.5 Creative goods exports, % total trade..... | 5.0 | 9 ● |
| 7.3 Online creativity..... | 19.3 | 67 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69..... | 2.9 | 74 |
| 7.3.2 Country-code TLDs/th pop. 15–69..... | 3.5 | 61 |
| 7.3.3 Wikipedia edits/pop. 15–69..... | 267.7 | 101 |
| 7.3.4 Video uploads on YouTube/pop. 15–69..... | 68.9 | 57 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓜ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|----------------------------------|
| Population (millions) | 25.0 |
| GDP (US\$ billions) | 43.2 |
| GDP per capita, PPP\$ | 2,399.1 |
| Income group | Lower-middle income |
| Region | Northern Africa and Western Asia |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|--------------|
| Global Innovation Index (out of 141) | 20.8 | 137 ○ |
| Innovation Output Sub-Index | 16.4 | 131 |
| Innovation Input Sub-Index | 25.2 | 138 ○ |
| Innovation Efficiency Ratio | 0.7 | 97 ● |
| Global Innovation Index 2014 (out of 143) | 19.5 | 141 |

| | | |
|--|-------------|--------------|
| 1 Institutions | 34.9 | 136 ○ |
| 1.1 Political environment | 7.5 | 140 ○ |
| 1.1.1 Political stability* | 6.1 | 140 ○ |
| 1.1.2 Government effectiveness* | 8.9 | 136 ○ |
| 1.2 Regulatory environment | 42.0 | 127 |
| 1.2.1 Regulatory quality* | 28.2 | 120 |
| 1.2.2 Rule of law* | 16.8 | 132 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 27.4 | 118 |
| 1.3 Business environment | 55.2 | 115 |
| 1.3.1 Ease of starting a business* | 74.4 | 113 |
| 1.3.2 Ease of resolving insolvency* | 27.5 | 129 |
| 1.3.3 Ease of paying taxes* | 63.6 | 103 ● |

| | | |
|---|-------------|------------|
| 2 Human capital & research | 14.5 | 127 |
| 2.1 Education | 30.4 | 119 |
| 2.1.1 Expenditure on education, % GDP [Ⓐ] | 4.6 | 70 ● |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 12.1 | 92 |
| 2.1.3 School life expectancy, years [Ⓐ] | 9.2 | 120 |
| 2.1.4 PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary [Ⓐ] | 16.1 | 70 ● |
| 2.2 Tertiary education | 13.1 | 117 |
| 2.2.1 Tertiary enrolment, % gross [Ⓐ] | 10.3 | 110 |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, % [Ⓐ] | 4.3 | 41 ● |
| 2.3 Research & development (R&D) | 0.0 | 128 ○ |
| 2.3.1 Researchers, FTE/mn pop. | n/a | n/a |
| 2.3.2 Gross expenditure on R&D, % GDP | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3* | 0.0 | 73 ○ |

| | | |
|---|-------------|------------|
| 3 Infrastructure | 19.4 | 134 |
| 3.1 Information & communication technologies (ICTs) | 23.0 | 117 |
| 3.1.1 ICT access* | 26.6 | 123 |
| 3.1.2 ICT use* | 7.3 | 115 |
| 3.1.3 Government's online service* | 30.7 | 101 |
| 3.1.4 E-participation* | 27.5 | 108 |
| 3.2 General infrastructure | 0.8 | 141 ○ |
| 3.2.1 Electricity output, kWh/cap | 275.8 | 111 |
| 3.2.2 Logistics performance* | 1.2 | 130 ○ |
| 3.2.3 Gross capital formation, % GDP | 8.4 | 139 ○ |
| 3.3 Ecological sustainability | 34.5 | 84 ● |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 12.3 | 10 ● |
| 3.3.2 Environmental performance* | 30.2 | 127 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 0.0 | 137 ○ |

| | | |
|--|-------------|------------|
| 4 Market sophistication | 35.3 | 133 |
| 4.1 Credit | 0.3 | 141 ○ |
| 4.1.1 Ease of getting credit* | 0.0 | 140 ○ |
| 4.1.2 Domestic credit to private sector, % GDP | 6.3 | 138 ○ |
| 4.1.3 Microfinance gross loans, % GDP | 0.0 | 77 |

| | | |
|---|------|------|
| 4.2 Investment | 39.2 | 52 |
| 4.2.1 Ease of protecting investors* | 39.2 | 129 |
| 4.2.2 Market capitalization, % GDP | n/a | n/a |
| 4.2.3 Total value of stocks traded, % GDP | n/a | n/a |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | n/a | n/a |
| 4.3 Trade & competition | 66.3 | 109 |
| 4.3.1 Applied tariff rate, weighted mean, % | 6.2 | 92 ● |
| 4.3.2 Intensity of local competition [†] | 54.5 | 119 |

| | | |
|---|-------------|------------|
| 5 Business sophistication | 21.9 | 133 |
| 5.1 Knowledge workers | 20.2 | 123 |
| 5.1.1 Knowledge-intensive employment, % [Ⓐ] | 17.0 | 85 ● |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 12.9 | 102 |
| 5.1.3 GERD performed by business, % of GDP | n/a | n/a |
| 5.1.4 GERD financed by business, % | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total | n/a | n/a |
| 5.2 Innovation linkages | 30.1 | 80 |
| 5.2.1 University/industry research collaboration [†] | 15.9 | 133 ○ |
| 5.2.2 State of cluster development [†] | 37.1 | 108 |
| 5.2.3 GERD financed by abroad, % | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | n/a | n/a |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | n/a | n/a |
| 5.3 Knowledge absorption | 15.5 | 140 ○ |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓐ] | 0.0 | 112 |
| 5.3.2 High-tech imports less re-imports, % total trade | 3.2 | 120 |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓐ] | 0.3 | 113 |
| 5.3.4 FDI net inflows, % GDP | -0.4 | 129 |

| | | |
|---|-------------|------------|
| 6 Knowledge & technology outputs | 18.3 | 112 |
| 6.1 Knowledge creation | 2.9 | 125 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | 0.4 | 77 ● |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP | n/a | n/a |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 2.0 | 128 |
| 6.1.5 Citable documents H index | 42.0 | 125 |
| 6.2 Knowledge impact | 33.3 | 93 ● |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 2.0 | 45 ● |
| 6.2.2 New businesses/th pop. 15–64 | n/a | n/a |
| 6.2.3 Computer software spending, % GDP | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 0.4 | 129 |
| 6.2.5 High- & medium-high-tech manufactures, % [Ⓐ] | 1.9 | 96 |
| 6.3 Knowledge diffusion | 18.7 | 115 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓐ] | 0.4 | 25 ● |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.0 | 121 |
| 6.3.3 Comm., computer & info. services exp., % total trade | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP | n/a | n/a |

| | | |
|---|-------------|------------|
| 7 Creative outputs | 14.5 | 134 |
| 7.1 Intangible assets | 23.2 | 134 ○ |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | 18.3 | 86 |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 28.5 | 133 ○ |
| 7.1.4 ICTs & organizational model creation [†] | 32.1 | 128 |
| 7.2 Creative goods & services | 2.1 | 125 |
| 7.2.1 Cultural & creative services exports, % total trade | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % [Ⓐ] | 0.4 | 94 |
| 7.2.5 Creative goods exports, % total trade | 0.0 | 122 |
| 7.3 Online creativity | 9.5 | 80 ● |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 0.5 | 118 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 0.0 | 131 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 117.5 | 112 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | 36.5 | 70 |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|---------------------|
| Population (millions) | 15.0 |
| GDP (US\$ billions) | 26.8 |
| GDP per capita, PPP\$ | 1,849.7 |
| Income group | Lower-middle income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|------------|
| Global Innovation Index (out of 141) | 24.6 | 124 |
| Innovation Output Sub-Index | 20.0 | 115 |
| Innovation Input Sub-Index | 29.3 | 130 |
| Innovation Efficiency Ratio | 0.7 | 81 |
| Global Innovation Index 2014 (out of 143) | 25.8 | 121 |

1 Institutions 48.8 107

| | | |
|--|------|-------|
| 1.1 Political environment | 51.2 | 68 |
| 1.1.1 Political stability* | 73.8 | 49 ● |
| 1.1.2 Government effectiveness* | 28.5 | 96 |
| 1.2 Regulatory environment | 26.6 | 136 ○ |
| 1.2.1 Regulatory quality* | 35.4 | 106 |
| 1.2.2 Rule of law* | 39.5 | 78 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 50.5 | 136 ○ |
| 1.3 Business environment | 68.7 | 72 |
| 1.3.1 Ease of starting a business* | 88.6 | 58 ● |
| 1.3.2 Ease of resolving insolvency* | 43.0 | 89 |
| 1.3.3 Ease of paying taxes* | 74.5 | 61 ● |

2 Human capital & research 6.3 141 ○

| | | |
|---|------|-------|
| 2.1 Education | 9.9 | 141 ○ |
| 2.1.1 Expenditure on education, % GDP [Ⓔ] | 1.3 | 128 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | n/a | n/a |
| 2.1.3 School life expectancy, years | n/a | n/a |
| 2.1.4 PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary | n/a | n/a |
| 2.2 Tertiary education | n/a | n/a |
| 2.2.1 Tertiary enrolment, % gross | n/a | n/a |
| 2.2.2 Graduates in science & engineering, % | n/a | n/a |
| 2.2.3 Tertiary inbound mobility, % | n/a | n/a |
| 2.3 Research & development (R&D) | 2.8 | 97 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓔ] | 43.0 | 93 |
| 2.3.2 Gross expenditure on R&D, % GDP [Ⓔ] | 0.3 | 75 |
| 2.3.3 QS university ranking, average score top 3* | 0.0 | 73 ○ |

3 Infrastructure 23.6 121

| | | |
|---|-------|-------|
| 3.1 Information & communication technologies (ICTs) | 16.0 | 133 ○ |
| 3.1.1 ICT access* | 26.8 | 122 |
| 3.1.2 ICT use* | 5.4 | 121 |
| 3.1.3 Government's online service* | 14.2 | 130 ○ |
| 3.1.4 E-participation* | 17.6 | 124 |
| 3.2 General infrastructure | 30.6 | 69 |
| 3.2.1 Electricity output, kWh/cap | 841.6 | 95 |
| 3.2.2 Logistics performance* | 15.4 | 113 |
| 3.2.3 Gross capital formation, % GDP | 31.9 | 17 ● |
| 3.3 Ecological sustainability | 24.2 | 122 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 4.1 | 107 |
| 3.3.2 Environmental performance* | 41.7 | 103 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 0.4 | 94 |

4 Market sophistication 45.0 83

| | | |
|--|------|------|
| 4.1 Credit | 24.7 | 89 |
| 4.1.1 Ease of getting credit* | 70.0 | 22 ● |
| 4.1.2 Domestic credit to private sector, % GDP | 16.5 | 124 |
| 4.1.3 Microfinance gross loans, % GDP | 0.0 | 84 ○ |

| | | |
|---|------|-----|
| 4.2 Investment | 29.1 | 102 |
| 4.2.1 Ease of protecting investors* | 54.2 | 75 |
| 4.2.2 Market capitalization, % GDP | 12.0 | 84 |
| 4.2.3 Total value of stocks traded, % GDP | 0.8 | 71 |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | n/a | n/a |

| | | |
|---|------|------|
| 4.3 Trade & competition | 81.1 | 47 ● |
| 4.3.1 Applied tariff rate, weighted mean, % | 4.1 | 67 |
| 4.3.2 Intensity of local competition [†] | 76.6 | 23 ● |

5 Business sophistication 22.6 129

| | | |
|---|------|-------|
| 5.1 Knowledge workers | 15.4 | 130 ○ |
| 5.1.1 Knowledge-intensive employment, % [Ⓔ] | 7.3 | 105 |
| 5.1.2 Firms offering formal training, % firms | 28.2 | 69 |
| 5.1.3 GERD performed by business, % of GDP [Ⓔ] | 0.0 | 83 ○ |
| 5.1.4 GERD financed by business, % [Ⓔ] | 3.2 | 80 |
| 5.1.5 Females employed w/advanced degrees, % total | n/a | n/a |

| | | |
|---|------|------|
| 5.2 Innovation linkages | 31.0 | 72 |
| 5.2.1 University/industry research collaboration [†] | 41.4 | 73 |
| 5.2.2 State of cluster development [†] | 51.9 | 43 ● |
| 5.2.3 GERD financed by abroad, % [Ⓔ] | 1.6 | 83 |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 22 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | n/a | n/a |

5.3 Knowledge absorption 21.3 133 ○

| | | |
|---|-----|-------|
| 5.3.1 Royalty & license fees payments, % total trade [Ⓔ] | 0.0 | 121 ○ |
| 5.3.2 High-tech imports less re-imports, % total trade | 4.5 | 106 |
| 5.3.3 Comm., computer & info. services imp., % total trade [Ⓔ] | 0.2 | 117 ○ |
| 5.3.4 FDI net inflows, % GDP | 8.1 | 15 ● |

6 Knowledge & technology outputs 21.6 98

| | | |
|---|------|------|
| 6.1 Knowledge creation | 4.7 | 107 |
| 6.1.1 Domestic resident patent app./bn PPP\$ GDP [Ⓔ] | 0.1 | 94 |
| 6.1.2 PCT resident patent app./bn PPP\$ GDP | n/a | n/a |
| 6.1.3 Domestic res utility model app./bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 4.6 | 102 |
| 6.1.5 Citable documents H index | 75.0 | 92 |
| 6.2 Knowledge impact | 38.0 | 65 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | 2.9 | 32 ● |
| 6.2.2 New businesses/th pop. 15–64 | 1.4 | 58 |
| 6.2.3 Computer software spending, % GDP | n/a | n/a |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 0.8 | 117 |
| 6.2.5 High- & medium-high-tech manufactures, % | n/a | n/a |
| 6.3 Knowledge diffusion | 22.1 | 104 |
| 6.3.1 Royalty & license fees receipts, % total trade | n/a | n/a |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.6 | 73 |
| 6.3.3 Comm., computer & info. services exp., % total trade [Ⓔ] | 0.4 | 94 |
| 6.3.4 FDI net outflows, % GDP | 0.7 | 60 |

7 Creative outputs 18.4 123

| | | |
|---|------|-------|
| 7.1 Intangible assets | 35.9 | 111 |
| 7.1.1 Domestic res trademark app./bn PPP\$ GDP | 7.3 | 98 ○ |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 55.7 | 70 |
| 7.1.4 ICTs & organizational model creation [†] | 49.2 | 78 |
| 7.2 Creative goods & services | 1.9 | 126 |
| 7.2.1 Cultural & creative services exports, % total trade | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade [Ⓔ] | 0.1 | 101 |
| 7.3 Online creativity | 0.1 | 130 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 0.1 | 130 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 0.0 | 138 ○ |
| 7.3.3 Wikipedia edits/pop. 15–69 | 44.3 | 124 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓔ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Key indicators

| | |
|-----------------------------|--------------------|
| Population (millions) | 14.6 |
| GDP (US\$ billions) | 13.7 |
| GDP per capita, PPP\$ | 824.6 |
| Income group | Low income |
| Region | Sub-Saharan Africa |

| | Score 0–100 or value (hard data) | Rank |
|---|-------------------------------------|------------|
| Global Innovation Index (out of 141) | 22.5 | 133 |
| Innovation Output Sub-Index | 18.4 | 120 |
| Innovation Input Sub-Index | 26.6 | 134 |
| Innovation Efficiency Ratio | 0.7 | 77 |
| Global Innovation Index 2014 (out of 143) | 24.3 | 130 |

1 Institutions **25.9** 140 ○

| | | |
|--|------|-------|
| 1.1 Political environment | 28.9 | 122 |
| 1.1.1 Political stability* | 47.1 | 104 |
| 1.1.2 Government effectiveness* | 10.6 | 135 ○ |
| 1.2 Regulatory environment | 1.5 | 140 ○ |
| 1.2.1 Regulatory quality* | 0.0 | 141 ○ |
| 1.2.2 Rule of law* | 5.9 | 140 ○ |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 82.3 | 138 ○ |
| 1.3 Business environment | 47.4 | 136 ○ |
| 1.3.1 Ease of starting a business* | 51.4 | 138 ○ |
| 1.3.2 Ease of resolving insolvency* | 29.3 | 125 |
| 1.3.3 Ease of paying taxes* | 61.4 | 109 |

2 Human capital & research **19.0** 104

| | | |
|---|------|-------|
| 2.1 Education | 31.9 | 110 |
| 2.1.1 Expenditure on education, % GDP [Ⓐ] | 2.0 | 126 ○ |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | n/a | n/a |
| 2.1.3 School life expectancy, years | 10.9 | 108 |
| 2.1.4 PISA scales in reading, maths, & science | n/a | n/a |
| 2.1.5 Pupil-teacher ratio, secondary | 22.4 | 90 |
| 2.2 Tertiary education | 24.6 | 87 |
| 2.2.1 Tertiary enrolment, % gross | 5.8 | 122 |
| 2.2.2 Graduates in science & engineering, % | 23.3 | 33 ● |
| 2.2.3 Tertiary inbound mobility, % | 0.4 | 99 |
| 2.3 Research & development (R&D) | 0.5 | 118 |
| 2.3.1 Researchers, FTE/mn pop. [Ⓐ] | 95.1 | 83 |
| 2.3.2 Gross expenditure on R&D, % GDP | n/a | n/a |
| 2.3.3 QS university ranking, average score top 3* | 0.0 | 73 ○ |

3 Infrastructure **20.8** 129

| | | |
|---|-------|-------|
| 3.1 Information & communication technologies (ICTs) | 31.6 | 101 |
| 3.1.1 ICT access* | 31.2 | 114 |
| 3.1.2 ICT use* | 19.2 | 91 |
| 3.1.3 Government's online service* | 30.7 | 101 |
| 3.1.4 E-participation* | 45.1 | 74 |
| 3.2 General infrastructure | 9.1 | 139 ○ |
| 3.2.1 Electricity output, kWh/cap | 662.4 | 102 |
| 3.2.2 Logistics performance* | 9.1 | 121 |
| 3.2.3 Gross capital formation, % GDP | 13.7 | 134 |
| 3.3 Ecological sustainability | 21.7 | 131 |
| 3.3.1 GDP/unit of energy use, 2005 PPP\$/kg oil eq | 0.4 | 123 ○ |
| 3.3.2 Environmental performance* | 49.5 | 84 |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP | 1.2 | 56 ● |

4 Market sophistication **40.7** 109

| | | |
|--|------|-----|
| 4.1 Credit | 20.5 | 114 |
| 4.1.1 Ease of getting credit* | 40.0 | 93 |
| 4.1.2 Domestic credit to private sector, % GDP | n/a | n/a |
| 4.1.3 Microfinance gross loans, % GDP | 0.1 | 68 |

| | | |
|---|------|------|
| 4.2 Investment | 36.0 | 64 ● |
| 4.2.1 Ease of protecting investors* | 53.3 | 79 |
| 4.2.2 Market capitalization, % GDP | 94.7 | 16 ● |
| 4.2.3 Total value of stocks traded, % GDP | 12.9 | 35 ● |
| 4.2.4 Venture capital deals/tr PPP\$ GDP | 0.0 | 41 |

4.3 Trade & competition **65.6** 114

| | | |
|---|------|-----|
| 4.3.1 Applied tariff rate, weighted mean, % | n/a | n/a |
| 4.3.2 Intensity of local competition [†] | 65.6 | 74 |

5 Business sophistication **26.7** 115

| | | |
|---|------|-------|
| 5.1 Knowledge workers | 23.4 | 112 |
| 5.1.1 Knowledge-intensive employment, % [Ⓐ] | 6.6 | 108 |
| 5.1.2 Firms offering formal training, % firms [Ⓐ] | 31.2 | 61 |
| 5.1.3 GERD performed by business, % of GDP | n/a | n/a |
| 5.1.4 GERD financed by business, % | n/a | n/a |
| 5.1.5 Females employed w/advanced degrees, % total | n/a | n/a |
| 5.2 Innovation linkages | 24.6 | 104 |
| 5.2.1 University/industry research collaboration [†] | 30.4 | 117 |
| 5.2.2 State of cluster development [†] | 32.4 | 125 |
| 5.2.3 GERD financed by abroad, % | n/a | n/a |
| 5.2.4 JV-strategic alliance deals/tr PPP\$ GDP | 0.0 | 32 ● |
| 5.2.5 Patent families 3+ offices/bn PPP\$ GDP | 0.0 | 108 ○ |
| 5.3 Knowledge absorption | 32.0 | 76 |
| 5.3.1 Royalty & license fees payments, % total trade [Ⓐ] | 0.3 | 69 |
| 5.3.2 High-tech imports less re-imports, % total trade | 7.9 | 56 ● |
| 5.3.3 Comm., computer & info. services imp., % total trade | n/a | n/a |
| 5.3.4 FDI net inflows, % GDP | 3.1 | 62 ● |

6 Knowledge & technology outputs **12.3** 130

| | | |
|---|------|-------|
| 6.1 Knowledge creation | 9.5 | 74 |
| 6.1.1 Domestic resident patent app/bn PPP\$ GDP | n/a | n/a |
| 6.1.2 PCT resident patent app/bn PPP\$ GDP [Ⓐ] | 0.1 | 62 |
| 6.1.3 Domestic res utility model app/bn PPP\$ GDP | n/a | n/a |
| 6.1.4 Scientific & technical articles/bn PPP\$ GDP | 13.3 | 57 ● |
| 6.1.5 Citable documents H index | 81.0 | 88 |
| 6.2 Knowledge impact | 23.9 | 121 |
| 6.2.1 Growth rate of PPP\$ GDP/worker, % | -3.4 | 115 ○ |
| 6.2.2 New businesses/th pop. 15–64 | n/a | n/a |
| 6.2.3 Computer software spending, % GDP | 0.4 | 22 ● |
| 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP | 4.4 | 68 ● |
| 6.2.5 High- & medium-high-tech manufactures, % | n/a | n/a |
| 6.3 Knowledge diffusion | 3.6 | 133 |
| 6.3.1 Royalty & license fees receipts, % total trade [Ⓐ] | 0.0 | 79 |
| 6.3.2 High-tech exports less re-exports, % total trade | 0.4 | 80 |
| 6.3.3 Comm., computer & info. services exp., % total trade | n/a | n/a |
| 6.3.4 FDI net outflows, % GDP | n/a | n/a |

7 Creative outputs **24.5** 103

| | | |
|---|------|-----|
| 7.1 Intangible assets | 44.0 | 76 |
| 7.1.1 Domestic res trademark app/bn PPP\$ GDP | n/a | n/a |
| 7.1.2 Madrid trademark app. holders/bn PPP\$ GDP | n/a | n/a |
| 7.1.3 ICTs & business model creation [†] | 47.1 | 102 |
| 7.1.4 ICTs & organizational model creation [†] | 40.9 | 113 |
| 7.2 Creative goods & services | 9.6 | 97 |
| 7.2.1 Cultural & creative services exports, % total trade | n/a | n/a |
| 7.2.2 National feature films/mn pop. 15–69 | n/a | n/a |
| 7.2.3 Global ent. & media output/th pop. 15–69 | n/a | n/a |
| 7.2.4 Printing & publishing output manufactures, % | n/a | n/a |
| 7.2.5 Creative goods exports, % total trade [Ⓐ] | 0.3 | 68 |
| 7.3 Online creativity | 0.4 | 120 |
| 7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 | 0.5 | 117 |
| 7.3.2 Country-code TLDs/th pop. 15–69 | 0.1 | 125 |
| 7.3.3 Wikipedia edits/pop. 15–69 | 86.2 | 116 |
| 7.3.4 Video uploads on YouTube/pop. 15–69 | n/a | n/a |

NOTES: ● indicates a strength; ○ a weakness; * an index; † a survey question.

Ⓐ indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data.

Appendix II

Data Tables

Index of Data Tables

1 Institutions

1.1 Political environment

| | |
|--------------------------------------|-----|
| 1.1.1 Political stability | 309 |
| 1.1.2 Government effectiveness | 310 |

1.2 Regulatory environment

| | |
|--|-----|
| 1.2.1 Regulatory quality | 311 |
| 1.2.2 Rule of law | 312 |
| 1.2.3 Cost of redundancy dismissal, salary weeks | 313 |

1.3 Business environment

| | |
|--|-----|
| 1.3.1 Ease of starting a business | 314 |
| 1.3.2 Ease of resolving insolvency | 315 |
| 1.3.3 Ease of paying taxes | 316 |

2 Human capital & research

2.1 Education

| | |
|---|-----|
| 2.1.1 Expenditure on education, % GDP | 317 |
| 2.1.2 Gov't expenditure/pupil, secondary, % GDP/cap | 318 |
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| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | New Zealand | 1.45 | 100.00 | 1.00 | ● | 73 | Senegal | -0.09 | 62.02 | 0.49 | |
| 2 | Switzerland | 1.37 | 98.09 | 0.99 | ● | 74 | Serbia | -0.10 | 61.80 | 0.48 | |
| 3 | Finland | 1.36 | 97.76 | 0.99 | ● | 75 | Panama | -0.13 | 60.85 | 0.47 | |
| 4 | Austria | 1.34 | 97.36 | 0.98 | ● | 76 | Tanzania, United Rep. | -0.15 | 60.41 | 0.46 | |
| 5 | Singapore | 1.33 | 97.14 | 0.97 | | 77 | Cambodia | -0.16 | 60.31 | 0.46 | |
| 6 | Luxembourg | 1.33 | 97.09 | 0.96 | | 78 | Ecuador | -0.20 | 59.32 | 0.45 | |
| 7 | Norway | 1.33 | 97.08 | 0.96 | ● | 79 | Greece | -0.20 | 59.27 | 0.44 | |
| 8 | Barbados | 1.29 | 96.12 | 0.95 | ● | 80 | Malawi | -0.22 | 58.61 | 0.44 | |
| 9 | Iceland | 1.26 | 95.32 | 0.94 | | 81 | Nicaragua | -0.25 | 58.05 | 0.43 | ● |
| 10 | Qatar | 1.22 | 94.26 | 0.94 | ● | 82 | Mozambique | -0.27 | 57.45 | 0.42 | |
| 11 | Sweden | 1.13 | 92.02 | 0.93 | | 83 | Brazil | -0.28 | 57.27 | 0.41 | |
| 12 | Netherlands | 1.12 | 91.78 | 0.92 | | 84 | Bolivia, Plurinational St. | -0.35 | 55.56 | 0.41 | |
| 13 | Slovakia | 1.10 | 91.35 | 0.91 | ● | 85 | Bosnia and Herzegovina | -0.37 | 55.11 | 0.40 | |
| 14 | Botswana | 1.06 | 90.27 | 0.91 | ● | 86 | Angola | -0.37 | 54.95 | 0.39 | ● |
| 15 | Czech Republic | 1.05 | 90.18 | 0.90 | ● | 87 | TFYR of Macedonia | -0.37 | 54.91 | 0.39 | |
| 16 | Canada | 1.03 | 89.64 | 0.89 | | 88 | Kazakhstan | -0.38 | 54.73 | 0.38 | |
| 17 | Australia | 1.02 | 89.29 | 0.89 | | 89 | Saudi Arabia | -0.41 | 54.05 | 0.37 | |
| 18 | Malta | 1.01 | 89.05 | 0.88 | | 90 | Azerbaijan | -0.41 | 54.01 | 0.36 | |
| 19 | Japan | 0.98 | 88.43 | 0.87 | | 91 | Togo | -0.43 | 53.60 | 0.36 | |
| 20 | Poland | 0.95 | 87.59 | 0.86 | ● | 92 | Swaziland | -0.44 | 53.36 | 0.35 | |
| 21 | Denmark | 0.95 | 87.56 | 0.86 | | 93 | Guyana | -0.44 | 53.24 | 0.34 | |
| 22 | Mauritius | 0.94 | 87.30 | 0.85 | ● | 94 | Georgia | -0.46 | 52.69 | 0.34 | |
| 23 | Namibia | 0.93 | 87.14 | 0.84 | ● | 95 | Honduras | -0.47 | 52.63 | 0.33 | |
| 24 | Germany | 0.93 | 87.08 | 0.84 | | 96 | Morocco | -0.50 | 51.79 | 0.32 | |
| 25 | Lithuania | 0.92 | 86.96 | 0.83 | | 97 | Indonesia | -0.50 | 51.78 | 0.31 | |
| 26 | United Arab Emirates | 0.92 | 86.86 | 0.82 | | 98 | Cameroon | -0.52 | 51.35 | 0.31 | |
| 27 | Belgium | 0.92 | 86.84 | 0.81 | | 99 | China | -0.55 | 50.65 | 0.30 | |
| 28 | Hong Kong (China) | 0.88 | 86.00 | 0.81 | | 100 | Uzbekistan | -0.55 | 50.58 | 0.29 | |
| 29 | Ireland | 0.88 | 85.86 | 0.80 | | 101 | Sri Lanka | -0.61 | 49.16 | 0.29 | |
| 30 | Seychelles | 0.87 | 85.65 | 0.79 | ● | 102 | Jordan | -0.62 | 48.92 | 0.28 | |
| 31 | Slovenia | 0.87 | 85.56 | 0.79 | | 103 | Paraguay | -0.67 | 47.59 | 0.27 | |
| 32 | Uruguay | 0.81 | 84.15 | 0.78 | ● | 104 | Zimbabwe | -0.69 | 47.09 | 0.26 | |
| 33 | Cabo Verde | 0.81 | 84.09 | 0.77 | ● | 105 | Guatemala | -0.69 | 46.97 | 0.26 | |
| 34 | Bhutan | 0.80 | 83.93 | 0.76 | ● | 106 | Madagascar | -0.71 | 46.49 | 0.25 | |
| 35 | Hungary | 0.78 | 83.43 | 0.76 | | 107 | Mexico | -0.74 | 45.92 | 0.24 | ○ |
| 36 | Portugal | 0.74 | 82.47 | 0.75 | | 108 | Russian Federation | -0.75 | 45.60 | 0.24 | ○ |
| 37 | Estonia | 0.73 | 82.09 | 0.74 | | 109 | Burkina Faso | -0.75 | 45.54 | 0.23 | |
| 38 | Costa Rica | 0.67 | 80.63 | 0.74 | | 110 | Ukraine | -0.76 | 45.42 | 0.22 | |
| 39 | Croatia | 0.61 | 79.34 | 0.73 | | 111 | Peru | -0.77 | 45.07 | 0.21 | |
| 40 | United States of America | 0.61 | 79.19 | 0.72 | | 112 | Uganda | -0.84 | 43.37 | 0.21 | |
| 41 | Latvia | 0.57 | 78.31 | 0.71 | | 113 | Kyrgyzstan | -0.91 | 41.64 | 0.20 | |
| 42 | Cyprus | 0.52 | 76.97 | 0.71 | | 114 | Tunisia | -0.91 | 41.59 | 0.19 | ○ |
| 43 | Italy | 0.51 | 76.76 | 0.70 | | 115 | Côte d'Ivoire | -1.05 | 38.16 | 0.19 | |
| 44 | Mongolia | 0.50 | 76.50 | 0.69 | | 116 | Philippines | -1.06 | 37.96 | 0.18 | |
| 45 | Montenegro | 0.49 | 76.15 | 0.69 | | 117 | Venezuela, Bolivarian Rep. | -1.08 | 37.52 | 0.17 | |
| 46 | United Kingdom | 0.48 | 76.11 | 0.68 | ○ | 118 | Israel | -1.09 | 37.12 | 0.16 | ○ |
| 47 | Oman | 0.48 | 75.94 | 0.67 | | 119 | Tajikistan | -1.14 | 36.04 | 0.16 | |
| 48 | France | 0.42 | 74.63 | 0.66 | | 120 | Nepal | -1.14 | 35.93 | 0.15 | |
| 49 | Zambia | 0.39 | 73.78 | 0.66 | ● | 121 | Kenya | -1.15 | 35.76 | 0.14 | |
| 50 | Chile | 0.37 | 73.39 | 0.65 | | 122 | Myanmar | -1.15 | 35.60 | 0.14 | |
| 51 | Lesotho | 0.33 | 72.22 | 0.64 | ● | 123 | Algeria | -1.17 | 35.22 | 0.13 | |
| 52 | Korea, Rep. | 0.24 | 70.00 | 0.64 | | 124 | India | -1.19 | 34.79 | 0.12 | ○ |
| 53 | Viet Nam | 0.22 | 69.70 | 0.63 | | 125 | Turkey | -1.19 | 34.61 | 0.11 | ○ |
| 54 | Dominican Republic | 0.19 | 68.77 | 0.62 | ● | 126 | Guinea | -1.23 | 33.85 | 0.11 | |
| 55 | Jamaica | 0.18 | 68.51 | 0.61 | | 127 | Colombia | -1.27 | 32.79 | 0.10 | ○ |
| 56 | Bulgaria | 0.18 | 68.50 | 0.61 | | 128 | Iran, Islamic Rep. | -1.27 | 32.77 | 0.09 | |
| 57 | Romania | 0.15 | 67.94 | 0.60 | | 129 | Niger | -1.30 | 32.10 | 0.09 | |
| 58 | Kuwait | 0.14 | 67.67 | 0.59 | | 130 | Burundi | -1.30 | 32.06 | 0.08 | |
| 59 | Trinidad and Tobago | 0.10 | 66.67 | 0.59 | | 131 | Thailand | -1.32 | 31.46 | 0.07 | ○ |
| 60 | Armenia | 0.07 | 65.90 | 0.58 | | 132 | Bahrain | -1.34 | 30.97 | 0.06 | ○ |
| 61 | Argentina | 0.06 | 65.63 | 0.57 | | 133 | Ethiopia | -1.39 | 29.68 | 0.06 | |
| 62 | Albania | 0.06 | 65.59 | 0.56 | | 134 | Bangladesh | -1.61 | 24.28 | 0.05 | ○ |
| 63 | Malaysia | 0.05 | 65.44 | 0.56 | | 135 | Egypt | -1.62 | 24.10 | 0.04 | ○ |
| 64 | Ghana | 0.02 | 64.66 | 0.55 | | 136 | Mali | -1.69 | 22.48 | 0.04 | ○ |
| 65 | Spain | 0.01 | 64.52 | 0.54 | ○ | 137 | Lebanon | -1.69 | 22.25 | 0.03 | ○ |
| 66 | Belarus | -0.03 | 63.53 | 0.54 | | 138 | Nigeria | -2.08 | 12.74 | 0.02 | ○ |
| 67 | Fiji | -0.03 | 63.50 | 0.53 | | 139 | Sudan | -2.20 | 9.74 | 0.01 | ○ |
| 68 | Moldova, Rep. | -0.03 | 63.32 | 0.52 | | 140 | Yemen | -2.35 | 6.07 | 0.01 | ○ |
| 69 | El Salvador | -0.04 | 63.08 | 0.51 | | 141 | Pakistan | -2.59 | 0.00 | 0.00 | ○ |
| 70 | Gambia | -0.05 | 63.01 | 0.51 | ● | | | | | | |
| 71 | South Africa | -0.06 | 62.73 | 0.50 | | | | | | | |
| 72 | Rwanda | -0.08 | 62.07 | 0.49 | | | | | | | |

SOURCE: World Bank, *World Governance Indicators 2013*

NOTE: ● indicates a strength; ○ a weakness

1.1.2 Government effectiveness

Government effectiveness index | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Finland | 2.17 | 100.00 | 1.00 | ● | 73 | Kuwait | -0.07 | 39.42 | 0.49 | |
| 2 | Singapore | 2.07 | 97.46 | 0.99 | ● | 74 | Morocco | -0.07 | 39.41 | 0.48 | |
| 3 | Denmark | 1.97 | 94.68 | 0.99 | ● | 75 | Brazil | -0.08 | 39.26 | 0.47 | |
| 4 | Sweden | 1.89 | 92.49 | 0.98 | ● | 76 | Ghana | -0.09 | 39.07 | 0.46 | |
| 5 | Norway | 1.86 | 91.80 | 0.97 | ● | 77 | Serbia | -0.10 | 38.63 | 0.46 | |
| 6 | Switzerland | 1.81 | 90.21 | 0.96 | | 78 | Jordan | -0.11 | 38.36 | 0.45 | |
| 7 | Canada | 1.77 | 89.28 | 0.96 | | 79 | El Salvador | -0.13 | 37.86 | 0.44 | |
| 8 | Netherlands | 1.77 | 89.17 | 0.95 | | 80 | Peru | -0.14 | 37.55 | 0.44 | |
| 9 | New Zealand | 1.75 | 88.59 | 0.94 | | 81 | Guyana | -0.16 | 36.98 | 0.43 | |
| 10 | Hong Kong (China) | 1.73 | 88.25 | 0.94 | | 82 | India | -0.19 | 36.26 | 0.42 | |
| 11 | Australia | 1.62 | 85.31 | 0.93 | | 83 | Sri Lanka | -0.23 | 35.11 | 0.41 | |
| 12 | Luxembourg | 1.62 | 85.07 | 0.92 | | 84 | Indonesia | -0.24 | 34.96 | 0.41 | |
| 13 | Japan | 1.59 | 84.51 | 0.91 | | 85 | Argentina | -0.29 | 33.55 | 0.40 | |
| 14 | Belgium | 1.59 | 84.38 | 0.91 | ● | 86 | Viet Nam | -0.30 | 33.30 | 0.39 | |
| 15 | Austria | 1.57 | 83.74 | 0.90 | | 87 | Albania | -0.33 | 32.38 | 0.39 | |
| 16 | Germany | 1.52 | 82.44 | 0.89 | | 88 | Russian Federation | -0.36 | 31.63 | 0.38 | |
| 17 | United States of America | 1.50 | 81.98 | 0.89 | | 89 | Lesotho | -0.38 | 31.07 | 0.37 | |
| 18 | Iceland | 1.48 | 81.49 | 0.88 | | 90 | Lebanon | -0.39 | 30.82 | 0.36 | |
| 19 | United Kingdom | 1.47 | 81.16 | 0.87 | | 91 | Bolivia, Plurinational St. | -0.40 | 30.64 | 0.36 | |
| 20 | France | 1.47 | 81.12 | 0.86 | | 92 | Moldova, Rep. | -0.40 | 30.61 | 0.35 | |
| 21 | Ireland | 1.46 | 80.99 | 0.86 | | 93 | Swaziland | -0.44 | 29.38 | 0.34 | |
| 22 | Cyprus | 1.35 | 77.92 | 0.85 | | 94 | Bosnia and Herzegovina | -0.45 | 29.16 | 0.34 | |
| 23 | Barbados | 1.35 | 77.75 | 0.84 | ● | 95 | Azerbaijan | -0.46 | 29.09 | 0.33 | |
| 24 | Malta | 1.25 | 75.14 | 0.84 | | 96 | Zambia | -0.48 | 28.54 | 0.32 | |
| 25 | Chile | 1.25 | 75.05 | 0.83 | | 97 | Senegal | -0.48 | 28.46 | 0.31 | |
| 26 | Portugal | 1.23 | 74.57 | 0.82 | | 98 | Ecuador | -0.49 | 28.25 | 0.31 | |
| 27 | Israel | 1.22 | 74.30 | 0.81 | | 99 | Kenya | -0.49 | 28.25 | 0.30 | |
| 28 | United Arab Emirates | 1.17 | 72.95 | 0.81 | | 100 | Dominican Republic | -0.49 | 28.10 | 0.29 | |
| 29 | Spain | 1.15 | 72.38 | 0.80 | | 101 | Ethiopia | -0.52 | 27.35 | 0.29 | |
| 30 | Korea, Rep. | 1.12 | 71.72 | 0.79 | | 102 | Kazakhstan | -0.54 | 26.88 | 0.28 | |
| 31 | Malaysia | 1.10 | 71.14 | 0.79 | | 103 | Mongolia | -0.54 | 26.77 | 0.27 | |
| 32 | Qatar | 1.07 | 70.34 | 0.78 | | 104 | Malawi | -0.56 | 26.24 | 0.26 | |
| 33 | Slovenia | 1.00 | 68.44 | 0.77 | | 105 | Uganda | -0.58 | 25.71 | 0.26 | |
| 34 | Estonia | 0.98 | 67.99 | 0.76 | | 106 | Algeria | -0.60 | 25.14 | 0.25 | |
| 35 | Latvia | 0.88 | 65.24 | 0.76 | | 107 | Burkina Faso | -0.62 | 24.71 | 0.24 | |
| 36 | Mauritius | 0.88 | 65.11 | 0.75 | | 108 | Mozambique | -0.65 | 23.86 | 0.24 | |
| 37 | Czech Republic | 0.88 | 65.08 | 0.74 | | 109 | Ukraine | -0.65 | 23.82 | 0.23 | |
| 38 | Lithuania | 0.82 | 63.68 | 0.74 | | 110 | Tanzania, United Rep. | -0.67 | 23.23 | 0.22 | |
| 39 | Slovakia | 0.78 | 62.40 | 0.73 | | 111 | Kyrgyzstan | -0.69 | 22.66 | 0.21 | |
| 40 | Poland | 0.71 | 60.54 | 0.72 | | 112 | Iran, Islamic Rep. | -0.70 | 22.57 | 0.21 | |
| 41 | Croatia | 0.69 | 60.02 | 0.71 | | 113 | Niger | -0.71 | 22.28 | 0.20 | |
| 42 | Hungary | 0.64 | 58.81 | 0.71 | | 114 | Guatemala | -0.71 | 22.14 | 0.19 | |
| 43 | Bahrain | 0.58 | 57.18 | 0.70 | | 115 | Gambia | -0.72 | 21.98 | 0.19 | |
| 44 | Georgia | 0.53 | 55.79 | 0.69 | | 116 | Honduras | -0.74 | 21.29 | 0.18 | |
| 45 | Costa Rica | 0.47 | 54.10 | 0.69 | | 117 | Pakistan | -0.80 | 19.76 | 0.17 | |
| 46 | Italy | 0.45 | 53.60 | 0.68 | | 118 | Nicaragua | -0.82 | 19.32 | 0.16 | |
| 47 | Greece | 0.45 | 53.53 | 0.67 | | 119 | Bangladesh | -0.82 | 19.23 | 0.16 | |
| 48 | South Africa | 0.43 | 53.13 | 0.66 | | 120 | Mali | -0.84 | 18.72 | 0.15 | |
| 49 | Uruguay | 0.41 | 52.35 | 0.66 | | 121 | Cameroon | -0.86 | 18.02 | 0.14 | |
| 50 | Turkey | 0.37 | 51.32 | 0.65 | | 122 | Paraguay | -0.88 | 17.59 | 0.14 | |
| 51 | Bhutan | 0.36 | 51.09 | 0.64 | ● | 123 | Egypt | -0.89 | 17.25 | 0.13 | |
| 52 | Trinidad and Tobago | 0.35 | 50.83 | 0.64 | ● | 124 | Cambodia | -0.92 | 16.46 | 0.12 | |
| 53 | Panama | 0.32 | 50.08 | 0.63 | | 125 | Nepal | -0.93 | 16.33 | 0.11 | |
| 54 | Mexico | 0.31 | 49.70 | 0.62 | | 126 | Uzbekistan | -0.94 | 16.09 | 0.11 | |
| 55 | Seychelles | 0.28 | 49.02 | 0.61 | | 127 | Belarus | -0.94 | 15.90 | 0.10 | ○ |
| 56 | Botswana | 0.28 | 48.90 | 0.61 | | 128 | Fiji | -0.96 | 15.51 | 0.09 | ○ |
| 57 | Thailand | 0.21 | 47.14 | 0.60 | | 129 | Nigeria | -1.01 | 14.11 | 0.09 | |
| 58 | Oman | 0.21 | 47.11 | 0.59 | | 130 | Côte d'Ivoire | -1.04 | 13.39 | 0.08 | ○ |
| 59 | Namibia | 0.19 | 46.62 | 0.59 | | 131 | Burundi | -1.07 | 12.34 | 0.07 | |
| 60 | Montenegro | 0.16 | 45.64 | 0.58 | | 132 | Tajikistan | -1.08 | 12.31 | 0.06 | |
| 61 | Bulgaria | 0.15 | 45.53 | 0.57 | | 133 | Madagascar | -1.12 | 11.02 | 0.06 | |
| 62 | Cabo Verde | 0.12 | 44.76 | 0.56 | ● | 134 | Venezuela, Bolivarian Rep. | -1.14 | 10.68 | 0.05 | |
| 63 | Armenia | 0.07 | 43.16 | 0.56 | | 135 | Zimbabwe | -1.14 | 10.62 | 0.04 | ○ |
| 64 | Saudi Arabia | 0.06 | 43.03 | 0.55 | | 136 | Yemen | -1.20 | 8.85 | 0.04 | ○ |
| 65 | Philippines | 0.06 | 43.00 | 0.54 | | 137 | Angola | -1.26 | 7.46 | 0.03 | |
| 66 | Colombia | 0.04 | 42.55 | 0.54 | | 138 | Guinea | -1.32 | 5.71 | 0.02 | |
| 67 | Rwanda | 0.00 | 41.39 | 0.53 | | 139 | Togo | -1.37 | 4.34 | 0.01 | ○ |
| 68 | Tunisia | 0.00 | 41.39 | 0.52 | | 140 | Myanmar | -1.51 | 0.59 | 0.01 | ○ |
| 69 | Jamaica | -0.02 | 40.96 | 0.51 | | 141 | Sudan | -1.53 | 0.00 | 0.00 | ○ |
| 70 | China | -0.03 | 40.60 | 0.51 | | | | | | | |
| 71 | TFYR of Macedonia | -0.06 | 39.73 | 0.50 | | | | | | | |
| 72 | Romania | -0.07 | 39.42 | 0.49 | | | | | | | |

SOURCE: World Bank, *World Governance Indicators 2013*

NOTE: ● indicates a strength; ○ a weakness

1.2.1

Regulatory quality Regulatory quality index | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Singapore | 1.96 | 100.00 | 1.00 | ● | 73 | Senegal | -0.05 | 46.53 | 0.49 | |
| 2 | Hong Kong (China) | 1.93 | 99.08 | 0.99 | ● | 74 | Philippines | -0.07 | 45.91 | 0.48 | |
| 3 | Sweden | 1.89 | 98.13 | 0.99 | ● | 75 | Serbia | -0.07 | 45.82 | 0.47 | |
| 4 | Finland | 1.85 | 97.03 | 0.98 | | 76 | Bosnia and Herzegovina | -0.08 | 45.61 | 0.46 | |
| 5 | New Zealand | 1.81 | 96.11 | 0.97 | ● | 77 | Kuwait | -0.09 | 45.53 | 0.46 | |
| 6 | Denmark | 1.80 | 95.79 | 0.96 | ● | 78 | Lebanon | -0.09 | 45.52 | 0.45 | |
| 7 | Australia | 1.79 | 95.45 | 0.96 | ● | 79 | Moldova, Rep. | -0.09 | 45.50 | 0.44 | |
| 8 | Netherlands | 1.77 | 94.83 | 0.95 | | 80 | Dominican Republic | -0.11 | 44.97 | 0.44 | |
| 9 | United Kingdom | 1.77 | 94.82 | 0.94 | | 81 | Cabo Verde | -0.12 | 44.64 | 0.43 | |
| 10 | Luxembourg | 1.76 | 94.73 | 0.94 | | 82 | Sri Lanka | -0.16 | 43.51 | 0.42 | |
| 11 | Canada | 1.71 | 93.47 | 0.93 | | 83 | Burkina Faso | -0.17 | 43.36 | 0.41 | |
| 12 | Norway | 1.65 | 91.86 | 0.92 | | 84 | Morocco | -0.17 | 43.31 | 0.41 | |
| 13 | Switzerland | 1.63 | 91.31 | 0.91 | | 85 | Indonesia | -0.20 | 42.57 | 0.40 | |
| 14 | Ireland | 1.58 | 89.86 | 0.91 | | 86 | Honduras | -0.20 | 42.51 | 0.39 | |
| 15 | Germany | 1.55 | 89.10 | 0.90 | | 87 | Guatemala | -0.21 | 42.17 | 0.39 | |
| 16 | Chile | 1.48 | 87.23 | 0.89 | ● | 88 | Uganda | -0.24 | 41.51 | 0.38 | |
| 17 | Austria | 1.48 | 87.17 | 0.89 | | 89 | Mongolia | -0.29 | 40.20 | 0.37 | |
| 18 | Estonia | 1.43 | 85.86 | 0.88 | | 90 | Seychelles | -0.29 | 40.01 | 0.36 | |
| 19 | Belgium | 1.29 | 82.19 | 0.87 | | 91 | Nicaragua | -0.30 | 39.70 | 0.36 | |
| 20 | Malta | 1.29 | 82.08 | 0.86 | | 92 | China | -0.31 | 39.64 | 0.35 | |
| 21 | United States of America | 1.26 | 81.30 | 0.86 | | 93 | Paraguay | -0.32 | 39.30 | 0.34 | |
| 22 | Israel | 1.16 | 78.56 | 0.85 | | 94 | Kyrgyzstan | -0.33 | 39.05 | 0.34 | |
| 23 | France | 1.15 | 78.38 | 0.84 | | 95 | Tanzania, United Rep. | -0.34 | 38.72 | 0.33 | |
| 24 | Lithuania | 1.13 | 77.93 | 0.84 | | 96 | Tunisia | -0.35 | 38.60 | 0.32 | |
| 25 | Japan | 1.10 | 77.15 | 0.83 | | 97 | Lesotho | -0.35 | 38.46 | 0.31 | |
| 26 | Iceland | 1.09 | 76.87 | 0.82 | | 98 | Cambodia | -0.35 | 38.45 | 0.31 | |
| 27 | Czech Republic | 1.09 | 76.76 | 0.81 | | 99 | Kenya | -0.35 | 38.40 | 0.30 | |
| 28 | Poland | 1.05 | 75.72 | 0.81 | | 100 | Swaziland | -0.36 | 38.17 | 0.29 | |
| 29 | Latvia | 1.03 | 75.14 | 0.80 | | 101 | Gambia | -0.37 | 38.04 | 0.29 | |
| 30 | Korea, Rep. | 0.98 | 73.94 | 0.79 | | 102 | Russian Federation | -0.37 | 37.98 | 0.28 | ○ |
| 31 | Mauritius | 0.94 | 72.81 | 0.79 | | 103 | Kazakhstan | -0.38 | 37.62 | 0.27 | |
| 32 | Spain | 0.93 | 72.59 | 0.78 | | 104 | Mozambique | -0.41 | 36.84 | 0.26 | |
| 33 | Slovakia | 0.91 | 72.16 | 0.77 | | 105 | Azerbaijan | -0.43 | 36.46 | 0.26 | |
| 34 | Cyprus | 0.91 | 72.07 | 0.76 | | 106 | Zambia | -0.47 | 35.36 | 0.25 | |
| 35 | Hungary | 0.89 | 71.44 | 0.76 | | 107 | India | -0.47 | 35.21 | 0.24 | |
| 36 | Portugal | 0.79 | 68.76 | 0.75 | | 108 | Mali | -0.50 | 34.45 | 0.24 | |
| 37 | United Arab Emirates | 0.78 | 68.53 | 0.74 | | 109 | Fiji | -0.57 | 32.58 | 0.23 | |
| 38 | Italy | 0.77 | 68.29 | 0.74 | | 110 | Niger | -0.61 | 31.60 | 0.22 | |
| 39 | Qatar | 0.74 | 67.53 | 0.73 | | 111 | Guyana | -0.62 | 31.44 | 0.21 | |
| 40 | Georgia | 0.74 | 67.39 | 0.72 | | 112 | Ukraine | -0.64 | 30.82 | 0.21 | |
| 41 | Botswana | 0.66 | 65.27 | 0.71 | ● | 113 | Viet Nam | -0.65 | 30.38 | 0.20 | |
| 42 | Greece | 0.62 | 64.24 | 0.71 | | 114 | Madagascar | -0.67 | 29.99 | 0.19 | |
| 43 | Malaysia | 0.62 | 64.23 | 0.70 | | 115 | Malawi | -0.68 | 29.71 | 0.19 | |
| 44 | Slovenia | 0.61 | 63.98 | 0.69 | | 116 | Egypt | -0.70 | 29.29 | 0.18 | |
| 45 | Bahrain | 0.60 | 63.81 | 0.69 | | 117 | Nigeria | -0.71 | 29.02 | 0.17 | |
| 46 | Romania | 0.59 | 63.49 | 0.68 | | 118 | Pakistan | -0.71 | 28.83 | 0.16 | |
| 47 | Costa Rica | 0.58 | 63.16 | 0.67 | | 119 | Côte d'Ivoire | -0.73 | 28.35 | 0.16 | |
| 48 | Uruguay | 0.52 | 61.72 | 0.66 | | 120 | Yemen | -0.74 | 28.24 | 0.15 | |
| 49 | Bulgaria | 0.52 | 61.64 | 0.66 | | 121 | Bolivia, Plurinational St. | -0.79 | 26.84 | 0.14 | ○ |
| 50 | Oman | 0.47 | 60.36 | 0.65 | | 122 | Nepal | -0.87 | 24.77 | 0.14 | |
| 51 | Mexico | 0.46 | 60.01 | 0.64 | | 123 | Burundi | -0.87 | 24.62 | 0.13 | |
| 52 | Peru | 0.45 | 59.85 | 0.64 | | 124 | Bangladesh | -0.93 | 23.12 | 0.12 | |
| 53 | Croatia | 0.44 | 59.53 | 0.63 | | 125 | Cameroon | -0.93 | 23.07 | 0.11 | |
| 54 | Barbados | 0.43 | 59.18 | 0.62 | | 126 | Ecuador | -0.94 | 22.72 | 0.11 | ○ |
| 55 | Turkey | 0.42 | 59.13 | 0.61 | | 127 | Togo | -0.95 | 22.50 | 0.10 | |
| 56 | South Africa | 0.41 | 58.66 | 0.61 | | 128 | Argentina | -0.99 | 21.48 | 0.09 | ○ |
| 57 | Colombia | 0.39 | 58.14 | 0.60 | | 129 | Guinea | -1.01 | 20.98 | 0.09 | |
| 58 | Panama | 0.37 | 57.67 | 0.59 | | 130 | Angola | -1.05 | 19.81 | 0.08 | |
| 59 | TFYR of Macedonia | 0.32 | 56.43 | 0.59 | | 131 | Tajikistan | -1.07 | 19.37 | 0.07 | |
| 60 | El Salvador | 0.31 | 55.97 | 0.58 | | 132 | Belarus | -1.09 | 18.72 | 0.06 | ○ |
| 61 | Trinidad and Tobago | 0.25 | 54.34 | 0.57 | | 133 | Bhutan | -1.10 | 18.60 | 0.06 | ○ |
| 62 | Armenia | 0.23 | 53.90 | 0.56 | | 134 | Ethiopia | -1.13 | 17.62 | 0.05 | |
| 63 | Jamaica | 0.23 | 53.83 | 0.56 | | 135 | Algeria | -1.19 | 16.24 | 0.04 | |
| 64 | Thailand | 0.21 | 53.49 | 0.55 | | 136 | Sudan | -1.44 | 9.38 | 0.04 | |
| 65 | Albania | 0.18 | 52.48 | 0.54 | | 137 | Iran, Islamic Rep. | -1.50 | 7.91 | 0.03 | ○ |
| 66 | Jordan | 0.11 | 50.86 | 0.54 | | 138 | Myanmar | -1.51 | 7.63 | 0.02 | |
| 67 | Ghana | 0.08 | 49.89 | 0.53 | | 139 | Uzbekistan | -1.63 | 4.37 | 0.01 | ○ |
| 68 | Saudi Arabia | 0.08 | 49.87 | 0.52 | | 140 | Venezuela, Bolivarian Rep. | -1.64 | 4.08 | 0.01 | ○ |
| 69 | Brazil | 0.07 | 49.56 | 0.51 | | 141 | Zimbabwe | -1.80 | 0.00 | 0.00 | ○ |
| 70 | Namibia | 0.05 | 49.20 | 0.51 | | | | | | | |
| 71 | Montenegro | 0.05 | 49.12 | 0.50 | | | | | | | |
| 72 | Rwanda | 0.03 | 48.69 | 0.49 | | | | | | | |

SOURCE: World Bank, *World Governance Indicators 2013*

NOTE: ● indicates a strength; ○ a weakness

1.2.2 Rule of law

Rule of law index | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Norway | 1.97 | 100.00 | 1.00 | ● | 73 | Panama | -0.24 | 41.26 | 0.49 | |
| 2 | Sweden | 1.95 | 99.63 | 0.99 | ● | 74 | Morocco | -0.25 | 41.05 | 0.48 | |
| 3 | Finland | 1.93 | 98.87 | 0.99 | ● | 75 | Lesotho | -0.26 | 40.71 | 0.47 | ● |
| 4 | Denmark | 1.87 | 97.48 | 0.98 | ● | 76 | Sri Lanka | -0.27 | 40.41 | 0.46 | |
| 5 | New Zealand | 1.86 | 97.13 | 0.97 | ● | 77 | Senegal | -0.27 | 40.37 | 0.46 | |
| 6 | Austria | 1.83 | 96.30 | 0.96 | ● | 78 | Zambia | -0.31 | 39.48 | 0.45 | |
| 7 | Netherlands | 1.81 | 95.77 | 0.96 | | 79 | Armenia | -0.31 | 39.26 | 0.44 | |
| 8 | Switzerland | 1.79 | 95.28 | 0.95 | | 80 | Serbia | -0.34 | 38.51 | 0.44 | |
| 9 | Luxembourg | 1.79 | 95.20 | 0.94 | | 81 | Uganda | -0.36 | 38.13 | 0.43 | |
| 10 | Australia | 1.75 | 94.30 | 0.94 | | 82 | Mongolia | -0.37 | 37.80 | 0.42 | |
| 11 | Singapore | 1.74 | 94.02 | 0.93 | | 83 | Jamaica | -0.39 | 37.34 | 0.41 | |
| 12 | Canada | 1.74 | 93.93 | 0.92 | | 84 | Moldova, Rep. | -0.41 | 36.72 | 0.41 | |
| 13 | Ireland | 1.72 | 93.42 | 0.91 | | 85 | Swaziland | -0.42 | 36.38 | 0.40 | |
| 14 | United Kingdom | 1.67 | 92.16 | 0.91 | | 86 | Philippines | -0.43 | 36.27 | 0.39 | |
| 15 | Iceland | 1.65 | 91.41 | 0.90 | | 87 | Colombia | -0.45 | 35.70 | 0.39 | |
| 16 | Germany | 1.62 | 90.62 | 0.89 | | 88 | China | -0.46 | 35.50 | 0.38 | |
| 17 | Hong Kong (China) | 1.54 | 88.70 | 0.89 | | 89 | Viet Nam | -0.49 | 34.67 | 0.37 | |
| 18 | United States of America | 1.54 | 88.50 | 0.88 | | 90 | Tanzania, United Rep. | -0.50 | 34.22 | 0.36 | |
| 19 | Japan | 1.41 | 85.14 | 0.87 | | 91 | Guyana | -0.52 | 33.67 | 0.36 | |
| 20 | Belgium | 1.40 | 84.97 | 0.86 | | 92 | Burkina Faso | -0.53 | 33.62 | 0.35 | |
| 21 | France | 1.40 | 84.84 | 0.86 | | 93 | Dominican Republic | -0.53 | 33.47 | 0.34 | |
| 22 | Chile | 1.34 | 83.25 | 0.85 | | 94 | Indonesia | -0.55 | 32.88 | 0.34 | |
| 23 | Malta | 1.32 | 82.81 | 0.84 | | 95 | Albania | -0.57 | 32.36 | 0.33 | |
| 24 | Estonia | 1.16 | 78.63 | 0.84 | | 96 | Mexico | -0.58 | 32.26 | 0.32 | |
| 25 | Qatar | 1.04 | 75.40 | 0.83 | | 97 | Gambia | -0.59 | 32.02 | 0.31 | |
| 26 | Portugal | 1.03 | 75.12 | 0.82 | | 98 | Egypt | -0.60 | 31.62 | 0.31 | |
| 27 | Czech Republic | 1.00 | 74.30 | 0.81 | | 99 | Peru | -0.61 | 31.42 | 0.30 | |
| 28 | Barbados | 1.00 | 74.22 | 0.81 | | 100 | Ethiopia | -0.62 | 31.09 | 0.29 | |
| 29 | Cyprus | 1.00 | 74.20 | 0.80 | | 101 | Nicaragua | -0.65 | 30.43 | 0.29 | |
| 30 | Spain | 1.00 | 74.15 | 0.79 | | 102 | Kazakhstan | -0.67 | 29.89 | 0.28 | |
| 31 | Slovenia | 0.97 | 73.41 | 0.79 | | 103 | Azerbaijan | -0.67 | 29.71 | 0.27 | |
| 32 | Israel | 0.95 | 72.98 | 0.78 | | 104 | El Salvador | -0.68 | 29.67 | 0.26 | |
| 33 | Korea, Rep. | 0.94 | 72.58 | 0.77 | | 105 | Algeria | -0.68 | 29.53 | 0.26 | |
| 34 | Mauritius | 0.90 | 71.63 | 0.76 | | 106 | Argentina | -0.73 | 28.17 | 0.25 | |
| 35 | Lithuania | 0.79 | 68.68 | 0.76 | | 107 | Kenya | -0.74 | 27.84 | 0.24 | |
| 36 | Poland | 0.79 | 68.53 | 0.75 | | 108 | Niger | -0.75 | 27.81 | 0.24 | |
| 37 | Latvia | 0.75 | 67.48 | 0.74 | | 109 | Mali | -0.75 | 27.69 | 0.23 | |
| 38 | United Arab Emirates | 0.64 | 64.75 | 0.74 | | 110 | Nepal | -0.76 | 27.53 | 0.22 | |
| 39 | Botswana | 0.59 | 63.42 | 0.73 | ● | 111 | Lebanon | -0.78 | 26.98 | 0.21 | |
| 40 | Hungary | 0.56 | 62.63 | 0.72 | | 112 | Russian Federation | -0.78 | 26.79 | 0.21 | ○ |
| 41 | Oman | 0.56 | 62.44 | 0.71 | ● | 113 | Paraguay | -0.82 | 25.74 | 0.20 | |
| 42 | Uruguay | 0.50 | 61.03 | 0.71 | | 114 | Ukraine | -0.83 | 25.68 | 0.19 | ○ |
| 43 | Costa Rica | 0.50 | 60.82 | 0.70 | | 115 | Bangladesh | -0.83 | 25.51 | 0.19 | |
| 44 | Cabo Verde | 0.48 | 60.45 | 0.69 | ● | 116 | Fiji | -0.84 | 25.25 | 0.18 | |
| 45 | Malaysia | 0.48 | 60.30 | 0.69 | | 117 | Mozambique | -0.85 | 25.11 | 0.17 | |
| 46 | Slovakia | 0.45 | 59.51 | 0.68 | | 118 | Pakistan | -0.88 | 24.24 | 0.16 | |
| 47 | Greece | 0.44 | 59.29 | 0.67 | | 119 | Belarus | -0.89 | 23.99 | 0.16 | ○ |
| 48 | Kuwait | 0.39 | 57.95 | 0.66 | | 120 | Madagascar | -0.90 | 23.76 | 0.15 | |
| 49 | Jordan | 0.39 | 57.94 | 0.66 | | 121 | Côte d'Ivoire | -0.93 | 22.84 | 0.14 | |
| 50 | Italy | 0.36 | 57.13 | 0.65 | | 122 | Ecuador | -0.95 | 22.35 | 0.14 | |
| 51 | Bahrain | 0.35 | 56.99 | 0.64 | | 123 | Iran, Islamic Rep. | -0.98 | 21.49 | 0.13 | |
| 52 | Saudi Arabia | 0.26 | 54.68 | 0.64 | | 124 | Cambodia | -0.99 | 21.30 | 0.12 | |
| 53 | Croatia | 0.26 | 54.68 | 0.63 | | 125 | Togo | -1.01 | 20.79 | 0.11 | |
| 54 | Namibia | 0.25 | 54.27 | 0.62 | | 126 | Cameroon | -1.05 | 19.81 | 0.11 | |
| 55 | Bhutan | 0.24 | 54.11 | 0.61 | ● | 127 | Burundi | -1.06 | 19.38 | 0.10 | |
| 56 | South Africa | 0.13 | 51.01 | 0.61 | | 128 | Bolivia, Plurinational St. | -1.07 | 19.14 | 0.09 | ○ |
| 57 | Ghana | 0.11 | 50.52 | 0.60 | ● | 129 | Guatemala | -1.11 | 18.06 | 0.09 | |
| 58 | Romania | 0.11 | 50.47 | 0.59 | | 130 | Kyrgyzstan | -1.14 | 17.34 | 0.08 | |
| 59 | Turkey | 0.08 | 49.76 | 0.59 | | 131 | Nigeria | -1.16 | 16.83 | 0.07 | |
| 60 | Seychelles | 0.04 | 48.77 | 0.58 | | 132 | Yemen | -1.16 | 16.81 | 0.06 | |
| 61 | Montenegro | 0.02 | 48.17 | 0.57 | | 133 | Uzbekistan | -1.20 | 15.60 | 0.06 | ○ |
| 62 | Georgia | -0.02 | 46.97 | 0.56 | | 134 | Myanmar | -1.22 | 15.17 | 0.05 | |
| 63 | India | -0.10 | 45.00 | 0.56 | | 135 | Honduras | -1.23 | 14.95 | 0.04 | ○ |
| 64 | Brazil | -0.12 | 44.46 | 0.55 | | 136 | Tajikistan | -1.24 | 14.67 | 0.04 | ○ |
| 65 | Thailand | -0.13 | 44.09 | 0.54 | | 137 | Sudan | -1.25 | 14.31 | 0.03 | ○ |
| 66 | Bulgaria | -0.14 | 43.98 | 0.54 | | 138 | Angola | -1.28 | 13.59 | 0.02 | |
| 67 | Rwanda | -0.15 | 43.71 | 0.53 | | 139 | Guinea | -1.42 | 9.81 | 0.01 | ○ |
| 68 | Bosnia and Herzegovina | -0.17 | 43.23 | 0.52 | | 140 | Zimbabwe | -1.57 | 5.92 | 0.01 | ○ |
| 69 | Malawi | -0.19 | 42.57 | 0.51 | | 141 | Venezuela, Bolivarian Rep. | -1.79 | 0.00 | 0.00 | ○ |
| 70 | TFYR of Macedonia | -0.20 | 42.29 | 0.51 | | | | | | | |
| 71 | Tunisia | -0.20 | 42.27 | 0.50 | | | | | | | |
| 72 | Trinidad and Tobago | -0.22 | 41.70 | 0.49 | | | | | | | |

SOURCE: World Bank, *World Governance Indicators 2013*

NOTE: ● indicates a strength; ○ a weakness

1.2.3

Cost of redundancy dismissal

Sum of notice period and severance pay for redundancy dismissal (in salary weeks, averages for workers with 1, 5 and 10 years of tenure, with a minimum threshold of 8 weeks) | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | Rank | Country/Economy | Value | Score (0–100) | Percent rank |
|------|--------------------------|-------|---------------|--------------|------|-----------------------------------|-------|---------------|--------------|
| 1 | Austria | 8.00 | 100.00 | 0.88 | 73 | Barbados | 16.00 | 84.15 | 0.49 |
| 1 | Bahrain | 8.00 | 100.00 | 0.88 | 74 | Guyana | 16.63 | 82.89 | 0.47 |
| 1 | Cyprus | 8.00 | 100.00 | 0.88 | 74 | Malawi | 16.63 | 82.89 | 0.47 |
| 1 | Denmark | 8.00 | 100.00 | 0.88 | 76 | Colombia | 16.67 | 82.83 | 0.46 |
| 1 | Guinea | 8.00 | 100.00 | 0.88 | 77 | Portugal | 17.00 | 82.17 | 0.46 |
| 1 | Hong Kong (China) | 8.00 | 100.00 | 0.88 | 78 | Algeria | 17.30 | 81.57 | 0.44 |
| 1 | Italy | 8.00 | 100.00 | 0.88 | 78 | Kyrgyzstan | 17.30 | 81.57 | 0.44 |
| 1 | Japan | 8.00 | 100.00 | 0.88 | 80 | Spain | 17.37 | 81.44 | 0.44 |
| 1 | Jordan | 8.00 | 100.00 | 0.88 | 81 | Russian Federation | 17.40 | 81.37 | 0.42 |
| 1 | Kenya | 8.00 | 100.00 | 0.88 | 81 | Uzbekistan | 17.40 | 81.37 | 0.42 |
| 1 | Malta | 8.00 | 100.00 | 0.88 | 83 | Panama | 18.13 | 79.92 | 0.41 |
| 1 | New Zealand | 8.00 | 100.00 | 0.88 | 84 | Costa Rica | 18.67 | 78.86 | 0.41 |
| 1 | Oman | 8.00 | 100.00 | 0.88 | 85 | Poland | 18.77 | 78.67 | 0.40 |
| 1 | Romania | 8.00 | 100.00 | 0.88 | 86 | Slovakia | 18.80 | 78.60 | 0.39 |
| 1 | Serbia | 8.00 | 100.00 | 0.88 | 87 | Ethiopia | 19.13 | 77.94 | 0.39 |
| 1 | Singapore | 8.00 | 100.00 | 0.88 | 88 | Cambodia | 19.33 | 77.54 | 0.38 |
| 1 | United Arab Emirates | 8.00 | 100.00 | 0.88 | 89 | Saudi Arabia | 19.47 | 77.28 | 0.37 |
| 1 | United States of America | 8.00 | 100.00 | 0.88 | 90 | Belgium | 19.67 | 76.88 | 0.36 |
| 19 | Bhutan | 8.30 | 99.41 | 0.87 | 91 | Cameroon | 19.87 | 76.49 | 0.36 |
| 20 | Bulgaria | 8.60 | 98.81 | 0.84 | 92 | Myanmar | 20.20 | 75.83 | 0.35 |
| 20 | Georgia | 8.60 | 98.81 | 0.84 | 93 | Czech Republic | 20.27 | 75.69 | 0.34 |
| 20 | Kazakhstan | 8.60 | 98.81 | 0.84 | 94 | Trinidad and Tobago | 20.50 | 75.23 | 0.34 |
| 20 | Mongolia | 8.60 | 98.81 | 0.84 | 95 | Morocco | 20.70 | 74.83 | 0.33 |
| 24 | Lebanon | 8.67 | 98.68 | 0.81 | 96 | Albania | 20.80 | 74.64 | 0.31 |
| 24 | Netherlands | 8.67 | 98.68 | 0.81 | 96 | Uruguay | 20.80 | 74.64 | 0.31 |
| 24 | Norway | 8.67 | 98.68 | 0.81 | 98 | Germany | 21.57 | 73.12 | 0.31 |
| 24 | Uganda | 8.67 | 98.68 | 0.81 | 99 | Luxembourg | 21.67 | 72.92 | 0.30 |
| 28 | Bosnia and Herzegovina | 9.20 | 97.62 | 0.81 | 100 | Botswana | 21.67 | 72.92 | 0.29 |
| 29 | South Africa | 9.33 | 97.36 | 0.79 | 101 | Azerbaijan | 21.70 | 72.85 | 0.28 |
| 29 | Tanzania, United Rep. | 9.33 | 97.36 | 0.79 | 101 | Belarus | 21.70 | 72.85 | 0.28 |
| 29 | United Kingdom | 9.33 | 97.36 | 0.79 | 103 | Mexico | 22.00 | 72.26 | 0.27 |
| 32 | Fiji | 9.63 | 96.76 | 0.77 | 104 | Moldova, Rep. | 22.63 | 71.00 | 0.26 |
| 32 | Namibia | 9.63 | 96.76 | 0.77 | 105 | El Salvador | 22.87 | 70.54 | 0.26 |
| 34 | Canada | 10.00 | 96.04 | 0.76 | 106 | Iran, Islamic Rep. | 23.10 | 70.08 | 0.25 |
| 35 | Finland | 10.10 | 95.84 | 0.75 | 107 | Qatar | 23.23 | 69.82 | 0.24 |
| 35 | Iceland | 10.10 | 95.84 | 0.75 | 108 | Malaysia | 23.90 | 68.49 | 0.24 |
| 37 | Switzerland | 10.13 | 95.77 | 0.74 | 109 | Viet Nam | 24.57 | 67.17 | 0.23 |
| 38 | Burkina Faso | 10.43 | 95.18 | 0.74 | 110 | Lithuania | 24.60 | 67.11 | 0.22 |
| 39 | Mauritius | 10.63 | 94.78 | 0.73 | 111 | Sudan | 25.97 | 64.40 | 0.21 |
| 40 | Slovenia | 10.67 | 94.72 | 0.72 | 112 | Gambia | 26.00 | 64.33 | 0.21 |
| 41 | Armenia | 11.00 | 94.06 | 0.71 | 113 | Paraguay | 26.07 | 64.20 | 0.20 |
| 42 | Montenegro | 11.23 | 93.59 | 0.71 | 114 | Dominican Republic | 26.17 | 64.00 | 0.19 |
| 43 | Peru | 11.43 | 93.20 | 0.70 | 115 | Guatemala | 27.00 | 62.35 | 0.19 |
| 44 | Australia | 11.67 | 92.73 | 0.69 | 116 | Nepal | 27.17 | 62.02 | 0.17 |
| 45 | France | 11.87 | 92.34 | 0.69 | 116 | Pakistan | 27.17 | 62.02 | 0.17 |
| 46 | Seychelles | 11.90 | 92.27 | 0.68 | 118 | Chile | 27.40 | 61.56 | 0.13 |
| 47 | Tunisia | 12.07 | 91.94 | 0.67 | 118 | China | 27.40 | 61.56 | 0.13 |
| 48 | Madagascar | 12.23 | 91.61 | 0.66 | 118 | Israel | 27.40 | 61.56 | 0.13 |
| 49 | Estonia | 12.90 | 90.29 | 0.66 | 118 | Korea, Rep. | 27.40 | 61.56 | 0.13 |
| 50 | Latvia | 12.97 | 90.16 | 0.64 | 118 | Philippines | 27.40 | 61.56 | 0.13 |
| 50 | Rwanda | 12.97 | 90.16 | 0.64 | 118 | Yemen | 27.40 | 61.56 | 0.13 |
| 50 | TFYR of Macedonia | 12.97 | 90.16 | 0.64 | 124 | Kuwait | 28.10 | 60.17 | 0.12 |
| 53 | Ukraine | 13.00 | 90.09 | 0.63 | 125 | Cabo Verde | 29.50 | 57.40 | 0.11 |
| 54 | Côte d'Ivoire | 13.07 | 89.96 | 0.62 | 126 | Turkey | 29.77 | 56.87 | 0.11 |
| 55 | Togo | 13.10 | 89.89 | 0.61 | 127 | Argentina | 30.33 | 55.75 | 0.09 |
| 56 | Hungary | 13.43 | 89.23 | 0.61 | 127 | Honduras | 30.33 | 55.75 | 0.09 |
| 57 | Mali | 13.63 | 88.84 | 0.60 | 129 | Bangladesh | 30.97 | 54.49 | 0.09 |
| 58 | Jamaica | 14.00 | 88.11 | 0.59 | 130 | Angola | 31.03 | 54.36 | 0.08 |
| 58 | Niger | 14.00 | 88.11 | 0.59 | 131 | Ecuador | 31.80 | 52.84 | 0.07 |
| 60 | Ireland | 14.33 | 87.45 | 0.58 | 132 | Thailand | 35.97 | 44.58 | 0.06 |
| 61 | Sweden | 14.43 | 87.25 | 0.57 | 133 | Egypt | 36.87 | 42.80 | 0.06 |
| 62 | Swaziland | 14.57 | 86.99 | 0.56 | 134 | Mozambique | 37.53 | 41.48 | 0.05 |
| 63 | Senegal | 14.80 | 86.53 | 0.56 | 135 | Ghana | 49.77 | 17.24 | 0.04 |
| 64 | Nicaragua | 14.93 | 86.26 | 0.55 | 136 | Zambia | 50.53 | 15.72 | 0.04 |
| 65 | Lesotho | 14.97 | 86.20 | 0.54 | 137 | Indonesia | 57.77 | 1.39 | 0.03 |
| 66 | Croatia | 15.10 | 85.93 | 0.54 | 138 | Bolivia, Plurinational St. (2013) | 82.33 | 0.00 | 0.00 |
| 67 | Nigeria | 15.40 | 85.34 | 0.53 | 138 | Sri Lanka | 82.33 | 0.00 | 0.00 |
| 68 | Brazil | 15.43 | 85.27 | 0.52 | 138 | Venezuela, Bolivarian Rep. (2013) | 82.33 | 0.00 | 0.00 |
| 69 | Tajikistan | 15.53 | 85.07 | 0.51 | 138 | Zimbabwe | 82.33 | 0.00 | 0.00 |
| 70 | India | 15.70 | 84.74 | 0.51 | | | | | |
| 71 | Burundi | 15.90 | 84.35 | 0.49 | | | | | |
| 71 | Greece | 15.90 | 84.35 | 0.49 | | | | | |

SOURCE: World Bank. *Doing Business 2015: Going Beyond Efficiency*
 NOTE: ● indicates a strength; ○ a weakness

1.3.1 Ease of starting a business

Ease of starting a business (distance to frontier) | 2014

II: Data Tables

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | New Zealand | 99.96 | 99.96 | 1.00 | ● | 73 | Croatia | 85.43 | 85.43 | 0.49 | |
| 2 | Canada | 98.82 | 98.82 | 0.99 | ● | 74 | Peru | 85.10 | 85.10 | 0.48 | |
| 3 | TFYR of Macedonia | 98.08 | 98.08 | 0.99 | ● | 75 | Senegal | 85.04 | 85.04 | 0.47 | |
| 4 | Armenia | 97.77 | 97.77 | 0.98 | ● | 76 | Bhutan | 85.01 | 85.01 | 0.46 | |
| 5 | Georgia | 97.73 | 97.73 | 0.97 | ● | 77 | Barbados | 84.36 | 84.36 | 0.46 | |
| 6 | Singapore | 96.48 | 96.48 | 0.96 | | 78 | Ghana | 83.73 | 83.73 | 0.45 | |
| 7 | Australia | 96.47 | 96.47 | 0.96 | ● | 79 | Guatemala | 83.72 | 83.72 | 0.44 | |
| 8 | Hong Kong (China) | 96.38 | 96.38 | 0.95 | | 80 | Guyana | 83.62 | 83.62 | 0.44 | |
| 9 | Kyrgyzstan | 96.35 | 96.35 | 0.94 | ● | 81 | Tunisia | 83.60 | 83.60 | 0.43 | |
| 10 | Portugal | 96.27 | 96.27 | 0.94 | ● | 82 | Austria | 83.42 | 83.42 | 0.42 | ○ |
| 11 | Lithuania | 96.22 | 96.22 | 0.93 | ● | 83 | Qatar | 83.14 | 83.14 | 0.41 | |
| 12 | Azerbaijan | 95.54 | 95.54 | 0.92 | ● | 84 | Nepal | 83.01 | 83.01 | 0.40 | |
| 13 | Malaysia | 94.90 | 94.90 | 0.91 | | 84 | Sri Lanka | 83.01 | 83.01 | 0.40 | |
| 14 | Belgium | 94.42 | 94.42 | 0.91 | ● | 86 | Tajikistan | 83.00 | 83.00 | 0.39 | |
| 15 | Slovenia | 94.39 | 94.39 | 0.90 | | 87 | Mozambique | 82.96 | 82.96 | 0.39 | |
| 16 | Korea, Rep. | 94.36 | 94.36 | 0.89 | | 88 | Lesotho | 82.84 | 82.84 | 0.38 | |
| 17 | Burundi | 94.25 | 94.25 | 0.89 | ● | 89 | Saudi Arabia | 82.71 | 82.71 | 0.37 | |
| 18 | Ireland | 94.17 | 94.17 | 0.88 | | 90 | Czech Republic | 82.58 | 82.58 | 0.36 | ○ |
| 19 | Jamaica | 94.13 | 94.13 | 0.87 | ● | 91 | Rwanda | 81.66 | 81.66 | 0.36 | |
| 20 | Netherlands | 94.08 | 94.08 | 0.86 | | 92 | Dominican Republic | 81.60 | 81.60 | 0.35 | |
| 21 | Norway | 94.03 | 94.03 | 0.86 | | 93 | Germany | 81.38 | 81.38 | 0.34 | ○ |
| 22 | Denmark | 93.40 | 93.40 | 0.85 | | 94 | Bangladesh | 81.36 | 81.36 | 0.34 | |
| 23 | Estonia | 93.25 | 93.25 | 0.84 | | 95 | Pakistan | 80.92 | 80.92 | 0.33 | |
| 24 | Finland | 93.10 | 93.10 | 0.84 | | 96 | Costa Rica | 80.90 | 80.90 | 0.32 | |
| 25 | France | 93.00 | 93.00 | 0.83 | | 97 | Lebanon | 80.80 | 80.80 | 0.31 | |
| 26 | Mauritius | 92.47 | 92.47 | 0.82 | | 98 | Nicaragua | 80.27 | 80.27 | 0.31 | |
| 27 | Iceland | 92.35 | 92.35 | 0.81 | | 99 | El Salvador | 79.87 | 79.87 | 0.30 | |
| 28 | Sweden | 92.30 | 92.30 | 0.81 | | 100 | Oman | 79.29 | 79.29 | 0.29 | |
| 29 | Russian Federation | 92.17 | 92.17 | 0.80 | | 101 | Tanzania, United Rep. | 78.85 | 78.85 | 0.29 | |
| 30 | Moldova, Rep. | 92.16 | 92.16 | 0.79 | | 102 | Viet Nam | 77.68 | 77.68 | 0.28 | |
| 31 | Latvia | 92.12 | 92.12 | 0.79 | | 103 | Paraguay | 77.52 | 77.52 | 0.27 | |
| 32 | Madagascar | 92.02 | 92.02 | 0.78 | ● | 104 | Seychelles | 77.48 | 77.48 | 0.26 | |
| 33 | Panama | 91.93 | 91.93 | 0.76 | | 105 | China | 77.43 | 77.43 | 0.26 | |
| 33 | Romania | 91.93 | 91.93 | 0.76 | ● | 106 | Nigeria | 77.13 | 77.13 | 0.25 | |
| 35 | Belarus | 91.88 | 91.88 | 0.76 | | 107 | Bahrain | 76.92 | 76.92 | 0.24 | |
| 36 | Albania | 91.86 | 91.86 | 0.75 | ● | 108 | Cameroon | 76.41 | 76.41 | 0.24 | |
| 37 | Mongolia | 91.33 | 91.33 | 0.74 | | 109 | Togo | 76.06 | 76.06 | 0.23 | |
| 38 | Côte d'Ivoire | 91.24 | 91.24 | 0.74 | ● | 110 | Malta | 75.29 | 75.29 | 0.22 | ○ |
| 39 | United Kingdom | 91.23 | 91.23 | 0.73 | | 111 | Honduras | 74.84 | 74.84 | 0.21 | |
| 40 | Italy | 91.22 | 91.22 | 0.71 | | 112 | Sudan | 74.71 | 74.71 | 0.21 | |
| 40 | United States of America | 91.22 | 91.22 | 0.71 | | 113 | Yemen | 74.43 | 74.43 | 0.20 | |
| 42 | Bulgaria | 91.09 | 91.09 | 0.71 | | 114 | Algeria | 74.07 | 74.07 | 0.19 | |
| 43 | Greece | 90.71 | 90.71 | 0.70 | | 115 | Kenya | 74.02 | 74.02 | 0.19 | |
| 44 | Israel | 90.54 | 90.54 | 0.69 | | 116 | Swaziland | 73.47 | 73.47 | 0.18 | |
| 45 | Morocco | 90.33 | 90.33 | 0.69 | | 117 | Argentina | 72.58 | 72.58 | 0.17 | |
| 46 | Kazakhstan | 90.19 | 90.19 | 0.68 | | 118 | Bosnia and Herzegovina | 72.51 | 72.51 | 0.16 | ○ |
| 47 | Montenegro | 90.05 | 90.05 | 0.67 | | 119 | Botswana | 71.68 | 71.68 | 0.16 | |
| 48 | Hungary | 90.04 | 90.04 | 0.66 | | 120 | Kuwait | 71.30 | 71.30 | 0.15 | |
| 49 | United Arab Emirates | 89.97 | 89.97 | 0.66 | | 121 | Burkina Faso | 69.06 | 69.06 | 0.14 | |
| 50 | Chile | 89.83 | 89.83 | 0.65 | | 122 | Indonesia | 68.84 | 68.84 | 0.14 | |
| 51 | Uruguay | 89.68 | 89.68 | 0.64 | | 123 | Namibia | 68.67 | 68.67 | 0.13 | ○ |
| 52 | South Africa | 89.43 | 89.43 | 0.64 | | 124 | Malawi | 68.53 | 68.53 | 0.12 | |
| 53 | Iran, Islamic Rep. | 89.37 | 89.37 | 0.63 | ● | 125 | India | 68.42 | 68.42 | 0.11 | ○ |
| 54 | Cyprus | 89.18 | 89.18 | 0.62 | | 126 | Gambia | 68.37 | 68.37 | 0.11 | |
| 55 | Uzbekistan | 89.00 | 89.00 | 0.61 | ● | 127 | Fiji | 67.79 | 67.79 | 0.10 | ○ |
| 56 | Serbia | 88.91 | 88.91 | 0.61 | | 128 | Philippines | 67.23 | 67.23 | 0.09 | ○ |
| 57 | Mexico | 88.85 | 88.85 | 0.60 | | 129 | Ecuador | 65.31 | 65.31 | 0.09 | ○ |
| 58 | Zambia | 88.63 | 88.63 | 0.59 | ● | 130 | Uganda | 63.44 | 63.44 | 0.08 | |
| 59 | Switzerland | 88.42 | 88.42 | 0.59 | ○ | 131 | Brazil | 63.37 | 63.37 | 0.07 | ○ |
| 60 | Trinidad and Tobago | 88.33 | 88.33 | 0.58 | | 132 | Ethiopia | 63.15 | 63.15 | 0.06 | |
| 61 | Egypt | 88.14 | 88.14 | 0.57 | | 133 | Mali | 62.92 | 62.92 | 0.06 | |
| 62 | Spain | 88.08 | 88.08 | 0.56 | | 134 | Bolivia, Plurinational St. | 59.07 | 59.07 | 0.05 | ○ |
| 63 | Thailand | 87.98 | 87.98 | 0.56 | | 135 | Angola | 56.56 | 56.56 | 0.04 | |
| 64 | Ukraine | 87.35 | 87.35 | 0.55 | | 136 | Guinea | 55.44 | 55.44 | 0.04 | |
| 65 | Slovakia | 87.02 | 87.02 | 0.54 | | 137 | Niger | 54.41 | 54.41 | 0.03 | ○ |
| 66 | Cabo Verde | 87.00 | 87.00 | 0.54 | ● | 138 | Zimbabwe | 51.42 | 51.42 | 0.02 | ○ |
| 67 | Turkey | 86.86 | 86.86 | 0.53 | | 139 | Venezuela, Bolivarian Rep. | 45.23 | 45.23 | 0.01 | ○ |
| 68 | Luxembourg | 86.47 | 86.47 | 0.52 | | 140 | Cambodia | 41.23 | 41.23 | 0.01 | ○ |
| 69 | Japan | 86.21 | 86.21 | 0.51 | | 141 | Myanmar | 22.85 | 22.85 | 0.00 | ○ |
| 70 | Colombia | 86.13 | 86.13 | 0.51 | | | | | | | |
| 71 | Poland | 85.79 | 85.79 | 0.50 | | | | | | | |
| 72 | Jordan | 85.61 | 85.61 | 0.49 | | | | | | | |

SOURCE: World Bank. *Doing Business 2015: Going Beyond Efficiency*

NOTE: ● indicates a strength; ○ a weakness

1.3.2 Ease of resolving insolvency

Ease of resolving insolvency (distance to frontier) | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Finland | 93.85 | 93.85 | 1.00 | ● | 73 | Pakistan | 46.18 | 46.18 | 0.49 | |
| 2 | Japan | 93.74 | 93.74 | 0.99 | ● | 74 | El Salvador | 46.02 | 46.02 | 0.48 | |
| 3 | Germany | 91.78 | 91.78 | 0.99 | ● | 75 | Swaziland | 45.80 | 45.80 | 0.47 | |
| 4 | United States of America | 90.12 | 90.12 | 0.98 | ● | 76 | Namibia | 45.53 | 45.53 | 0.46 | |
| 5 | Korea, Rep. | 90.06 | 90.06 | 0.97 | ● | 77 | Nepal | 45.41 | 45.41 | 0.46 | ● |
| 6 | Canada | 89.17 | 89.17 | 0.96 | ● | 78 | Argentina | 45.10 | 45.10 | 0.45 | |
| 7 | Norway | 85.62 | 85.62 | 0.96 | ● | 79 | Cambodia | 45.02 | 45.02 | 0.44 | |
| 8 | Denmark | 84.59 | 84.59 | 0.95 | | 80 | Côte d'Ivoire | 44.97 | 44.97 | 0.44 | ● |
| 9 | Portugal | 84.19 | 84.19 | 0.94 | ● | 81 | Malta | 44.78 | 44.78 | 0.43 | |
| 10 | Belgium | 83.87 | 83.87 | 0.94 | ● | 82 | Bahrain | 44.24 | 44.24 | 0.42 | |
| 11 | Netherlands | 83.77 | 83.77 | 0.93 | | 83 | Costa Rica | 43.95 | 43.95 | 0.41 | |
| 12 | United Kingdom | 82.04 | 82.04 | 0.92 | | 84 | Mongolia | 43.93 | 43.93 | 0.41 | |
| 13 | Australia | 81.60 | 81.60 | 0.91 | | 85 | Fiji | 43.62 | 43.62 | 0.40 | |
| 14 | Iceland | 81.47 | 81.47 | 0.91 | | 86 | United Arab Emirates | 43.51 | 43.51 | 0.39 | |
| 15 | Austria | 78.84 | 78.84 | 0.90 | | 87 | Togo | 43.12 | 43.12 | 0.39 | ● |
| 16 | Sweden | 78.43 | 78.43 | 0.89 | | 88 | Azerbaijan | 43.02 | 43.02 | 0.38 | |
| 17 | Singapore | 77.94 | 77.94 | 0.89 | | 89 | Zambia | 43.01 | 43.01 | 0.37 | |
| 18 | Czech Republic | 77.50 | 77.50 | 0.88 | | 90 | Bolivia, Plurinational St. | 42.82 | 42.82 | 0.36 | |
| 19 | Ireland | 76.90 | 76.90 | 0.87 | | 91 | Algeria | 42.74 | 42.74 | 0.36 | |
| 20 | France | 75.94 | 75.94 | 0.86 | | 92 | Uganda | 42.27 | 42.27 | 0.35 | |
| 21 | Spain | 75.89 | 75.89 | 0.86 | | 93 | Senegal | 41.86 | 41.86 | 0.34 | |
| 22 | Israel | 75.21 | 75.21 | 0.85 | | 94 | Rwanda | 41.77 | 41.77 | 0.34 | |
| 23 | Hong Kong (China) | 75.06 | 75.06 | 0.84 | | 95 | Gambia | 41.51 | 41.51 | 0.33 | |
| 24 | Barbados | 74.09 | 74.09 | 0.84 | ● | 96 | Viet Nam | 41.27 | 41.27 | 0.32 | |
| 25 | Mexico | 72.59 | 72.59 | 0.83 | ● | 97 | Tanzania, United Rep. | 41.12 | 41.12 | 0.31 | |
| 26 | New Zealand | 71.56 | 71.56 | 0.82 | | 98 | Paraguay | 40.87 | 40.87 | 0.31 | |
| 27 | Italy | 71.29 | 71.29 | 0.81 | | 99 | Mozambique | 40.75 | 40.75 | 0.30 | |
| 28 | Colombia | 70.00 | 70.00 | 0.81 | | 100 | Mali | 40.35 | 40.35 | 0.29 | |
| 29 | Slovakia | 69.93 | 69.93 | 0.80 | | 101 | Turkey | 40.00 | 40.00 | 0.29 | |
| 30 | Poland | 69.73 | 69.73 | 0.79 | | 102 | Nicaragua | 39.64 | 39.64 | 0.28 | |
| 31 | Montenegro | 68.22 | 68.22 | 0.79 | ● | 103 | Oman | 39.02 | 39.02 | 0.27 | |
| 32 | Bosnia and Herzegovina | 66.21 | 66.21 | 0.78 | ● | 104 | Morocco | 38.47 | 38.47 | 0.26 | |
| 33 | TFYR of Macedonia | 65.93 | 65.93 | 0.77 | ● | 105 | Burkina Faso | 38.08 | 38.08 | 0.26 | |
| 34 | Malaysia | 65.61 | 65.61 | 0.76 | | 106 | Guinea | 37.62 | 37.62 | 0.25 | ● |
| 35 | Estonia | 64.92 | 64.92 | 0.76 | | 107 | Lesotho | 37.51 | 37.51 | 0.24 | |
| 36 | Bulgaria | 64.75 | 64.75 | 0.75 | | 108 | Georgia | 36.48 | 36.48 | 0.24 | |
| 37 | South Africa | 64.51 | 64.51 | 0.74 | | 109 | Cameroon | 36.42 | 36.42 | 0.23 | |
| 38 | Latvia | 63.42 | 63.42 | 0.74 | | 110 | Egypt | 36.17 | 36.17 | 0.22 | |
| 39 | Switzerland | 63.10 | 63.10 | 0.73 | | 111 | Kuwait | 36.02 | 36.02 | 0.21 | |
| 40 | Slovenia | 62.91 | 62.91 | 0.72 | | 112 | Niger | 36.01 | 36.01 | 0.21 | |
| 41 | Mauritius | 62.81 | 62.81 | 0.71 | | 113 | Madagascar | 34.43 | 34.43 | 0.20 | |
| 42 | Albania | 61.37 | 61.37 | 0.71 | ● | 114 | Nigeria | 33.76 | 33.76 | 0.19 | |
| 43 | Thailand | 58.73 | 58.73 | 0.70 | | 115 | Panama | 33.66 | 33.66 | 0.19 | |
| 44 | Romania | 58.70 | 58.70 | 0.69 | | 116 | Kenya | 33.31 | 33.31 | 0.18 | |
| 45 | Qatar | 58.27 | 58.27 | 0.69 | | 117 | Lebanon | 33.03 | 33.03 | 0.17 | ○ |
| 46 | Serbia | 57.90 | 57.90 | 0.68 | | 118 | India | 32.60 | 32.60 | 0.16 | |
| 47 | Botswana | 57.17 | 57.17 | 0.67 | ● | 119 | Iran, Islamic Rep. | 32.38 | 32.38 | 0.16 | |
| 48 | Philippines | 56.74 | 56.74 | 0.66 | ● | 120 | Honduras | 31.83 | 31.83 | 0.15 | ○ |
| 49 | Cyprus | 56.68 | 56.68 | 0.66 | | 121 | Ukraine | 31.17 | 31.17 | 0.14 | ○ |
| 50 | Greece | 55.98 | 55.98 | 0.65 | | 122 | Burundi | 30.55 | 30.55 | 0.14 | |
| 51 | China | 55.31 | 55.31 | 0.64 | | 123 | Jordan | 30.17 | 30.17 | 0.13 | ○ |
| 52 | Tunisia | 54.71 | 54.71 | 0.64 | | 124 | Bangladesh | 29.49 | 29.49 | 0.12 | |
| 53 | Brazil | 54.52 | 54.52 | 0.63 | | 125 | Zimbabwe | 29.28 | 29.28 | 0.11 | |
| 54 | Croatia | 53.92 | 53.92 | 0.62 | | 126 | Tajikistan | 29.26 | 29.26 | 0.11 | |
| 55 | Uruguay | 53.47 | 53.47 | 0.61 | | 127 | Guyana | 28.50 | 28.50 | 0.10 | ○ |
| 56 | Moldova, Rep. | 53.32 | 53.32 | 0.61 | | 128 | Ecuador | 28.36 | 28.36 | 0.09 | ○ |
| 57 | Jamaica | 53.29 | 53.29 | 0.60 | | 129 | Yemen | 27.46 | 27.46 | 0.09 | |
| 58 | Seychelles | 52.17 | 52.17 | 0.59 | | 130 | Guatemala | 27.37 | 27.37 | 0.08 | ○ |
| 59 | Luxembourg | 51.83 | 51.83 | 0.59 | | 131 | Sudan | 26.54 | 26.54 | 0.07 | |
| 60 | Kazakhstan | 51.45 | 51.45 | 0.58 | | 132 | Kyrgyzstan | 24.38 | 24.38 | 0.06 | ○ |
| 61 | Hungary | 49.78 | 49.78 | 0.57 | | 133 | Dominican Republic | 23.75 | 23.75 | 0.06 | ○ |
| 62 | Russian Federation | 49.69 | 49.69 | 0.56 | | 134 | Myanmar | 23.51 | 23.51 | 0.05 | |
| 63 | Trinidad and Tobago | 48.97 | 48.97 | 0.56 | | 135 | Ghana | 22.45 | 22.45 | 0.04 | ○ |
| 64 | Lithuania | 48.47 | 48.47 | 0.55 | | 136 | Saudi Arabia | 21.67 | 21.67 | 0.04 | ○ |
| 65 | Belarus | 48.18 | 48.18 | 0.54 | | 137 | Venezuela, Bolivarian Rep. | 19.20 | 19.20 | 0.03 | |
| 66 | Armenia | 48.14 | 48.14 | 0.54 | | 138 | Malawi | 18.99 | 18.99 | 0.02 | ○ |
| 67 | Sri Lanka | 47.81 | 47.81 | 0.53 | | 139 | Angola | 0.00 | 0.00 | 0.00 | ○ |
| 68 | Chile | 47.38 | 47.38 | 0.52 | | 139 | Bhutan | 0.00 | 0.00 | 0.00 | ○ |
| 69 | Ethiopia | 47.20 | 47.20 | 0.51 | ● | 139 | Cabo Verde | 0.00 | 0.00 | 0.00 | ○ |
| 70 | Indonesia | 46.75 | 46.75 | 0.51 | | | | | | | |
| 71 | Peru | 46.57 | 46.57 | 0.50 | | | | | | | |
| 72 | Uzbekistan | 46.45 | 46.45 | 0.49 | ● | | | | | | |

SOURCE: World Bank. *Doing Business 2015: Going Beyond Efficiency*

NOTE: ● indicates a strength; ○ a weakness

1.3.3 Ease of paying taxes

Ease of paying taxes (distance to frontier) | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Qatar | 99.44 | 99.44 | 0.99 | ● | 73 | Cabo Verde | 73.05 | 73.05 | 0.49 | |
| 1 | United Arab Emirates | 99.44 | 99.44 | 0.99 | ● | 74 | Barbados | 72.99 | 72.99 | 0.48 | |
| 3 | Saudi Arabia | 99.23 | 99.23 | 0.99 | ● | 75 | France | 72.12 | 72.12 | 0.47 | ○ |
| 4 | Hong Kong (China) | 98.51 | 98.51 | 0.98 | | 76 | Israel | 71.88 | 71.88 | 0.46 | ○ |
| 5 | Singapore | 97.19 | 97.19 | 0.97 | | 77 | Montenegro | 71.59 | 71.59 | 0.46 | |
| 6 | Ireland | 95.07 | 95.07 | 0.96 | ● | 78 | Slovakia | 71.57 | 71.57 | 0.45 | |
| 7 | TFYR of Macedonia | 94.17 | 94.17 | 0.96 | ● | 79 | Ghana | 71.53 | 71.53 | 0.44 | |
| 8 | Bahrain | 93.88 | 93.88 | 0.95 | ● | 80 | Kenya | 71.49 | 71.49 | 0.44 | |
| 9 | Canada | 93.00 | 93.00 | 0.94 | | 81 | Malawi | 71.37 | 71.37 | 0.43 | |
| 10 | Oman | 92.91 | 92.91 | 0.94 | ● | 82 | Uganda | 71.32 | 71.32 | 0.42 | |
| 11 | Kuwait | 92.48 | 92.48 | 0.93 | ● | 83 | Mexico | 71.17 | 71.17 | 0.41 | |
| 12 | Denmark | 91.94 | 91.94 | 0.92 | | 84 | Fiji | 70.73 | 70.73 | 0.41 | |
| 13 | Mauritius | 91.92 | 91.92 | 0.91 | ● | 85 | Ukraine | 70.33 | 70.33 | 0.40 | |
| 14 | Norway | 90.80 | 90.80 | 0.91 | | 86 | Lesotho | 69.72 | 69.72 | 0.39 | |
| 15 | United Kingdom | 90.52 | 90.52 | 0.90 | | 87 | Paraguay | 69.45 | 69.45 | 0.39 | |
| 16 | Kazakhstan | 90.04 | 90.04 | 0.89 | ● | 88 | Ethiopia | 69.11 | 69.11 | 0.38 | |
| 17 | Switzerland | 89.05 | 89.05 | 0.89 | | 89 | Trinidad and Tobago | 68.98 | 68.98 | 0.37 | |
| 18 | South Africa | 88.73 | 88.73 | 0.88 | ● | 90 | Guyana | 68.69 | 68.69 | 0.36 | |
| 19 | Luxembourg | 88.58 | 88.58 | 0.87 | | 91 | Myanmar | 68.64 | 68.64 | 0.36 | ● |
| 20 | Finland | 88.36 | 88.36 | 0.86 | | 92 | Uzbekistan | 68.30 | 68.30 | 0.35 | |
| 21 | New Zealand | 88.04 | 88.04 | 0.86 | | 93 | Czech Republic | 67.66 | 67.66 | 0.34 | ○ |
| 22 | Netherlands | 86.76 | 86.76 | 0.85 | | 94 | China | 67.44 | 67.44 | 0.34 | |
| 23 | Latvia | 86.19 | 86.19 | 0.84 | | 95 | Costa Rica | 67.27 | 67.27 | 0.33 | |
| 24 | Korea, Rep. | 86.09 | 86.09 | 0.84 | | 96 | Japan | 67.19 | 67.19 | 0.32 | ○ |
| 25 | Malta | 85.81 | 85.81 | 0.83 | | 97 | Mozambique | 66.85 | 66.85 | 0.31 | |
| 26 | Rwanda | 85.79 | 85.79 | 0.82 | ● | 98 | Burundi | 66.78 | 66.78 | 0.30 | |
| 27 | Estonia | 84.93 | 84.93 | 0.81 | | 98 | Iran, Islamic Rep. | 66.78 | 66.78 | 0.30 | |
| 28 | Chile | 84.50 | 84.50 | 0.81 | | 100 | Nepal | 66.52 | 66.52 | 0.29 | |
| 29 | Malaysia | 83.95 | 83.95 | 0.80 | | 101 | Philippines | 66.46 | 66.46 | 0.29 | |
| 30 | Azerbaijan | 83.77 | 83.77 | 0.79 | ● | 102 | Albania | 64.75 | 64.75 | 0.28 | |
| 31 | Sweden | 83.30 | 83.30 | 0.79 | | 103 | Yemen | 63.62 | 63.62 | 0.27 | ● |
| 32 | Croatia | 82.92 | 82.92 | 0.78 | ● | 104 | Kyrgyzstan | 63.15 | 63.15 | 0.26 | |
| 33 | Georgia | 82.76 | 82.76 | 0.77 | | 105 | Ecuador | 62.84 | 62.84 | 0.26 | |
| 34 | Australia | 82.48 | 82.48 | 0.76 | | 106 | Sudan | 62.34 | 62.34 | 0.25 | ● |
| 35 | Lebanon | 82.44 | 82.44 | 0.76 | | 107 | Uruguay | 62.32 | 62.32 | 0.24 | |
| 36 | Armenia | 82.10 | 82.10 | 0.75 | | 108 | Italy | 62.13 | 62.13 | 0.24 | ○ |
| 37 | Slovenia | 81.94 | 81.94 | 0.74 | | 109 | Zimbabwe | 61.39 | 61.39 | 0.23 | |
| 38 | Seychelles | 81.50 | 81.50 | 0.74 | ● | 110 | Angola | 60.40 | 60.40 | 0.22 | |
| 39 | Lithuania | 81.24 | 81.24 | 0.73 | | 111 | Mali | 60.16 | 60.16 | 0.21 | |
| 40 | Jordan | 81.19 | 81.19 | 0.72 | ● | 112 | Colombia | 59.71 | 59.71 | 0.21 | ○ |
| 41 | Iceland | 80.86 | 80.86 | 0.71 | | 113 | Jamaica | 59.01 | 59.01 | 0.20 | ○ |
| 42 | United States of America | 80.84 | 80.84 | 0.71 | | 114 | Tanzania, United Rep. | 58.95 | 58.95 | 0.19 | |
| 43 | Russian Federation | 80.63 | 80.63 | 0.70 | | 115 | Egypt | 58.84 | 58.84 | 0.19 | |
| 44 | Cyprus | 80.53 | 80.53 | 0.69 | | 116 | Bosnia and Herzegovina | 58.22 | 58.22 | 0.18 | ○ |
| 45 | Romania | 80.09 | 80.09 | 0.69 | | 117 | Burkina Faso | 58.08 | 58.08 | 0.17 | |
| 46 | Guatemala | 80.04 | 80.04 | 0.68 | ● | 118 | Honduras | 57.92 | 57.92 | 0.16 | |
| 47 | Turkey | 79.80 | 79.80 | 0.67 | | 119 | Niger | 57.07 | 57.07 | 0.16 | |
| 48 | Peru | 79.43 | 79.43 | 0.66 | | 120 | India | 55.53 | 55.53 | 0.15 | |
| 49 | Greece | 78.30 | 78.30 | 0.66 | | 121 | Sri Lanka | 55.00 | 55.00 | 0.14 | ○ |
| 50 | Belarus | 78.29 | 78.29 | 0.65 | | 122 | Indonesia | 53.66 | 53.66 | 0.14 | |
| 51 | Thailand | 77.99 | 77.99 | 0.64 | | 123 | El Salvador | 52.31 | 52.31 | 0.13 | |
| 52 | Portugal | 77.84 | 77.84 | 0.64 | | 124 | Togo | 50.81 | 50.81 | 0.12 | |
| 53 | Madagascar | 77.78 | 77.78 | 0.63 | ● | 125 | Nicaragua | 49.51 | 49.51 | 0.11 | |
| 54 | Morocco | 77.69 | 77.69 | 0.62 | | 126 | Serbia | 48.90 | 48.90 | 0.11 | ○ |
| 55 | Botswana | 77.47 | 77.47 | 0.61 | | 127 | Panama | 48.60 | 48.60 | 0.10 | ○ |
| 56 | Germany | 77.02 | 77.02 | 0.61 | | 128 | Tajikistan | 46.06 | 46.06 | 0.09 | |
| 57 | Moldova, Rep. | 76.57 | 76.57 | 0.60 | | 129 | Argentina | 44.99 | 44.99 | 0.09 | ○ |
| 58 | Austria | 76.36 | 76.36 | 0.59 | ○ | 130 | Pakistan | 44.46 | 44.46 | 0.08 | ○ |
| 59 | Swaziland | 75.76 | 75.76 | 0.59 | ● | 131 | Viet Nam | 43.61 | 43.61 | 0.07 | ○ |
| 60 | Spain | 75.25 | 75.25 | 0.58 | | 132 | Côte d'Ivoire | 42.73 | 42.73 | 0.06 | ○ |
| 61 | Zambia | 74.52 | 74.52 | 0.57 | ● | 133 | Algeria | 41.63 | 41.63 | 0.06 | |
| 62 | Dominican Republic | 74.24 | 74.24 | 0.56 | | 134 | Brazil | 41.31 | 41.31 | 0.05 | ○ |
| 63 | Belgium | 74.18 | 74.18 | 0.56 | | 135 | Nigeria | 39.15 | 39.15 | 0.04 | |
| 64 | Tunisia | 74.11 | 74.11 | 0.55 | | 136 | Gambia | 38.36 | 38.36 | 0.04 | ○ |
| 65 | Bangladesh | 73.98 | 73.98 | 0.54 | ● | 137 | Cameroon | 36.34 | 36.34 | 0.03 | ○ |
| 66 | Mongolia | 73.79 | 73.79 | 0.54 | | 138 | Senegal | 30.94 | 30.94 | 0.02 | ○ |
| 67 | Namibia | 73.57 | 73.57 | 0.53 | | 139 | Guinea | 28.27 | 28.27 | 0.01 | ○ |
| 68 | Bhutan | 73.55 | 73.55 | 0.52 | ● | 140 | Venezuela, Bolivarian Rep. | 13.37 | 13.37 | 0.01 | ○ |
| 69 | Poland | 73.51 | 73.51 | 0.51 | | 141 | Bolivia, Plurinational St. | 12.18 | 12.18 | 0.00 | ○ |
| 70 | Hungary | 73.27 | 73.27 | 0.51 | | | | | | | |
| 71 | Bulgaria | 73.18 | 73.18 | 0.50 | | | | | | | |
| 72 | Cambodia | 73.06 | 73.06 | 0.49 | ● | | | | | | |

SOURCE: World Bank. *Doing Business 2015: Going Beyond Efficiency*

NOTE: ● indicates a strength; ○ a weakness

2.1.1

Expenditure on education

Government expenditure on education (% of GDP) | 2011

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-----------------------------------|-------|---------------|--------------|---|------|---------------------------|-------|---------------|--------------|---|
| 1 | Lesotho (2008) | 12.98 | 100.00 | 1.00 | ● | 73 | Niger (2012) | 4.44 | 33.86 | 0.44 | |
| 2 | Botswana (2009) | 9.49 | 72.95 | 0.99 | ● | 74 | Uruguay | 4.42 | 33.76 | 0.43 | |
| 3 | Denmark | 8.75 | 67.21 | 0.98 | ● | 75 | Nicaragua (2010) | 4.39 | 33.54 | 0.43 | |
| 4 | Namibia (2010) | 8.50 | 65.28 | 0.98 | ● | 76 | Ecuador (2012) | 4.36 | 33.26 | 0.42 | |
| 5 | Moldova, Rep. (2012) | 8.35 | 64.14 | 0.97 | ● | 77 | Algeria (2008) | 4.34 | 33.10 | 0.41 | |
| 6 | Ghana | 8.14 | 62.53 | 0.96 | ● | 78 | Italy | 4.29 | 32.77 | 0.40 | ○ |
| 7 | Malta | 7.96 | 61.16 | 0.95 | ● | 79 | Croatia | 4.21 | 32.09 | 0.40 | ○ |
| 8 | Swaziland | 7.83 | 60.12 | 0.95 | ● | 80 | Oman (2009) | 4.20 | 32.04 | 0.39 | |
| 9 | Thailand (2012) | 7.57 | 58.11 | 0.94 | ● | 81 | Fiji | 4.20 | 32.01 | 0.38 | |
| 10 | Iceland | 7.36 | 56.49 | 0.93 | | 82 | Russian Federation (2008) | 4.10 | 31.28 | 0.37 | |
| 11 | New Zealand (2012) | 7.35 | 56.45 | 0.92 | | 83 | Greece (2005) | 4.09 | 31.19 | 0.36 | |
| 12 | Cyprus | 7.24 | 55.58 | 0.91 | ● | 84 | Gambia (2012) | 4.08 | 31.13 | 0.36 | |
| 13 | Venezuela, Bolivarian Rep. (2009) | 6.87 | 52.73 | 0.91 | ● | 85 | Slovakia | 4.06 | 30.93 | 0.35 | |
| 14 | Costa Rica (2013) | 6.87 | 52.67 | 0.90 | ● | 86 | Tajikistan (2012) | 4.02 | 30.63 | 0.34 | |
| 15 | Sweden | 6.82 | 52.31 | 0.89 | | 87 | Togo (2012) | 4.01 | 30.59 | 0.33 | |
| 16 | Kyrgyzstan | 6.79 | 52.08 | 0.88 | ● | 88 | Japan (2012) | 3.85 | 29.32 | 0.33 | ○ |
| 17 | Finland | 6.76 | 51.86 | 0.88 | | 89 | Bulgaria | 3.82 | 29.10 | 0.32 | ○ |
| 18 | Ukraine (2012) | 6.66 | 51.08 | 0.87 | ● | 90 | India (2012) | 3.79 | 28.88 | 0.31 | |
| 19 | Kenya (2010) | 6.64 | 50.91 | 0.86 | ● | 91 | Dominican Republic (2013) | 3.78 | 28.76 | 0.30 | |
| 20 | Morocco (2013) | 6.59 | 50.54 | 0.85 | ● | 92 | Egypt (2008) | 3.76 | 28.64 | 0.29 | |
| 21 | Norway | 6.55 | 50.24 | 0.84 | | 93 | Hong Kong (China) (2013) | 3.76 | 28.63 | 0.29 | ○ |
| 22 | Belgium | 6.55 | 50.21 | 0.84 | | 94 | Kuwait (2006) | 3.76 | 28.63 | 0.28 | |
| 23 | Bolivia, Plurinational St. (2012) | 6.44 | 49.35 | 0.83 | ● | 95 | Iran, Islamic Rep. (2013) | 3.68 | 28.01 | 0.27 | |
| 24 | Viet Nam (2012) | 6.30 | 48.31 | 0.82 | ● | 96 | Mauritius (2013) | 3.67 | 27.96 | 0.26 | |
| 25 | Jamaica (2013) | 6.26 | 47.95 | 0.81 | ● | 97 | Seychelles | 3.63 | 27.61 | 0.26 | |
| 26 | South Africa (2013) | 6.23 | 47.77 | 0.81 | ● | 98 | Indonesia (2012) | 3.57 | 27.14 | 0.25 | |
| 27 | Tunisia (2012) | 6.22 | 47.70 | 0.80 | ● | 99 | Angola (2010) | 3.48 | 26.44 | 0.24 | ● |
| 28 | Tanzania, United Rep. (2010) | 6.18 | 47.37 | 0.79 | ● | 100 | Burkina Faso | 3.43 | 26.05 | 0.23 | |
| 29 | Ireland | 6.15 | 47.16 | 0.78 | | 101 | El Salvador | 3.42 | 25.98 | 0.22 | |
| 30 | United Kingdom | 6.03 | 46.22 | 0.78 | | 102 | Panama | 3.29 | 25.02 | 0.22 | |
| 31 | Malaysia | 5.94 | 45.51 | 0.77 | | 103 | Uganda (2012) | 3.28 | 24.91 | 0.21 | |
| 32 | Netherlands | 5.93 | 45.43 | 0.76 | | 104 | Peru (2013) | 3.28 | 24.90 | 0.20 | |
| 33 | Brazil (2010) | 5.82 | 44.59 | 0.75 | | 105 | Albania (2007) | 3.27 | 24.83 | 0.19 | |
| 34 | Burundi (2012) | 5.82 | 44.58 | 0.74 | ● | 106 | Guyana (2012) | 3.19 | 24.25 | 0.19 | |
| 35 | Austria | 5.80 | 44.39 | 0.74 | | 107 | Romania | 3.07 | 23.32 | 0.18 | ○ |
| 36 | Slovenia | 5.68 | 43.49 | 0.73 | | 108 | Kazakhstan (2009) | 3.06 | 23.22 | 0.17 | |
| 37 | France | 5.68 | 43.45 | 0.72 | | 109 | Cameroon (2012) | 2.97 | 22.48 | 0.16 | |
| 38 | Israel | 5.64 | 43.16 | 0.71 | | 110 | Singapore (2013) | 2.94 | 22.25 | 0.16 | ○ |
| 39 | Barbados (2012) | 5.61 | 42.95 | 0.71 | | 111 | Turkey (2006) | 2.86 | 21.68 | 0.15 | ○ |
| 40 | Senegal (2010) | 5.60 | 42.87 | 0.70 | ● | 112 | Guatemala (2013) | 2.85 | 21.55 | 0.14 | |
| 41 | Bhutan (2013) | 5.48 | 41.92 | 0.69 | ● | 113 | Madagascar (2012) | 2.74 | 20.76 | 0.13 | |
| 42 | Mongolia | 5.48 | 41.91 | 0.68 | | 114 | Bahrain (2012) | 2.68 | 20.26 | 0.12 | ○ |
| 43 | Malawi | 5.35 | 40.96 | 0.67 | ● | 115 | Philippines (2009) | 2.65 | 20.06 | 0.12 | ○ |
| 44 | Switzerland | 5.28 | 40.37 | 0.67 | | 116 | Cambodia (2010) | 2.60 | 19.68 | 0.11 | ○ |
| 45 | Canada | 5.27 | 40.34 | 0.66 | | 117 | Lebanon (2013) | 2.57 | 19.44 | 0.10 | ○ |
| 46 | Portugal | 5.27 | 40.33 | 0.65 | | 118 | Pakistan (2013) | 2.49 | 18.79 | 0.09 | |
| 47 | United States of America | 5.23 | 39.98 | 0.64 | | 119 | Guinea (2012) | 2.47 | 18.66 | 0.09 | |
| 48 | Lithuania | 5.17 | 39.56 | 0.64 | | 120 | Qatar (2008) | 2.45 | 18.48 | 0.08 | ○ |
| 49 | Estonia | 5.16 | 39.44 | 0.63 | | 121 | Azerbaijan | 2.44 | 18.38 | 0.07 | ○ |
| 50 | Mexico | 5.15 | 39.36 | 0.62 | | 122 | Armenia (2013) | 2.25 | 16.95 | 0.06 | ○ |
| 51 | Saudi Arabia (2008) | 5.14 | 39.29 | 0.61 | | 123 | Bangladesh (2009) | 2.23 | 16.82 | 0.05 | |
| 52 | Argentina (2012) | 5.14 | 39.29 | 0.60 | | 124 | Sudan (2009) | 2.23 | 16.80 | 0.05 | |
| 53 | Belarus (2012) | 5.12 | 39.16 | 0.60 | | 125 | Georgia (2012) | 1.98 | 14.88 | 0.04 | ○ |
| 54 | Australia | 5.11 | 39.08 | 0.59 | | 126 | Zimbabwe (2010) | 1.97 | 14.75 | 0.03 | ○ |
| 55 | Rwanda (2013) | 5.09 | 38.91 | 0.58 | | 127 | Sri Lanka (2012) | 1.72 | 12.87 | 0.02 | ○ |
| 56 | Cabo Verde | 5.04 | 38.56 | 0.57 | ● | 128 | Zambia (2008) | 1.35 | 9.94 | 0.02 | ○ |
| 57 | Mozambique (2006) | 5.01 | 38.28 | 0.57 | ● | 129 | Myanmar | 0.79 | 5.61 | 0.01 | ○ |
| 58 | Germany | 4.98 | 38.07 | 0.56 | | 130 | Serbia (2012) | 0.06 | 0.00 | 0.00 | ○ |
| 59 | Spain | 4.98 | 38.06 | 0.55 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 60 | Paraguay | 4.97 | 37.97 | 0.54 | ● | n/a | China | n/a | n/a | n/a | |
| 61 | Poland | 4.94 | 37.78 | 0.53 | | n/a | Honduras | n/a | n/a | n/a | |
| 62 | Latvia | 4.93 | 37.72 | 0.53 | | n/a | Jordan | n/a | n/a | n/a | |
| 63 | Colombia (2013) | 4.93 | 37.68 | 0.52 | | n/a | Luxembourg | n/a | n/a | n/a | |
| 64 | Korea, Rep. | 4.86 | 37.18 | 0.51 | | n/a | Montenegro | n/a | n/a | n/a | |
| 65 | Mali | 4.81 | 36.75 | 0.50 | | n/a | Nigeria | n/a | n/a | n/a | |
| 66 | Ethiopia (2010) | 4.74 | 36.20 | 0.50 | ● | n/a | TFYR of Macedonia | n/a | n/a | n/a | |
| 67 | Nepal (2010) | 4.72 | 36.04 | 0.49 | ● | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 68 | Hungary | 4.71 | 36.00 | 0.48 | | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 69 | Côte d'Ivoire (2008) | 4.60 | 35.15 | 0.47 | ● | n/a | Uzbekistan | n/a | n/a | n/a | |
| 70 | Yemen (2008) | 4.56 | 34.83 | 0.47 | ● | | | | | | |
| 71 | Chile (2012) | 4.55 | 34.77 | 0.46 | | | | | | | |
| 72 | Czech Republic | 4.51 | 34.41 | 0.45 | | | | | | | |

SOURCE: UNESCO Institute for Statistics, *UIS online database*

NOTE: ● indicates a strength; ○ a weakness

2.1.2 Government expenditure on education per pupil, secondary

Government expenditure on education per pupil, secondary (% of GDP per capita) | 2011

II: Data Tables

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-----------------------------------|-------|---------------|--------------|---|------|-----------------------------------|-------|---------------|--------------|---|
| 1 | Mozambique (2006) | 85.98 | 100.00 | 1.00 | ● | 73 | Colombia (2013) | 17.04 | 14.75 | 0.35 | |
| 2 | Malta | 66.43 | 75.83 | 0.99 | ● | 74 | Singapore (2010) | 16.68 | 14.32 | 0.34 | ○ |
| 3 | Lesotho (2008) | 51.21 | 57.01 | 0.98 | ● | 75 | Burkina Faso (2012) | 16.63 | 14.26 | 0.33 | |
| 4 | Niger (2012) | 46.66 | 51.39 | 0.97 | ● | 76 | Venezuela, Bolivarian Rep. (2009) | 16.61 | 14.22 | 0.32 | |
| 5 | Rwanda (2013) | 41.79 | 45.36 | 0.96 | ● | 77 | Tanzania, United Rep. (2010) | 16.25 | 13.78 | 0.32 | |
| 6 | Cyprus | 41.74 | 45.30 | 0.95 | ● | 78 | Mexico | 15.91 | 13.36 | 0.31 | |
| 7 | Swaziland | 38.69 | 41.53 | 0.95 | ● | 79 | Oman | 15.89 | 13.34 | 0.30 | |
| 8 | Belgium | 38.58 | 41.39 | 0.94 | ● | 80 | Iran, Islamic Rep. (2012) | 15.86 | 13.30 | 0.29 | |
| 9 | Moldova, Rep. (2012) | 37.77 | 40.40 | 0.93 | ● | 81 | Namibia (2008) | 15.76 | 13.18 | 0.28 | |
| 10 | Thailand (2012) | 37.41 | 39.95 | 0.92 | ● | 82 | India | 15.53 | 12.89 | 0.27 | |
| 11 | Morocco (2012) | 36.49 | 38.81 | 0.91 | ● | 83 | Georgia (2008) | 15.49 | 12.85 | 0.26 | |
| 12 | Finland | 36.20 | 38.45 | 0.90 | | 84 | Israel | 15.48 | 12.82 | 0.25 | ○ |
| 13 | Bhutan (2013) | 33.55 | 35.17 | 0.89 | ● | 85 | Togo | 15.42 | 12.76 | 0.24 | |
| 14 | Portugal | 33.52 | 35.14 | 0.88 | ● | 86 | Jordan | 15.06 | 12.31 | 0.23 | ○ |
| 15 | Malawi | 33.18 | 34.72 | 0.87 | ● | 87 | Cabo Verde | 14.78 | 11.97 | 0.23 | |
| 16 | Burundi (2012) | 33.05 | 34.55 | 0.86 | ● | 88 | Bangladesh | 13.93 | 10.92 | 0.22 | |
| 17 | Botswana (2009) | 33.00 | 34.50 | 0.86 | ● | 89 | Serbia (2012) | 13.93 | 10.91 | 0.21 | ○ |
| 18 | Sweden | 32.66 | 34.07 | 0.85 | | 90 | Gambia (2010) | 13.14 | 9.94 | 0.20 | |
| 19 | United Kingdom | 31.48 | 32.62 | 0.84 | | 91 | Nepal (2009) | 12.17 | 8.73 | 0.19 | |
| 20 | Slovenia | 31.43 | 32.56 | 0.83 | | 92 | Yemen | 12.13 | 8.69 | 0.18 | |
| 21 | Mali | 31.18 | 32.24 | 0.82 | ● | 93 | Romania | 11.90 | 8.40 | 0.17 | ○ |
| 22 | Austria | 30.55 | 31.46 | 0.81 | | 94 | El Salvador (2010) | 11.31 | 7.67 | 0.16 | |
| 23 | Ukraine (2012) | 30.14 | 30.96 | 0.80 | | 95 | Indonesia (2012) | 10.69 | 6.91 | 0.15 | |
| 24 | Denmark | 30.13 | 30.94 | 0.79 | | 96 | Uruguay (2006) | 10.69 | 6.90 | 0.14 | ○ |
| 25 | Jamaica (2013) | 29.41 | 30.05 | 0.78 | ● | 97 | Ethiopia (2010) | 10.40 | 6.55 | 0.14 | |
| 26 | Senegal (2010) | 28.95 | 29.49 | 0.77 | ● | 98 | Peru (2013) | 10.38 | 6.53 | 0.13 | ○ |
| 27 | Ireland | 28.94 | 29.48 | 0.77 | | 99 | Pakistan (2013) | 10.38 | 6.52 | 0.12 | |
| 28 | France | 27.95 | 28.25 | 0.76 | | 100 | Qatar (2009) | 10.27 | 6.39 | 0.11 | ○ |
| 29 | Switzerland | 27.49 | 27.68 | 0.75 | | 101 | Guinea (2012) | 9.89 | 5.92 | 0.10 | |
| 30 | Estonia | 27.49 | 27.68 | 0.74 | | 102 | Guyana (2012) | 9.83 | 5.84 | 0.09 | ○ |
| 31 | Spain | 26.49 | 26.44 | 0.73 | | 103 | Panama | 9.66 | 5.64 | 0.08 | ○ |
| 32 | Norway | 26.17 | 26.05 | 0.72 | | 104 | Philippines (2008) | 9.14 | 4.99 | 0.07 | ○ |
| 33 | Netherlands | 25.89 | 25.70 | 0.71 | | 105 | Dominican Republic (2012) | 8.46 | 4.15 | 0.06 | ○ |
| 34 | Latvia | 25.82 | 25.62 | 0.70 | | 106 | Madagascar (2012) | 8.42 | 4.10 | 0.05 | |
| 35 | Japan (2012) | 25.75 | 25.53 | 0.69 | | 107 | Nicaragua (2010) | 7.28 | 2.69 | 0.05 | ○ |
| 36 | Ghana | 25.73 | 25.50 | 0.68 | ● | 108 | Sri Lanka (2012) | 6.87 | 2.18 | 0.04 | ○ |
| 37 | New Zealand (2012) | 25.17 | 24.81 | 0.68 | | 109 | Seychelles | 6.79 | 2.08 | 0.03 | ○ |
| 38 | Czech Republic | 25.15 | 24.79 | 0.67 | | 110 | Fiji | 5.75 | 0.80 | 0.02 | ○ |
| 39 | Barbados (2010) | 24.97 | 24.56 | 0.66 | | 111 | Guatemala (2012) | 5.12 | 0.01 | 0.01 | ○ |
| 40 | Costa Rica (2013) | 24.82 | 24.38 | 0.65 | | 112 | Lebanon (2013) | 5.10 | 0.00 | 0.00 | ○ |
| 41 | Tunisia (2008) | 24.36 | 23.80 | 0.64 | | n/a | Albania | n/a | n/a | n/a | |
| 42 | Poland | 24.20 | 23.61 | 0.63 | | n/a | Algeria | n/a | n/a | n/a | |
| 43 | Germany | 24.11 | 23.50 | 0.62 | | n/a | Angola | n/a | n/a | n/a | |
| 44 | United States of America | 23.95 | 23.30 | 0.61 | | n/a | Azerbaijan | n/a | n/a | n/a | |
| 45 | Uganda (2012) | 23.42 | 22.65 | 0.60 | ● | n/a | Bahrain | n/a | n/a | n/a | |
| 46 | Italy | 23.39 | 22.61 | 0.59 | | n/a | Belarus | n/a | n/a | n/a | |
| 47 | Korea, Rep. | 23.04 | 22.18 | 0.59 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 48 | Bulgaria | 22.22 | 21.16 | 0.58 | | n/a | Cambodia | n/a | n/a | n/a | |
| 49 | Brazil (2010) | 21.57 | 20.36 | 0.57 | | n/a | China | n/a | n/a | n/a | |
| 50 | South Africa (2012) | 21.56 | 20.34 | 0.56 | | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 51 | Greece (2005) | 21.53 | 20.31 | 0.55 | | n/a | Croatia | n/a | n/a | n/a | |
| 52 | Kenya (2006) | 21.17 | 19.86 | 0.54 | | n/a | Egypt | n/a | n/a | n/a | |
| 53 | Iceland | 21.17 | 19.86 | 0.53 | | n/a | Honduras | n/a | n/a | n/a | |
| 54 | Hungary | 20.95 | 19.59 | 0.52 | | n/a | Kazakhstan | n/a | n/a | n/a | |
| 55 | Kuwait | 20.94 | 19.58 | 0.51 | | n/a | Kyrgyzstan | n/a | n/a | n/a | |
| 56 | Bolivia, Plurinational St. (2012) | 20.33 | 18.82 | 0.50 | ● | n/a | Montenegro | n/a | n/a | n/a | |
| 57 | Malaysia | 19.87 | 18.25 | 0.50 | | n/a | Myanmar | n/a | n/a | n/a | |
| 58 | Cameroon (2012) | 19.74 | 18.09 | 0.49 | ● | n/a | Nigeria | n/a | n/a | n/a | |
| 59 | Argentina (2012) | 19.64 | 17.97 | 0.48 | | n/a | Russian Federation | n/a | n/a | n/a | |
| 60 | Lithuania | 19.47 | 17.76 | 0.47 | | n/a | Sudan | n/a | n/a | n/a | |
| 61 | Mauritius (2012) | 19.03 | 17.22 | 0.46 | | n/a | Tajikistan | n/a | n/a | n/a | |
| 62 | Ecuador (2013) | 18.99 | 17.17 | 0.45 | | n/a | TFYR of Macedonia | n/a | n/a | n/a | |
| 63 | Hong Kong (China) (2013) | 18.96 | 17.13 | 0.44 | | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 64 | Slovakia | 18.41 | 16.46 | 0.43 | | n/a | Turkey | n/a | n/a | n/a | |
| 65 | Canada | 18.32 | 16.34 | 0.42 | ○ | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 66 | Luxembourg | 18.32 | 16.34 | 0.41 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 67 | Saudi Arabia (2007) | 18.11 | 16.09 | 0.41 | | n/a | Viet Nam | n/a | n/a | n/a | |
| 68 | Chile (2012) | 18.06 | 16.03 | 0.40 | | n/a | Zambia | n/a | n/a | n/a | |
| 69 | Australia | 17.94 | 15.87 | 0.39 | ○ | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Mongolia (2010) | 17.82 | 15.72 | 0.38 | | | | | | | |
| 71 | Armenia (2012) | 17.74 | 15.62 | 0.37 | | | | | | | |
| 72 | Paraguay | 17.59 | 15.44 | 0.36 | | | | | | | |

SOURCE: UNESCO Institute for Statistics, UIS online database

NOTE: ● indicates a strength; ○ a weakness

2.1.3

School life expectancy

School life expectancy, primary to tertiary education (years) | 2012

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-----------------------------------|-------|---------------|--------------|---|------|-----------------------------------|-------|---------------|--------------|---|
| 1 | Australia | 20.22 | 100.00 | 1.00 | ● | 73 | Seychelles | 13.37 | 53.73 | 0.45 | |
| 2 | New Zealand | 19.16 | 92.81 | 0.99 | ● | 74 | TFYR of Macedonia | 13.35 | 53.60 | 0.44 | |
| 3 | Iceland | 18.98 | 91.59 | 0.98 | ● | 75 | Panama | 13.28 | 53.09 | 0.44 | |
| 4 | Denmark | 18.69 | 89.65 | 0.98 | ● | 76 | Bolivia, Plurinational St. (2007) | 13.15 | 52.24 | 0.43 | |
| 5 | Ireland | 18.57 | 88.84 | 0.97 | ● | 77 | Dominican Republic | 13.08 | 51.77 | 0.42 | |
| 6 | Argentina | 17.95 | 84.64 | 0.96 | ● | 78 | China | 13.07 | 51.70 | 0.41 | |
| 7 | Netherlands | 17.92 | 84.47 | 0.95 | | 79 | Peru (2010) | 13.07 | 51.65 | 0.40 | |
| 8 | Greece | 17.63 | 82.48 | 0.95 | ● | 80 | Mexico | 13.06 | 51.61 | 0.40 | |
| 9 | Norway | 17.49 | 81.56 | 0.94 | | 81 | Indonesia | 12.99 | 51.12 | 0.39 | |
| 10 | Spain | 17.35 | 80.57 | 0.93 | ● | 82 | Malaysia (2005) | 12.73 | 49.39 | 0.38 | |
| 11 | Finland | 17.07 | 78.70 | 0.92 | | 83 | Bhutan (2013) | 12.62 | 48.64 | 0.37 | |
| 12 | Korea, Rep. | 16.87 | 77.39 | 0.92 | | 84 | Kyrgyzstan (2011) | 12.51 | 47.91 | 0.37 | |
| 13 | Slovenia | 16.81 | 76.92 | 0.91 | | 85 | Botswana (2008) | 12.49 | 47.78 | 0.36 | |
| 14 | Estonia | 16.48 | 74.75 | 0.90 | | 86 | Jamaica (2013) | 12.36 | 46.85 | 0.35 | |
| 15 | Germany | 16.46 | 74.56 | 0.89 | | 87 | Nepal (2011) | 12.35 | 46.83 | 0.34 | |
| 16 | United States of America | 16.44 | 74.42 | 0.89 | | 88 | Armenia (2009) | 12.32 | 46.59 | 0.34 | |
| 17 | Lithuania | 16.39 | 74.10 | 0.88 | ● | 89 | Trinidad and Tobago (2004) | 12.27 | 46.26 | 0.33 | |
| 18 | Belgium | 16.33 | 73.72 | 0.87 | | 90 | El Salvador | 12.26 | 46.17 | 0.32 | |
| 19 | Czech Republic | 16.33 | 73.69 | 0.86 | | 91 | Togo (2011) | 12.23 | 46.03 | 0.31 | |
| 20 | Portugal | 16.31 | 73.60 | 0.85 | | 92 | Azerbaijan | 11.94 | 44.04 | 0.31 | |
| 21 | Saudi Arabia (2013) | 16.27 | 73.33 | 0.85 | ● | 93 | Paraguay (2010) | 11.91 | 43.85 | 0.30 | |
| 22 | United Kingdom | 16.18 | 72.71 | 0.84 | | 94 | Moldova, Rep. (2013) | 11.87 | 43.56 | 0.29 | |
| 23 | Italy | 16.04 | 71.76 | 0.83 | | 95 | India (2011) | 11.70 | 42.40 | 0.28 | |
| 24 | France | 16.00 | 71.49 | 0.82 | | 96 | Morocco (2011) | 11.56 | 41.49 | 0.27 | |
| 25 | Israel | 15.95 | 71.16 | 0.82 | | 97 | Uzbekistan (2011) | 11.51 | 41.15 | 0.27 | |
| 26 | Sweden | 15.82 | 70.23 | 0.81 | | 98 | Ghana | 11.50 | 41.09 | 0.26 | |
| 27 | Switzerland | 15.79 | 70.06 | 0.80 | | 99 | Namibia (2006) | 11.34 | 40.01 | 0.25 | |
| 28 | Austria | 15.75 | 69.76 | 0.79 | | 100 | Swaziland (2011) | 11.33 | 39.93 | 0.24 | |
| 29 | Belarus (2013) | 15.66 | 69.18 | 0.79 | ● | 101 | Angola (2011) | 11.32 | 39.83 | 0.24 | |
| 30 | Hong Kong (China) (2013) | 15.60 | 68.75 | 0.78 | | 102 | Philippines (2009) | 11.28 | 39.56 | 0.23 | |
| 31 | Mauritius | 15.58 | 68.61 | 0.77 | | 103 | Tajikistan | 11.24 | 39.34 | 0.22 | |
| 32 | Uruguay (2010) | 15.50 | 68.11 | 0.76 | ● | 104 | Lesotho | 11.14 | 38.64 | 0.21 | |
| 33 | Poland | 15.47 | 67.86 | 0.76 | | 105 | Honduras (2013) | 11.10 | 38.37 | 0.21 | |
| 34 | Barbados (2011) | 15.42 | 67.56 | 0.75 | | 106 | Kenya (2009) | 10.98 | 37.58 | 0.20 | |
| 35 | Hungary | 15.39 | 67.34 | 0.74 | | 107 | Cambodia (2008) | 10.90 | 37.05 | 0.19 | |
| 36 | Japan | 15.33 | 66.92 | 0.73 | | 108 | Zimbabwe | 10.85 | 36.68 | 0.18 | |
| 37 | Chile | 15.25 | 66.38 | 0.73 | | 109 | Malawi (2011) | 10.75 | 36.02 | 0.18 | |
| 38 | Latvia | 15.24 | 66.36 | 0.72 | | 110 | Guatemala (2007) | 10.62 | 35.14 | 0.17 | |
| 39 | Montenegro (2010) | 15.18 | 65.93 | 0.71 | | 111 | Cameroon (2011) | 10.40 | 33.62 | 0.16 | |
| 40 | Ukraine (2013) | 15.14 | 65.67 | 0.70 | | 112 | Madagascar | 10.35 | 33.27 | 0.15 | |
| 41 | Iran, Islamic Rep. | 15.09 | 65.36 | 0.69 | ● | 113 | Guyana | 10.29 | 32.90 | 0.15 | |
| 42 | Slovakia | 15.06 | 65.15 | 0.69 | | 114 | Rwanda (2013) | 10.27 | 32.78 | 0.14 | |
| 43 | Kazakhstan | 15.02 | 64.88 | 0.68 | | 115 | Burundi (2010) | 10.11 | 31.64 | 0.13 | |
| 44 | Croatia | 14.81 | 63.42 | 0.67 | | 116 | Bangladesh (2011) | 9.98 | 30.76 | 0.12 | |
| 45 | Russian Federation | 14.69 | 62.61 | 0.66 | | 117 | Uganda (2011) | 9.77 | 29.37 | 0.11 | |
| 46 | Kuwait (2004) | 14.64 | 62.26 | 0.66 | | 118 | Mozambique (2013) | 9.28 | 26.07 | 0.11 | |
| 47 | Tunisia (2011) | 14.62 | 62.18 | 0.65 | | 119 | Tanzania, United Rep. | 9.17 | 25.33 | 0.10 | |
| 48 | Mongolia (2010) | 14.59 | 61.98 | 0.64 | | 120 | Yemen (2011) | 9.15 | 25.22 | 0.09 | |
| 49 | Turkey | 14.54 | 61.64 | 0.63 | | 121 | Nigeria (2005) | 8.99 | 24.10 | 0.08 | |
| 50 | Malta | 14.41 | 60.71 | 0.63 | | 122 | Côte d'Ivoire (2013) | 8.94 | 23.75 | 0.08 | ○ |
| 51 | Serbia (2013) | 14.39 | 60.58 | 0.62 | | 123 | Gambia (2010) | 8.77 | 22.62 | 0.07 | ○ |
| 52 | Bulgaria | 14.35 | 60.36 | 0.61 | | 124 | Guinea | 8.70 | 22.15 | 0.06 | |
| 53 | Venezuela, Bolivarian Rep. (2009) | 14.22 | 59.43 | 0.60 | ● | 125 | Myanmar (2007) | 8.63 | 21.65 | 0.05 | |
| 54 | Romania (2011) | 14.21 | 59.39 | 0.60 | | 126 | Mali (2011) | 8.43 | 20.29 | 0.05 | |
| 55 | Brazil (2005) | 14.19 | 59.22 | 0.59 | | 127 | Senegal (2010) | 7.95 | 17.05 | 0.04 | ○ |
| 56 | Ecuador | 14.17 | 59.12 | 0.58 | | 128 | Pakistan (2013) | 7.79 | 15.99 | 0.03 | ○ |
| 57 | Cyprus | 13.97 | 57.73 | 0.57 | | 129 | Burkina Faso (2013) | 7.77 | 15.86 | 0.02 | ○ |
| 58 | Algeria (2011) | 13.97 | 57.73 | 0.56 | ● | 130 | Sudan | 7.00 | 10.63 | 0.02 | ○ |
| 59 | Fiji (2004) | 13.88 | 57.17 | 0.56 | | 131 | Ethiopia (2005) | 6.60 | 7.99 | 0.01 | ○ |
| 60 | Costa Rica (2013) | 13.86 | 57.03 | 0.55 | | 132 | Niger | 5.42 | 0.00 | 0.00 | ○ |
| 61 | Luxembourg | 13.85 | 56.94 | 0.54 | | n/a | Albania | n/a | n/a | n/a | |
| 62 | Georgia (2013) | 13.80 | 56.59 | 0.53 | | n/a | Bahrain | n/a | n/a | n/a | |
| 63 | Qatar (2005) | 13.79 | 56.52 | 0.53 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 64 | Lebanon (2013) | 13.75 | 56.30 | 0.52 | | n/a | Canada | n/a | n/a | n/a | |
| 65 | Sri Lanka | 13.71 | 56.02 | 0.51 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 66 | Oman (2011) | 13.64 | 55.51 | 0.50 | | n/a | Singapore | n/a | n/a | n/a | |
| 67 | South Africa | 13.56 | 54.97 | 0.50 | | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 68 | Colombia (2010) | 13.55 | 54.89 | 0.49 | | n/a | Viet Nam | n/a | n/a | n/a | |
| 69 | Egypt | 13.53 | 54.77 | 0.48 | | n/a | Zambia | n/a | n/a | n/a | |
| 70 | Jordan | 13.51 | 54.64 | 0.47 | | | | | | | |
| 71 | Thailand | 13.47 | 54.39 | 0.47 | | | | | | | |
| 72 | Cabo Verde (2013) | 13.47 | 54.35 | 0.46 | | | | | | | |

SOURCE: UNESCO Institute for Statistics, *UIS online database*

NOTE: ● indicates a strength; ○ a weakness

2.1.4 Assessment in reading, mathematics, and science

PISA average scales in reading, mathematics, and science | 2012

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank |
|------|-----------------------------------|--------|---------------|--------------|---|------|------------------------|-------|---------------|--------------|
| 1 | China | 587.46 | 100.00 | 1.00 | ● | n/a | Bosnia and Herzegovina | n/a | n/a | n/a |
| 2 | Singapore | 555.73 | 87.38 | 0.98 | ● | n/a | Botswana | n/a | n/a | n/a |
| 3 | Hong Kong (China) | 553.59 | 86.53 | 0.97 | | n/a | Burkina Faso | n/a | n/a | n/a |
| 4 | Korea, Rep. | 542.45 | 82.10 | 0.95 | | n/a | Burundi | n/a | n/a | n/a |
| 5 | Japan | 540.40 | 81.28 | 0.93 | | n/a | Cabo Verde | n/a | n/a | n/a |
| 6 | Finland | 529.40 | 76.91 | 0.92 | | n/a | Cambodia | n/a | n/a | n/a |
| 7 | Estonia | 526.08 | 75.59 | 0.90 | | n/a | Cameroon | n/a | n/a | n/a |
| 8 | Canada | 522.21 | 74.05 | 0.89 | | n/a | Côte d'Ivoire | n/a | n/a | n/a |
| 9 | Poland | 520.50 | 73.37 | 0.87 | ● | n/a | Cyprus | n/a | n/a | n/a |
| 10 | Netherlands | 518.75 | 72.68 | 0.85 | | n/a | Dominican Republic | n/a | n/a | n/a |
| 11 | Switzerland | 518.42 | 72.55 | 0.84 | | n/a | Ecuador | n/a | n/a | n/a |
| 12 | Ireland | 515.56 | 71.41 | 0.82 | | n/a | Egypt | n/a | n/a | n/a |
| 13 | Germany | 515.11 | 71.23 | 0.80 | | n/a | El Salvador | n/a | n/a | n/a |
| 14 | Australia | 512.48 | 70.18 | 0.79 | | n/a | Ethiopia | n/a | n/a | n/a |
| 15 | Belgium | 509.77 | 69.10 | 0.77 | | n/a | Fiji | n/a | n/a | n/a |
| 16 | New Zealand | 509.19 | 68.87 | 0.75 | | n/a | Gambia | n/a | n/a | n/a |
| 17 | United Kingdom | 502.46 | 66.20 | 0.74 | | n/a | Georgia | n/a | n/a | n/a |
| 18 | Austria | 500.31 | 65.34 | 0.72 | | n/a | Ghana | n/a | n/a | n/a |
| 19 | Czech Republic | 500.05 | 65.24 | 0.70 | | n/a | Guatemala | n/a | n/a | n/a |
| 20 | France | 499.81 | 65.14 | 0.69 | | n/a | Guinea | n/a | n/a | n/a |
| 21 | Slovenia | 498.86 | 64.77 | 0.67 | | n/a | Guyana | n/a | n/a | n/a |
| 22 | Denmark | 498.21 | 64.51 | 0.66 | | n/a | Honduras | n/a | n/a | n/a |
| 23 | Norway | 495.94 | 63.61 | 0.64 | | n/a | Iran, Islamic Rep. | n/a | n/a | n/a |
| 24 | Latvia | 493.82 | 62.76 | 0.62 | | n/a | Jamaica | n/a | n/a | n/a |
| 25 | United States of America | 492.12 | 62.09 | 0.61 | | n/a | Kenya | n/a | n/a | n/a |
| 26 | Luxembourg | 489.62 | 61.09 | 0.59 | | n/a | Kuwait | n/a | n/a | n/a |
| 27 | Spain | 489.57 | 61.07 | 0.57 | | n/a | Kyrgyzstan | n/a | n/a | n/a |
| 28 | Italy | 489.54 | 61.06 | 0.56 | | n/a | Lebanon | n/a | n/a | n/a |
| 29 | Portugal | 488.03 | 60.46 | 0.54 | | n/a | Lesotho | n/a | n/a | n/a |
| 30 | Hungary | 486.60 | 59.89 | 0.52 | | n/a | Madagascar | n/a | n/a | n/a |
| 31 | Iceland | 484.49 | 59.05 | 0.51 | | n/a | Malawi | n/a | n/a | n/a |
| 32 | Lithuania | 483.94 | 58.83 | 0.49 | | n/a | Mali | n/a | n/a | n/a |
| 33 | Croatia | 482.35 | 58.20 | 0.48 | | n/a | Malta | n/a | n/a | n/a |
| 34 | Sweden | 482.13 | 58.11 | 0.46 | ○ | n/a | Mauritius | n/a | n/a | n/a |
| 35 | Russian Federation | 481.20 | 57.74 | 0.44 | ○ | n/a | Moldova, Rep. | n/a | n/a | n/a |
| 36 | Israel | 474.12 | 54.93 | 0.43 | ○ | n/a | Mongolia | n/a | n/a | n/a |
| 37 | Slovakia | 471.87 | 54.03 | 0.41 | | n/a | Morocco | n/a | n/a | n/a |
| 38 | United Arab Emirates | 468.74 | 52.79 | 0.39 | | n/a | Mozambique | n/a | n/a | n/a |
| 39 | Greece | 465.63 | 51.55 | 0.38 | | n/a | Myanmar | n/a | n/a | n/a |
| 40 | Turkey | 462.30 | 50.23 | 0.36 | | n/a | Namibia | n/a | n/a | n/a |
| 41 | Serbia | 446.60 | 43.98 | 0.34 | | n/a | Nepal | n/a | n/a | n/a |
| 42 | Bulgaria | 440.44 | 41.54 | 0.33 | | n/a | Nicaragua | n/a | n/a | n/a |
| 43 | Romania | 440.31 | 41.48 | 0.31 | | n/a | Niger | n/a | n/a | n/a |
| 44 | Thailand | 437.32 | 40.29 | 0.30 | | n/a | Nigeria | n/a | n/a | n/a |
| 45 | Chile | 436.32 | 39.90 | 0.28 | ○ | n/a | Oman | n/a | n/a | n/a |
| 46 | Costa Rica | 425.63 | 35.64 | 0.26 | ○ | n/a | Pakistan | n/a | n/a | n/a |
| 47 | Mexico | 417.25 | 32.31 | 0.25 | ○ | n/a | Panama | n/a | n/a | n/a |
| 48 | Kazakhstan | 416.41 | 31.98 | 0.23 | | n/a | Paraguay | n/a | n/a | n/a |
| 49 | Montenegro | 413.95 | 31.00 | 0.21 | ○ | n/a | Philippines | n/a | n/a | n/a |
| 50 | Venezuela, Bolivarian Rep. (2010) | 413.44 | 30.80 | 0.20 | | n/a | Rwanda | n/a | n/a | n/a |
| 51 | Malaysia | 412.74 | 30.52 | 0.18 | ○ | n/a | Saudi Arabia | n/a | n/a | n/a |
| 52 | Uruguay | 412.16 | 30.29 | 0.16 | ○ | n/a | Senegal | n/a | n/a | n/a |
| 53 | Brazil | 402.10 | 26.29 | 0.15 | ○ | n/a | Seychelles | n/a | n/a | n/a |
| 54 | Jordan | 398.00 | 24.66 | 0.13 | ○ | n/a | South Africa | n/a | n/a | n/a |
| 55 | Argentina | 396.68 | 24.13 | 0.11 | | n/a | Sri Lanka | n/a | n/a | n/a |
| 56 | Tunisia | 396.65 | 24.12 | 0.10 | ○ | n/a | Sudan | n/a | n/a | n/a |
| 57 | Albania | 395.22 | 23.55 | 0.08 | ○ | n/a | Swaziland | n/a | n/a | n/a |
| 58 | Colombia | 392.86 | 22.61 | 0.07 | ○ | n/a | Tajikistan | n/a | n/a | n/a |
| 59 | Indonesia | 384.38 | 19.24 | 0.05 | ○ | n/a | Tanzania, United Rep. | n/a | n/a | n/a |
| 60 | Qatar | 382.53 | 18.50 | 0.03 | ○ | n/a | TFYR of Macedonia | n/a | n/a | n/a |
| 61 | Peru | 375.12 | 15.56 | 0.02 | ○ | n/a | Togo | n/a | n/a | n/a |
| 62 | India (2010) | 336.00 | 0.00 | 0.00 | ○ | n/a | Trinidad and Tobago | n/a | n/a | n/a |
| n/a | Algeria | n/a | n/a | n/a | | n/a | Uganda | n/a | n/a | n/a |
| n/a | Angola | n/a | n/a | n/a | | n/a | Ukraine | n/a | n/a | n/a |
| n/a | Armenia | n/a | n/a | n/a | | n/a | Uzbekistan | n/a | n/a | n/a |
| n/a | Azerbaijan | n/a | n/a | n/a | | n/a | Viet Nam | n/a | n/a | n/a |
| n/a | Bahrain | n/a | n/a | n/a | | n/a | Yemen | n/a | n/a | n/a |
| n/a | Bangladesh | n/a | n/a | n/a | | n/a | Zambia | n/a | n/a | n/a |
| n/a | Barbados | n/a | n/a | n/a | | n/a | Zimbabwe | n/a | n/a | n/a |
| n/a | Belarus | n/a | n/a | n/a | | | | | | |
| n/a | Bhutan | n/a | n/a | n/a | | | | | | |
| n/a | Bolivia, Plurinational St. | n/a | n/a | n/a | | | | | | |

SOURCE: OECD Programme for International Student Assessment (PISA) (2010–12)

NOTE: ● indicates a strength; ○ a weakness

2.1.5 Pupil-teacher ratio, secondary

Pupil-teacher ratio, secondary | 2012

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-------------------------------|-------|---------------|--------------|---|------|-----------------------------------|-------|---------------|--------------|---|
| 1 | Georgia (2009) | 7.57 | 100.00 | 1.00 | ● | 73 | Indonesia | 16.62 | 73.47 | 0.39 | |
| 2 | Belarus (2013) | 7.76 | 99.44 | 0.99 | ● | 74 | Cabo Verde (2013) | 16.66 | 73.34 | 0.39 | |
| 3 | Croatia | 7.81 | 99.30 | 0.98 | ● | 75 | Sri Lanka | 17.28 | 71.52 | 0.38 | |
| 4 | Luxembourg | 7.88 | 99.08 | 0.97 | ● | 76 | Ghana (2013) | 17.53 | 70.80 | 0.37 | |
| 5 | Greece (2007) | 7.88 | 99.07 | 0.97 | ● | 77 | Mexico | 17.74 | 70.18 | 0.36 | |
| 6 | Latvia | 7.90 | 99.03 | 0.96 | ● | 78 | Turkey | 17.95 | 69.58 | 0.35 | |
| 7 | Portugal | 8.16 | 98.25 | 0.95 | ● | 79 | Bolivia, Plurinational St. (2007) | 18.17 | 68.93 | 0.34 | |
| 8 | Kuwait (2009) | 8.17 | 98.22 | 0.94 | ● | 80 | Morocco (2004) | 18.73 | 67.29 | 0.34 | |
| 9 | Lebanon (2013) | 8.21 | 98.12 | 0.93 | ● | 81 | Mali (2013) | 19.28 | 65.68 | 0.33 | |
| 10 | Lithuania | 8.32 | 97.81 | 0.92 | ● | 82 | Fiji | 19.29 | 65.63 | 0.32 | |
| 11 | Estonia | 8.38 | 97.63 | 0.92 | ● | 83 | Bhutan | 19.89 | 63.88 | 0.31 | |
| 12 | Malta | 8.52 | 97.20 | 0.91 | ● | 84 | Thailand (2011) | 19.91 | 63.83 | 0.30 | |
| 13 | Kazakhstan | 8.60 | 96.97 | 0.90 | ● | 85 | Chile | 20.04 | 63.43 | 0.29 | ○ |
| 14 | Poland | 8.66 | 96.79 | 0.89 | ● | 86 | Guyana | 20.29 | 62.70 | 0.29 | |
| 15 | Russian Federation | 8.76 | 96.49 | 0.88 | ● | 87 | Pakistan | 21.04 | 60.50 | 0.28 | |
| 16 | Paraguay (2011) | 8.87 | 96.18 | 0.87 | ● | 88 | Uganda (2013) | 21.32 | 59.69 | 0.27 | |
| 17 | Slovenia (2011) | 8.96 | 95.91 | 0.87 | ● | 89 | Cameroon | 21.43 | 59.35 | 0.26 | |
| 18 | Serbia (2013) | 9.00 | 95.79 | 0.86 | ● | 90 | Zimbabwe | 22.43 | 56.43 | 0.25 | |
| 19 | Finland | 9.27 | 95.02 | 0.85 | ● | 91 | Côte d'Ivoire (2013) | 22.68 | 55.69 | 0.24 | |
| 20 | Ukraine (2013) | 9.32 | 94.87 | 0.84 | ● | 92 | Rwanda (2013) | 22.79 | 55.37 | 0.24 | |
| 21 | Switzerland | 9.33 | 94.84 | 0.83 | ● | 93 | Namibia (2007) | 24.62 | 50.00 | 0.23 | |
| 22 | Sweden | 9.52 | 94.27 | 0.82 | ● | 94 | Lesotho | 24.69 | 49.80 | 0.22 | |
| 23 | Austria | 9.54 | 94.22 | 0.82 | ● | 95 | South Africa (2009) | 25.05 | 48.76 | 0.21 | ○ |
| 24 | Moldova, Rep. (2013) | 9.59 | 94.08 | 0.81 | ● | 96 | Colombia (2013) | 25.19 | 48.34 | 0.20 | ○ |
| 25 | Cyprus | 9.67 | 93.85 | 0.80 | ● | 97 | India (2011) | 25.92 | 46.20 | 0.19 | |
| 26 | Qatar (2013) | 9.67 | 93.83 | 0.79 | ● | 98 | Togo (2011) | 26.25 | 45.25 | 0.18 | |
| 27 | Israel (2009) | 9.76 | 93.56 | 0.78 | ● | 99 | Tanzania, United Rep. | 26.39 | 44.81 | 0.18 | |
| 28 | Bahrain | 9.82 | 93.40 | 0.77 | ● | 100 | Burkina Faso (2013) | 26.91 | 43.30 | 0.17 | |
| 29 | Hungary | 10.04 | 92.75 | 0.76 | ● | 101 | Senegal (2011) | 27.35 | 42.01 | 0.16 | |
| 30 | Italy (2007) | 10.10 | 92.57 | 0.76 | ● | 102 | Angola (2011) | 27.42 | 41.81 | 0.15 | |
| 31 | TFYR of Macedonia | 10.49 | 91.43 | 0.75 | ● | 103 | Madagascar | 27.64 | 41.17 | 0.14 | |
| 32 | Argentina (2008) | 10.90 | 90.23 | 0.74 | ● | 104 | Cambodia (2007) | 28.92 | 37.40 | 0.13 | |
| 33 | Bosnia and Herzegovina (2013) | 11.13 | 89.56 | 0.73 | ● | 105 | Dominican Republic | 29.18 | 36.66 | 0.13 | |
| 34 | Czech Republic | 11.19 | 89.38 | 0.72 | ● | 106 | Nepal (2013) | 29.18 | 36.66 | 0.12 | |
| 35 | Uruguay (2010) | 11.32 | 89.00 | 0.71 | ● | 107 | Nicaragua (2010) | 30.83 | 31.81 | 0.11 | |
| 36 | Saudi Arabia (2009) | 11.32 | 89.00 | 0.71 | ● | 108 | Sudan | 31.09 | 31.06 | 0.10 | |
| 37 | Slovakia | 11.35 | 88.93 | 0.70 | ● | 109 | Mozambique (2013) | 31.18 | 30.79 | 0.09 | |
| 38 | Spain | 11.35 | 88.91 | 0.69 | ● | 110 | Burundi (2013) | 31.66 | 29.38 | 0.08 | |
| 39 | United Arab Emirates (2013) | 11.50 | 88.46 | 0.68 | ● | 111 | Bangladesh | 32.24 | 27.68 | 0.08 | |
| 40 | Japan | 11.68 | 87.96 | 0.67 | ● | 112 | Nigeria (2010) | 33.08 | 25.21 | 0.07 | |
| 41 | Egypt (2009) | 12.13 | 86.61 | 0.66 | ● | 113 | Guinea (2011) | 33.14 | 25.05 | 0.06 | |
| 42 | Seychelles | 12.19 | 86.44 | 0.66 | ● | 114 | Myanmar (2010) | 34.08 | 22.29 | 0.05 | |
| 43 | Bulgaria | 12.32 | 86.06 | 0.65 | ● | 115 | Niger (2011) | 34.68 | 20.52 | 0.04 | |
| 44 | Germany | 12.74 | 84.82 | 0.64 | ● | 116 | Philippines (2009) | 34.81 | 20.13 | 0.03 | ○ |
| 45 | Romania | 12.75 | 84.80 | 0.63 | ● | 117 | El Salvador (2013) | 37.99 | 10.81 | 0.03 | ○ |
| 46 | France | 12.83 | 84.56 | 0.62 | ● | 118 | Ethiopia | 38.78 | 8.52 | 0.02 | ○ |
| 47 | Uzbekistan (2011) | 13.28 | 83.26 | 0.61 | ● | 119 | Kenya | 41.13 | 1.60 | 0.01 | ○ |
| 48 | Tunisia (2011) | 13.62 | 82.24 | 0.61 | ● | 120 | Malawi (2013) | 41.68 | 0.00 | 0.00 | ○ |
| 49 | Guatemala | 13.66 | 82.14 | 0.60 | ● | n/a | Algeria | n/a | n/a | n/a | |
| 50 | Costa Rica (2013) | 13.79 | 81.77 | 0.59 | ● | n/a | Armenia | n/a | n/a | n/a | |
| 51 | Netherlands | 13.86 | 81.56 | 0.58 | ○ | n/a | Australia | n/a | n/a | n/a | |
| 52 | Botswana (2007) | 13.88 | 81.50 | 0.57 | ○ | n/a | Azerbaijan | n/a | n/a | n/a | |
| 53 | Malaysia | 13.92 | 81.37 | 0.56 | ○ | n/a | Belgium | n/a | n/a | n/a | |
| 54 | Ecuador (2013) | 14.06 | 80.98 | 0.55 | ○ | n/a | Canada | n/a | n/a | n/a | |
| 55 | Panama | 14.18 | 80.60 | 0.55 | ○ | n/a | Denmark | n/a | n/a | n/a | |
| 56 | United Kingdom (2008) | 14.27 | 80.35 | 0.54 | ○ | n/a | Gambia | n/a | n/a | n/a | |
| 57 | New Zealand | 14.36 | 80.09 | 0.53 | ○ | n/a | Honduras | n/a | n/a | n/a | |
| 58 | Mongolia (2010) | 14.49 | 79.70 | 0.52 | ○ | n/a | Hong Kong (China) | n/a | n/a | n/a | |
| 59 | China | 14.50 | 79.67 | 0.51 | ○ | n/a | Iceland | n/a | n/a | n/a | |
| 60 | Barbados (2006) | 14.58 | 79.43 | 0.50 | ○ | n/a | Iran, Islamic Rep. | n/a | n/a | n/a | |
| 61 | United States of America | 14.66 | 79.20 | 0.50 | ○ | n/a | Ireland | n/a | n/a | n/a | |
| 62 | Mauritius | 14.71 | 79.07 | 0.49 | ○ | n/a | Jordan | n/a | n/a | n/a | |
| 63 | Albania (2013) | 14.76 | 78.92 | 0.48 | ○ | n/a | Montenegro | n/a | n/a | n/a | |
| 64 | Singapore (2009) | 14.91 | 78.48 | 0.47 | ○ | n/a | Norway | n/a | n/a | n/a | |
| 65 | Kyrgyzstan (2010) | 15.21 | 77.60 | 0.46 | ○ | n/a | Oman | n/a | n/a | n/a | |
| 66 | Tajikistan (2011) | 15.44 | 76.93 | 0.45 | ○ | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 67 | Peru (2013) | 15.46 | 76.85 | 0.45 | ○ | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 68 | Korea, Rep. | 15.94 | 75.47 | 0.44 | ○ | n/a | Viet Nam | n/a | n/a | n/a | |
| 69 | Brazil | 15.97 | 75.36 | 0.43 | ○ | n/a | Zambia | n/a | n/a | n/a | |
| 70 | Yemen (2011) | 16.09 | 75.03 | 0.42 | ○ | | | | | | |
| 71 | Jamaica (2013) | 16.18 | 74.76 | 0.41 | ○ | | | | | | |
| 72 | Swaziland | 16.35 | 74.27 | 0.40 | ○ | | | | | | |

SOURCE: UNESCO Institute for Statistics, UIS online database

NOTE: ● indicates a strength; ○ a weakness

2.2.1 Tertiary enrolment

School enrolment, tertiary (% gross) | 2012

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-----------------------------------|--------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Greece | 116.62 | 100.00 | 1.00 | ● | 73 | Georgia (2013) | 33.05 | 27.84 | 0.46 | |
| 2 | Korea, Rep. | 98.38 | 84.25 | 0.99 | ● | 74 | Indonesia | 31.51 | 26.51 | 0.45 | |
| 3 | United States of America | 94.28 | 80.71 | 0.98 | ● | 75 | Algeria | 31.46 | 26.47 | 0.44 | ● |
| 4 | Finland | 93.72 | 80.23 | 0.98 | | 76 | Egypt | 30.06 | 25.25 | 0.44 | |
| 5 | Belarus (2013) | 92.89 | 79.51 | 0.97 | ● | 77 | Mexico | 28.99 | 24.33 | 0.43 | |
| 6 | Australia | 86.33 | 73.85 | 0.96 | ● | 78 | Jamaica (2013) | 28.74 | 24.11 | 0.42 | |
| 7 | Slovenia | 86.02 | 73.58 | 0.95 | ● | 79 | Kuwait (2013) | 28.45 | 23.86 | 0.41 | |
| 8 | Spain | 84.57 | 72.32 | 0.95 | ● | 80 | Philippines (2009) | 28.20 | 23.65 | 0.41 | |
| 9 | Iceland | 81.36 | 69.55 | 0.94 | | 81 | Oman (2011) | 28.14 | 23.59 | 0.40 | |
| 10 | Argentina | 80.31 | 68.64 | 0.93 | ● | 82 | China | 26.70 | 22.35 | 0.39 | |
| 11 | New Zealand | 79.78 | 68.18 | 0.92 | | 83 | Brazil (2005) | 25.53 | 21.34 | 0.38 | |
| 12 | Denmark | 79.60 | 68.03 | 0.92 | | 84 | El Salvador | 25.45 | 21.28 | 0.38 | |
| 13 | Ukraine (2013) | 79.00 | 67.51 | 0.91 | ● | 85 | India | 24.80 | 20.72 | 0.37 | |
| 14 | Venezuela, Bolivarian Rep. (2009) | 77.91 | 66.57 | 0.90 | ● | 86 | Viet Nam (2013) | 24.58 | 20.52 | 0.36 | |
| 15 | Netherlands | 77.34 | 66.08 | 0.89 | | 87 | Cabo Verde (2013) | 22.85 | 19.02 | 0.35 | |
| 16 | Estonia | 76.68 | 65.51 | 0.89 | | 88 | Tajikistan | 22.47 | 18.70 | 0.35 | |
| 17 | Russian Federation | 76.14 | 65.05 | 0.88 | ● | 89 | Honduras (2013) | 21.14 | 17.55 | 0.34 | |
| 18 | Chile | 74.39 | 63.53 | 0.87 | ● | 90 | Azerbaijan | 20.44 | 16.94 | 0.33 | |
| 19 | Norway | 74.10 | 63.28 | 0.86 | | 91 | Luxembourg | 19.74 | 16.35 | 0.32 | |
| 20 | Lithuania | 73.95 | 63.15 | 0.86 | ● | 92 | South Africa | 19.70 | 16.31 | 0.32 | |
| 21 | Poland | 73.19 | 62.50 | 0.85 | ● | 93 | Guatemala (2013) | 18.74 | 15.48 | 0.31 | |
| 22 | Austria | 72.44 | 61.85 | 0.84 | | 94 | Botswana (2011) | 17.91 | 14.76 | 0.30 | |
| 23 | Ireland | 71.24 | 60.81 | 0.83 | | 95 | Sudan (2013) | 17.15 | 14.11 | 0.29 | ● |
| 24 | Belgium | 70.83 | 60.46 | 0.83 | | 96 | Sri Lanka | 16.97 | 13.95 | 0.29 | |
| 25 | Sweden | 70.03 | 59.76 | 0.82 | | 97 | Morocco (2011) | 16.16 | 13.25 | 0.28 | |
| 26 | Turkey | 69.39 | 59.21 | 0.81 | ● | 98 | Fiji (2005) | 16.15 | 13.24 | 0.27 | |
| 27 | Portugal | 68.86 | 58.76 | 0.80 | | 99 | Cambodia (2011) | 15.83 | 12.97 | 0.26 | |
| 28 | Israel | 67.89 | 57.92 | 0.80 | | 100 | Nepal (2011) | 14.49 | 11.81 | 0.26 | |
| 29 | Hong Kong (China) (2013) | 66.84 | 57.01 | 0.79 | | 101 | Qatar (2013) | 14.26 | 11.61 | 0.25 | |
| 30 | Latvia | 65.13 | 55.54 | 0.78 | | 102 | Myanmar | 13.38 | 10.85 | 0.24 | ● |
| 31 | Czech Republic | 64.17 | 54.71 | 0.77 | | 103 | Bangladesh | 13.23 | 10.72 | 0.23 | |
| 32 | Uruguay (2010) | 63.15 | 53.83 | 0.77 | ● | 104 | Guyana | 12.91 | 10.45 | 0.23 | |
| 33 | Bulgaria | 62.70 | 53.44 | 0.76 | | 105 | Ghana | 12.20 | 9.83 | 0.22 | |
| 34 | Italy | 62.47 | 53.24 | 0.75 | | 106 | Trinidad and Tobago (2004) | 11.95 | 9.62 | 0.21 | |
| 35 | Mongolia (2013) | 62.27 | 53.07 | 0.74 | | 107 | Cameroon (2011) | 11.91 | 9.58 | 0.20 | |
| 36 | United Kingdom | 61.88 | 52.73 | 0.74 | | 108 | Lesotho | 10.83 | 8.64 | 0.20 | |
| 37 | Germany | 61.65 | 52.53 | 0.73 | | 109 | Nigeria (2005) | 10.41 | 8.28 | 0.19 | |
| 38 | Croatia | 61.63 | 52.52 | 0.72 | | 110 | Yemen (2011) | 10.29 | 8.18 | 0.18 | |
| 39 | Japan | 61.46 | 52.37 | 0.71 | | 111 | Togo (2013) | 10.04 | 7.97 | 0.17 | |
| 40 | Barbados (2011) | 60.84 | 51.83 | 0.71 | | 112 | Guinea | 9.93 | 7.87 | 0.17 | |
| 41 | Hungary | 59.63 | 50.79 | 0.70 | | 113 | Pakistan (2013) | 9.82 | 7.78 | 0.16 | |
| 42 | France | 58.30 | 49.64 | 0.69 | | 114 | Bhutan | 9.43 | 7.44 | 0.15 | |
| 43 | Saudi Arabia (2013) | 57.52 | 48.96 | 0.68 | | 115 | Namibia (2008) | 9.33 | 7.35 | 0.14 | |
| 44 | Serbia (2013) | 56.38 | 47.98 | 0.68 | | 116 | Côte d'Ivoire (2013) | 9.10 | 7.16 | 0.14 | |
| 45 | Switzerland | 55.56 | 47.27 | 0.67 | | 117 | Uzbekistan (2011) | 8.87 | 6.96 | 0.13 | |
| 46 | Montenegro (2010) | 55.53 | 47.25 | 0.66 | | 118 | Senegal (2010) | 7.63 | 5.89 | 0.12 | |
| 47 | Albania | 55.50 | 47.22 | 0.65 | | 119 | Angola (2011) | 7.50 | 5.77 | 0.11 | |
| 48 | Iran, Islamic Rep. | 55.16 | 46.93 | 0.65 | ● | 120 | Mali | 7.47 | 5.75 | 0.11 | |
| 49 | Slovakia | 55.11 | 46.88 | 0.64 | | 121 | Rwanda | 6.90 | 5.26 | 0.10 | ○ |
| 50 | Romania (2011) | 51.60 | 43.85 | 0.63 | | 122 | Zimbabwe (2013) | 5.83 | 4.33 | 0.09 | |
| 51 | Thailand (2013) | 51.23 | 43.54 | 0.62 | | 123 | Swaziland (2013) | 5.33 | 3.90 | 0.08 | ○ |
| 52 | Colombia (2013) | 48.33 | 41.03 | 0.62 | | 124 | Mozambique (2013) | 5.19 | 3.78 | 0.08 | ○ |
| 53 | Lebanon (2013) | 47.93 | 40.68 | 0.61 | | 125 | Burkina Faso (2013) | 4.78 | 3.42 | 0.07 | ○ |
| 54 | Kyrgyzstan (2013) | 47.64 | 40.43 | 0.60 | | 126 | Uganda (2011) | 4.38 | 3.08 | 0.06 | ○ |
| 55 | Costa Rica (2013) | 47.60 | 40.40 | 0.59 | | 127 | Madagascar | 4.09 | 2.83 | 0.05 | |
| 56 | Jordan | 46.61 | 39.54 | 0.59 | | 128 | Kenya (2009) | 4.05 | 2.79 | 0.05 | ○ |
| 57 | Dominican Republic | 46.38 | 39.34 | 0.58 | ● | 129 | Tanzania, United Rep. | 3.92 | 2.68 | 0.04 | ○ |
| 58 | Armenia (2013) | 46.11 | 39.11 | 0.57 | | 130 | Burundi (2010) | 3.17 | 2.03 | 0.03 | |
| 59 | Cyprus | 45.86 | 38.90 | 0.56 | | 131 | Ethiopia (2005) | 2.79 | 1.70 | 0.02 | ○ |
| 60 | Kazakhstan | 44.53 | 37.75 | 0.56 | | 132 | Niger | 1.75 | 0.81 | 0.02 | ○ |
| 61 | Panama | 43.46 | 36.82 | 0.55 | | 133 | Seychelles | 1.33 | 0.45 | 0.01 | ○ |
| 62 | Moldova, Rep. (2013) | 41.28 | 34.94 | 0.54 | | 134 | Malawi (2011) | 0.81 | 0.00 | 0.00 | ○ |
| 63 | Malta | 41.21 | 34.88 | 0.53 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 64 | Mauritius (2013) | 41.21 | 34.88 | 0.53 | | n/a | Canada | n/a | n/a | n/a | |
| 65 | Peru (2010) | 40.65 | 34.40 | 0.52 | | n/a | Gambia | n/a | n/a | n/a | |
| 66 | Ecuador | 40.51 | 34.28 | 0.51 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 67 | TFYR of Macedonia | 38.46 | 32.51 | 0.50 | | n/a | Singapore | n/a | n/a | n/a | |
| 68 | Bolivia, Plurinational St. (2007) | 37.69 | 31.84 | 0.50 | | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 69 | Malaysia | 37.20 | 31.42 | 0.49 | | n/a | Zambia | n/a | n/a | n/a | |
| 70 | Tunisia | 35.20 | 29.69 | 0.48 | | | | | | | |
| 71 | Paraguay (2010) | 34.51 | 29.10 | 0.47 | | | | | | | |
| 72 | Bahrain | 33.46 | 28.19 | 0.47 | | | | | | | |

SOURCE: UNESCO Institute for Statistics, UIS online database

NOTE: ● indicates a strength; ○ a weakness

2.2.2

Graduates in science and engineering

Tertiary graduates in science, engineering, manufacturing, and construction (% of total tertiary graduates) | 2012

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|-----|
| 1 | Iran, Islamic Rep. | 47.22 | 100.00 | 1.00 | ● | 73 | Azerbaijan | 16.21 | 30.43 | 0.28 | |
| 2 | Myanmar | 47.14 | 99.82 | 0.99 | ● | 74 | Jordan (2011) | 16.12 | 30.24 | 0.27 | |
| 3 | Tunisia | 42.38 | 89.14 | 0.98 | ● | 75 | United States of America | 16.05 | 30.06 | 0.26 | ○ |
| 4 | Oman (2010) | 38.94 | 81.42 | 0.97 | ● | 76 | Sudan | 16.02 | 30.01 | 0.25 | ● |
| 5 | Morocco (2010) | 34.91 | 72.37 | 0.96 | ● | 77 | Australia (2011) | 15.93 | 29.80 | 0.24 | ○ |
| 6 | Hong Kong (China) (2006) | 34.67 | 71.84 | 0.95 | | 78 | Armenia (2010) | 15.92 | 29.77 | 0.23 | |
| 7 | Qatar | 33.57 | 69.38 | 0.94 | ● | 79 | Kyrgyzstan | 15.64 | 29.15 | 0.22 | |
| 8 | Korea, Rep. | 31.06 | 63.75 | 0.93 | | 80 | Bangladesh | 15.62 | 29.11 | 0.21 | |
| 9 | Malaysia | 30.90 | 63.40 | 0.92 | ● | 81 | Uruguay (2010) | 15.60 | 29.07 | 0.20 | ○ |
| 10 | Trinidad and Tobago (2004) | 30.38 | 62.23 | 0.91 | ● | 82 | Ethiopia (2010) | 15.23 | 28.24 | 0.19 | |
| 11 | Saudi Arabia | 28.95 | 59.02 | 0.90 | ● | 83 | Barbados (2011) | 14.99 | 27.69 | 0.18 | ○ |
| 12 | Greece | 28.66 | 58.37 | 0.89 | ● | 84 | Luxembourg | 14.74 | 27.14 | 0.17 | ○ |
| 13 | Russian Federation (2009) | 28.11 | 57.13 | 0.88 | ● | 85 | Netherlands | 14.42 | 26.41 | 0.16 | ○ |
| 14 | Finland | 27.56 | 55.89 | 0.87 | | 86 | Ghana | 14.18 | 25.87 | 0.15 | |
| 15 | Germany | 27.21 | 55.11 | 0.86 | | 87 | Honduras | 14.13 | 25.77 | 0.14 | ○ |
| 16 | Sweden | 27.19 | 55.06 | 0.85 | | 88 | Albania (2011) | 13.79 | 25.00 | 0.13 | |
| 17 | Belarus | 27.17 | 55.03 | 0.84 | ● | 89 | Argentina (2011) | 13.48 | 24.31 | 0.12 | |
| 18 | Mexico | 26.88 | 54.38 | 0.83 | ● | 90 | Guyana | 13.44 | 24.22 | 0.11 | ○ |
| 19 | United Arab Emirates | 26.02 | 52.43 | 0.82 | | 91 | Ecuador (2008) | 12.81 | 22.80 | 0.10 | ○ |
| 20 | Ukraine | 25.57 | 51.42 | 0.81 | | 92 | Lesotho | 12.55 | 22.23 | 0.09 | |
| 21 | Tajikistan | 25.50 | 51.28 | 0.80 | ● | 93 | Cambodia (2008) | 12.49 | 22.09 | 0.08 | ○ |
| 22 | Austria | 25.45 | 51.16 | 0.79 | | 94 | Brazil | 11.96 | 20.90 | 0.07 | ○ |
| 23 | France | 25.36 | 50.95 | 0.78 | | 95 | Costa Rica (2011) | 11.90 | 20.76 | 0.06 | ○ |
| 24 | Portugal | 25.01 | 50.18 | 0.77 | | 96 | Nepal (2011) | 11.78 | 20.49 | 0.05 | ○ |
| 25 | Seychelles (2011) | 25.00 | 50.15 | 0.76 | ● | 97 | Burundi (2010) | 9.58 | 15.57 | 0.04 | |
| 26 | Algeria (2011) | 24.95 | 50.04 | 0.75 | ● | 98 | Uganda (2004) | 9.53 | 15.45 | 0.03 | ○ |
| 27 | Serbia | 24.80 | 49.69 | 0.74 | | 99 | Mozambique (2011) | 8.90 | 14.03 | 0.02 | ○ |
| 28 | Slovenia | 24.74 | 49.56 | 0.73 | | 100 | Niger (2008) | 4.28 | 3.66 | 0.01 | ○ |
| 29 | Viet Nam | 24.05 | 48.02 | 0.72 | | 101 | Namibia (2008) | 2.64 | 0.00 | 0.00 | ○ |
| 30 | Croatia | 23.85 | 47.57 | 0.71 | | n/a | Angola | n/a | n/a | n/a | n/a |
| 31 | Ireland | 23.76 | 47.38 | 0.70 | | n/a | Bhutan | n/a | n/a | n/a | n/a |
| 32 | Lebanon (2011) | 23.35 | 46.45 | 0.69 | | n/a | Bolivia, Plurinational St. | n/a | n/a | n/a | n/a |
| 33 | Zimbabwe | 23.28 | 46.29 | 0.68 | ● | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | n/a |
| 34 | Rwanda | 22.45 | 44.43 | 0.67 | ● | n/a | Botswana | n/a | n/a | n/a | n/a |
| 35 | Spain | 22.21 | 43.90 | 0.66 | | n/a | Cabo Verde | n/a | n/a | n/a | n/a |
| 36 | Lithuania | 22.12 | 43.69 | 0.65 | | n/a | Canada | n/a | n/a | n/a | n/a |
| 37 | Estonia | 22.12 | 43.69 | 0.64 | | n/a | China | n/a | n/a | n/a | n/a |
| 38 | Panama (2011) | 22.03 | 43.50 | 0.63 | | n/a | Côte d'Ivoire | n/a | n/a | n/a | n/a |
| 39 | United Kingdom | 21.85 | 43.09 | 0.62 | ○ | n/a | Dominican Republic | n/a | n/a | n/a | n/a |
| 40 | Indonesia (2009) | 21.68 | 42.71 | 0.61 | | n/a | Egypt | n/a | n/a | n/a | n/a |
| 41 | Czech Republic | 21.61 | 42.55 | 0.60 | | n/a | Fiji | n/a | n/a | n/a | n/a |
| 42 | El Salvador | 21.54 | 42.38 | 0.59 | | n/a | Gambia | n/a | n/a | n/a | n/a |
| 43 | Bulgaria | 21.48 | 42.25 | 0.58 | | n/a | Guinea | n/a | n/a | n/a | n/a |
| 44 | Cyprus | 21.46 | 42.22 | 0.57 | | n/a | India | n/a | n/a | n/a | n/a |
| 45 | Colombia | 21.45 | 42.19 | 0.56 | | n/a | Israel | n/a | n/a | n/a | n/a |
| 46 | Denmark | 21.24 | 41.72 | 0.55 | ○ | n/a | Jamaica | n/a | n/a | n/a | n/a |
| 47 | Uzbekistan (2011) | 21.14 | 41.48 | 0.54 | ● | n/a | Kazakhstan | n/a | n/a | n/a | n/a |
| 48 | Cameroon (2010) | 21.02 | 41.22 | 0.53 | ● | n/a | Kenya | n/a | n/a | n/a | n/a |
| 49 | Turkey | 20.89 | 40.92 | 0.52 | | n/a | Kuwait | n/a | n/a | n/a | n/a |
| 50 | Switzerland (2011) | 20.85 | 40.84 | 0.51 | ○ | n/a | Malawi | n/a | n/a | n/a | n/a |
| 51 | Georgia | 20.74 | 40.60 | 0.50 | | n/a | Mali | n/a | n/a | n/a | n/a |
| 52 | Slovakia | 20.61 | 40.30 | 0.49 | | n/a | Mauritius | n/a | n/a | n/a | n/a |
| 53 | Madagascar | 20.47 | 39.99 | 0.48 | | n/a | Moldova, Rep. | n/a | n/a | n/a | n/a |
| 54 | Japan | 20.26 | 39.51 | 0.47 | | n/a | Montenegro | n/a | n/a | n/a | n/a |
| 55 | Romania (2011) | 20.18 | 39.34 | 0.46 | | n/a | Nicaragua | n/a | n/a | n/a | n/a |
| 56 | Italy | 20.18 | 39.33 | 0.45 | | n/a | Nigeria | n/a | n/a | n/a | n/a |
| 57 | Burkina Faso | 19.94 | 38.81 | 0.44 | | n/a | Pakistan | n/a | n/a | n/a | n/a |
| 58 | Chile | 19.18 | 37.09 | 0.43 | | n/a | Paraguay | n/a | n/a | n/a | n/a |
| 59 | Malta | 19.12 | 36.95 | 0.42 | | n/a | Peru | n/a | n/a | n/a | n/a |
| 60 | TFYR of Macedonia | 19.07 | 36.86 | 0.41 | | n/a | Philippines | n/a | n/a | n/a | n/a |
| 61 | New Zealand | 18.79 | 36.22 | 0.40 | ○ | n/a | Senegal | n/a | n/a | n/a | n/a |
| 62 | Latvia | 18.76 | 36.15 | 0.39 | ○ | n/a | Singapore | n/a | n/a | n/a | n/a |
| 63 | Iceland | 17.96 | 34.35 | 0.38 | ○ | n/a | South Africa | n/a | n/a | n/a | n/a |
| 64 | Bahrain (2006) | 17.91 | 34.25 | 0.37 | | n/a | Tanzania, United Rep. | n/a | n/a | n/a | n/a |
| 65 | Mongolia (2011) | 17.59 | 33.52 | 0.36 | | n/a | Thailand | n/a | n/a | n/a | n/a |
| 66 | Norway | 16.96 | 32.13 | 0.35 | ○ | n/a | Togo | n/a | n/a | n/a | n/a |
| 67 | Hungary | 16.84 | 31.84 | 0.34 | | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | n/a |
| 68 | Poland | 16.81 | 31.78 | 0.33 | | n/a | Yemen | n/a | n/a | n/a | n/a |
| 69 | Guatemala (2007) | 16.76 | 31.67 | 0.32 | | n/a | Zambia | n/a | n/a | n/a | n/a |
| 70 | Swaziland (2013) | 16.75 | 31.65 | 0.31 | | | | | | | |
| 71 | Sri Lanka | 16.70 | 31.54 | 0.30 | | | | | | | |
| 72 | Belgium | 16.44 | 30.96 | 0.29 | ○ | | | | | | |

SOURCE: UNESCO Institute for Statistics, *UIS online database*

NOTE: ● indicates a strength; ○ a weakness

2.2.3 Tertiary inbound mobility

Tertiary inbound mobility ratio (%) | 2012

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-------------------------------|-------|---------------|--------------|---|------|-----------------------------------|-------|---------------|--------------|---|
| 1 | Cyprus | 23.46 | 100.00 | 0.97 | ● | 73 | Tajikistan | 1.60 | 6.76 | 0.37 | |
| 1 | Fiji (2004) | 32.94 | 100.00 | 0.97 | ● | 74 | Costa Rica (2004) | 1.43 | 6.05 | 0.37 | |
| 1 | Luxembourg | 40.56 | 100.00 | 0.97 | ● | 75 | Togo (2007) | 1.41 | 5.96 | 0.36 | |
| 1 | Qatar (2013) | 40.71 | 100.00 | 0.97 | ● | 76 | Cameroon (2011) | 1.39 | 5.84 | 0.35 | |
| 1 | United Arab Emirates (2013) | 44.63 | 100.00 | 0.97 | ● | 77 | Kazakhstan | 1.38 | 5.81 | 0.34 | |
| 6 | Singapore (2013) | 19.17 | 81.68 | 0.96 | | 78 | Albania | 1.30 | 5.48 | 0.33 | |
| 7 | Australia | 18.30 | 77.97 | 0.95 | | 79 | Israel | 1.19 | 5.00 | 0.32 | ○ |
| 8 | United Kingdom | 17.14 | 73.02 | 0.94 | | 80 | Poland | 1.17 | 4.93 | 0.31 | ○ |
| 9 | Switzerland | 16.50 | 70.29 | 0.93 | | 81 | Malawi (2010) | 1.14 | 4.78 | 0.30 | |
| 10 | New Zealand | 15.79 | 67.29 | 0.92 | | 82 | Cabo Verde (2013) | 0.96 | 4.05 | 0.30 | |
| 11 | Austria | 15.42 | 65.70 | 0.91 | ● | 83 | Guinea | 0.92 | 3.85 | 0.29 | ● |
| 12 | Barbados (2011) | 13.80 | 58.79 | 0.90 | ● | 84 | Honduras (2013) | 0.89 | 3.73 | 0.28 | |
| 13 | Lebanon | 12.82 | 54.60 | 0.90 | ● | 85 | Turkey | 0.89 | 3.71 | 0.27 | |
| 14 | France | 11.82 | 50.34 | 0.89 | | 86 | Thailand | 0.84 | 3.50 | 0.26 | |
| 15 | Uganda (2011) | 10.73 | 45.71 | 0.88 | ● | 87 | Rwanda | 0.76 | 3.19 | 0.25 | |
| 16 | Namibia (2008) | 10.17 | 43.31 | 0.87 | ● | 88 | Tanzania, United Rep. (2004) | 0.64 | 2.66 | 0.24 | |
| 17 | Jordan | 9.11 | 38.79 | 0.86 | ● | 89 | Mongolia (2013) | 0.62 | 2.58 | 0.23 | |
| 18 | Belgium | 8.98 | 38.25 | 0.85 | | 90 | Ecuador | 0.59 | 2.45 | 0.23 | |
| 19 | Czech Republic | 8.96 | 38.16 | 0.84 | | 91 | Algeria (2011) | 0.55 | 2.28 | 0.22 | |
| 20 | Hong Kong (China) (2013) | 8.90 | 37.89 | 0.83 | | 92 | Croatia | 0.54 | 2.22 | 0.21 | ○ |
| 21 | Bahrain | 8.48 | 36.11 | 0.83 | | 93 | Tunisia | 0.53 | 2.20 | 0.20 | ○ |
| 22 | Denmark | 8.13 | 34.61 | 0.82 | | 94 | Mali (2011) | 0.53 | 2.18 | 0.19 | |
| 23 | Norway | 7.75 | 32.97 | 0.81 | | 95 | Swaziland (2013) | 0.51 | 2.10 | 0.18 | |
| 24 | Netherlands | 7.25 | 30.84 | 0.80 | | 96 | Lesotho | 0.50 | 2.06 | 0.17 | |
| 25 | Germany | 7.04 | 29.97 | 0.79 | | 97 | El Salvador | 0.41 | 1.66 | 0.17 | |
| 26 | Bosnia and Herzegovina (2013) | 6.48 | 27.58 | 0.78 | ● | 98 | Guyana | 0.38 | 1.57 | 0.16 | |
| 27 | Sweden | 6.32 | 26.87 | 0.77 | | 99 | Zimbabwe | 0.37 | 1.53 | 0.15 | |
| 28 | Iceland | 6.21 | 26.42 | 0.77 | | 100 | Botswana (2011) | 0.35 | 1.44 | 0.14 | |
| 29 | Burundi (2010) | 6.19 | 26.35 | 0.76 | ● | 101 | Chile | 0.31 | 1.25 | 0.13 | ○ |
| 30 | Trinidad and Tobago (2004) | 5.78 | 24.61 | 0.75 | ● | 102 | Mozambique (2013) | 0.30 | 1.23 | 0.12 | |
| 31 | Ireland | 5.76 | 24.51 | 0.74 | | 103 | China | 0.27 | 1.10 | 0.11 | ○ |
| 32 | Finland | 5.71 | 24.28 | 0.73 | | 104 | Brazil | 0.21 | 0.83 | 0.10 | ○ |
| 33 | Niger | 5.43 | 23.08 | 0.72 | ● | 105 | Viet Nam (2013) | 0.16 | 0.62 | 0.10 | ○ |
| 34 | Malaysia | 5.22 | 22.20 | 0.71 | | 106 | Sri Lanka | 0.14 | 0.52 | 0.09 | ○ |
| 35 | Malta | 4.84 | 20.59 | 0.70 | | 107 | Uzbekistan (2011) | 0.14 | 0.51 | 0.08 | ○ |
| 36 | Portugal | 4.75 | 20.18 | 0.70 | | 108 | Indonesia | 0.12 | 0.43 | 0.07 | ○ |
| 37 | Hungary | 4.60 | 19.56 | 0.69 | | 109 | Iran, Islamic Rep. | 0.10 | 0.37 | 0.06 | ○ |
| 38 | Saudi Arabia (2013) | 4.58 | 19.46 | 0.68 | | 110 | Philippines (2008) | 0.10 | 0.36 | 0.05 | ○ |
| 39 | Côte d'Ivoire (2013) | 4.40 | 18.69 | 0.67 | ● | 111 | Bangladesh (2009) | 0.10 | 0.36 | 0.04 | ○ |
| 40 | Greece | 4.37 | 18.58 | 0.66 | | 112 | India | 0.10 | 0.36 | 0.03 | ○ |
| 41 | Yemen (2011) | 4.26 | 18.10 | 0.65 | ● | 113 | Venezuela, Bolivarian Rep. (2008) | 0.09 | 0.32 | 0.03 | |
| 42 | South Africa | 4.19 | 17.82 | 0.64 | | 114 | Cambodia (2006) | 0.07 | 0.24 | 0.02 | ○ |
| 43 | Slovakia | 4.09 | 17.40 | 0.63 | | 115 | Nepal (2011) | 0.03 | 0.05 | 0.01 | ○ |
| 44 | Italy | 4.04 | 17.15 | 0.63 | | 116 | Myanmar | 0.02 | 0.00 | 0.00 | ○ |
| 45 | Kyrgyzstan (2013) | 3.96 | 16.81 | 0.62 | | n/a | Angola | n/a | n/a | n/a | |
| 46 | Bulgaria | 3.93 | 16.72 | 0.61 | | n/a | Argentina | n/a | n/a | n/a | |
| 47 | Japan | 3.88 | 16.47 | 0.60 | | n/a | Bhutan | n/a | n/a | n/a | |
| 48 | Serbia (2013) | 3.74 | 15.87 | 0.59 | | n/a | Bolivia, Plurinational St. | n/a | n/a | n/a | |
| 49 | United States of America | 3.53 | 14.98 | 0.58 | | n/a | Canada | n/a | n/a | n/a | |
| 50 | Dominican Republic | 3.48 | 14.79 | 0.57 | ● | n/a | Colombia | n/a | n/a | n/a | |
| 51 | Ghana | 3.09 | 13.12 | 0.57 | | n/a | Ethiopia | n/a | n/a | n/a | |
| 52 | Georgia (2013) | 3.03 | 12.87 | 0.56 | | n/a | Gambia | n/a | n/a | n/a | |
| 53 | Armenia (2013) | 3.02 | 12.80 | 0.55 | | n/a | Guatemala | n/a | n/a | n/a | |
| 54 | Burkina Faso (2013) | 2.90 | 12.30 | 0.54 | ● | n/a | Jamaica | n/a | n/a | n/a | |
| 55 | Mauritius (2013) | 2.87 | 12.17 | 0.53 | | n/a | Kenya | n/a | n/a | n/a | |
| 56 | Spain | 2.84 | 12.03 | 0.52 | ○ | n/a | Kuwait | n/a | n/a | n/a | |
| 57 | Latvia | 2.80 | 11.87 | 0.51 | | n/a | Mexico | n/a | n/a | n/a | |
| 58 | Oman (2013) | 2.63 | 11.17 | 0.50 | | n/a | Montenegro | n/a | n/a | n/a | |
| 59 | Azerbaijan | 2.50 | 10.61 | 0.50 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 60 | Belarus (2013) | 2.41 | 10.21 | 0.49 | | n/a | Nigeria | n/a | n/a | n/a | |
| 61 | Estonia | 2.33 | 9.86 | 0.48 | ○ | n/a | Pakistan | n/a | n/a | n/a | |
| 62 | Slovenia | 2.27 | 9.60 | 0.47 | | n/a | Panama | n/a | n/a | n/a | |
| 63 | Ukraine (2013) | 2.25 | 9.54 | 0.46 | | n/a | Paraguay | n/a | n/a | n/a | |
| 64 | Russian Federation | 2.17 | 9.21 | 0.45 | | n/a | Peru | n/a | n/a | n/a | |
| 65 | TFYR of Macedonia | 2.17 | 9.17 | 0.44 | | n/a | Senegal | n/a | n/a | n/a | |
| 66 | Morocco (2010) | 1.93 | 8.16 | 0.43 | | n/a | Seychelles | n/a | n/a | n/a | |
| 67 | Moldova, Rep. (2013) | 1.88 | 7.96 | 0.43 | | n/a | Sudan | n/a | n/a | n/a | |
| 68 | Egypt (2010) | 1.85 | 7.83 | 0.42 | | n/a | Uruguay | n/a | n/a | n/a | |
| 69 | Romania (2011) | 1.84 | 7.80 | 0.41 | | n/a | Zambia | n/a | n/a | n/a | |
| 70 | Lithuania | 1.79 | 7.58 | 0.40 | | | | | | | |
| 71 | Korea, Rep. | 1.77 | 7.49 | 0.39 | ○ | | | | | | |
| 72 | Madagascar | 1.74 | 7.34 | 0.38 | | | | | | | |

SOURCE: UNESCO Institute for Statistics, UIS online database

NOTE: ● indicates a strength; ○ a weakness

2.3.1

Researchers

Researchers, FTE (per million population) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-----------------------------------|----------|---------------|--------------|---|------|-------------------------------|--------|---------------|--------------|---|
| 1 | Israel (2012) | 8,337.13 | 100.00 | 1.00 | ● | 73 | Paraguay (2012) | 161.65 | 1.87 | 0.31 | |
| 2 | Denmark | 7,271.28 | 87.21 | 0.99 | ● | 74 | Colombia (2012) | 161.45 | 1.87 | 0.30 | |
| 3 | Finland | 7,223.34 | 86.63 | 0.98 | ● | 75 | India (2010) | 159.93 | 1.85 | 0.29 | |
| 4 | Iceland (2011) | 7,012.22 | 84.10 | 0.97 | ● | 76 | Oman (2011) | 159.89 | 1.85 | 0.28 | |
| 5 | Korea, Rep. | 6,533.18 | 78.35 | 0.96 | | 77 | Bosnia and Herzegovina (2012) | 150.58 | 1.74 | 0.27 | |
| 6 | Sweden | 6,508.55 | 78.05 | 0.95 | | 78 | Seychelles (2005) | 149.26 | 1.72 | 0.26 | |
| 7 | Singapore (2012) | 6,437.73 | 77.20 | 0.94 | | 79 | Albania (2008) | 147.94 | 1.71 | 0.25 | |
| 8 | Norway (2012) | 5,575.03 | 66.85 | 0.93 | | 80 | Kuwait (2012) | 135.06 | 1.55 | 0.24 | |
| 9 | Japan | 5,194.83 | 62.28 | 0.92 | | 81 | Panama (2011) | 117.10 | 1.34 | 0.23 | |
| 10 | Luxembourg | 4,930.80 | 59.11 | 0.91 | | 82 | Sri Lanka (2010) | 103.09 | 1.17 | 0.22 | |
| 11 | Austria | 4,699.46 | 56.34 | 0.90 | ● | 83 | Zimbabwe (2012) | 95.10 | 1.07 | 0.21 | |
| 12 | Switzerland (2012) | 4,495.21 | 53.89 | 0.89 | | 84 | Indonesia (2009) | 89.90 | 1.01 | 0.20 | |
| 13 | Canada (2012) | 4,493.66 | 53.87 | 0.88 | | 85 | Philippines (2007) | 78.28 | 0.87 | 0.19 | |
| 14 | Germany | 4,362.56 | 52.29 | 0.88 | | 86 | Côte d'Ivoire (2005) | 72.96 | 0.81 | 0.18 | |
| 15 | Netherlands | 4,315.51 | 51.73 | 0.87 | | 87 | Angola (2011) | 56.99 | 0.61 | 0.17 | |
| 16 | Australia (2008) | 4,280.36 | 51.31 | 0.86 | | 88 | Madagascar (2011) | 51.02 | 0.54 | 0.16 | |
| 17 | Slovenia | 4,202.23 | 50.37 | 0.85 | | 89 | Cabo Verde (2011) | 50.96 | 0.54 | 0.15 | |
| 18 | France | 4,124.62 | 49.44 | 0.84 | | 90 | Malawi (2010) | 48.76 | 0.51 | 0.14 | |
| 19 | United Kingdom | 4,107.73 | 49.23 | 0.83 | | 91 | Burkina Faso (2010) | 47.78 | 0.50 | 0.13 | |
| 20 | Portugal | 4,083.76 | 48.95 | 0.82 | | 92 | Ethiopia | 46.06 | 0.48 | 0.13 | |
| 21 | Belgium | 4,020.82 | 48.19 | 0.81 | | 93 | Zambia (2008) | 43.03 | 0.45 | 0.12 | |
| 22 | United States of America (2011) | 3,978.73 | 47.69 | 0.80 | | 94 | Ghana (2010) | 38.77 | 0.39 | 0.11 | |
| 23 | New Zealand (2011) | 3,692.86 | 44.25 | 0.79 | | 95 | Nigeria (2007) | 38.57 | 0.39 | 0.10 | |
| 24 | Ireland (2012) | 3,438.02 | 41.20 | 0.78 | | 96 | Mozambique (2010) | 38.07 | 0.39 | 0.09 | |
| 25 | Estonia | 3,423.57 | 41.02 | 0.77 | | 97 | Uganda (2010) | 37.15 | 0.38 | 0.08 | |
| 26 | Czech Republic | 3,202.25 | 38.37 | 0.76 | | 98 | Togo (2012) | 36.48 | 0.37 | 0.07 | |
| 27 | Russian Federation | 3,084.57 | 36.95 | 0.75 | | 99 | Tanzania, United Rep. (2010) | 35.57 | 0.36 | 0.06 | ○ |
| 28 | Hong Kong (China) (2012) | 2,970.70 | 35.59 | 0.74 | | 100 | Gambia (2011) | 33.78 | 0.34 | 0.05 | ○ |
| 29 | Lithuania | 2,836.32 | 33.97 | 0.73 | | 101 | Mali (2010) | 31.64 | 0.31 | 0.04 | |
| 30 | Slovakia | 2,702.16 | 32.36 | 0.72 | | 102 | Guatemala (2012) | 27.25 | 0.26 | 0.03 | ○ |
| 31 | Spain | 2,633.51 | 31.54 | 0.71 | | 103 | Rwanda (2009) | 11.70 | 0.07 | 0.02 | ○ |
| 32 | Hungary | 2,515.13 | 30.12 | 0.70 | | 104 | Niger (2005) | 7.66 | 0.02 | 0.01 | ○ |
| 33 | Greece | 2,486.30 | 29.77 | 0.69 | | 105 | Lesotho (2011) | 5.86 | 0.00 | 0.00 | ○ |
| 34 | Malta | 2,039.61 | 24.41 | 0.68 | | n/a | Armenia | n/a | n/a | n/a | |
| 35 | Italy | 1,934.30 | 23.15 | 0.67 | | n/a | Azerbaijan | n/a | n/a | n/a | |
| 36 | Poland | 1,870.19 | 22.38 | 0.66 | | n/a | Bahrain | n/a | n/a | n/a | |
| 37 | Malaysia (2012) | 1,777.17 | 21.26 | 0.65 | | n/a | Bangladesh | n/a | n/a | n/a | |
| 38 | Latvia | 1,768.02 | 21.15 | 0.64 | | n/a | Barbados | n/a | n/a | n/a | |
| 39 | Bulgaria | 1,699.31 | 20.33 | 0.63 | | n/a | Belarus | n/a | n/a | n/a | |
| 40 | Croatia | 1,522.01 | 18.20 | 0.63 | | n/a | Bhutan | n/a | n/a | n/a | |
| 41 | Tunisia (2012) | 1,393.94 | 16.66 | 0.62 | | n/a | Botswana | n/a | n/a | n/a | |
| 42 | Costa Rica (2011) | 1,289.03 | 15.40 | 0.61 | | n/a | Burundi | n/a | n/a | n/a | |
| 43 | Argentina (2012) | 1,255.82 | 15.00 | 0.60 | | n/a | Cambodia | n/a | n/a | n/a | |
| 44 | Serbia (2012) | 1,235.48 | 14.76 | 0.59 | | n/a | Cameroon | n/a | n/a | n/a | |
| 45 | Turkey | 1,188.73 | 14.20 | 0.58 | | n/a | Dominican Republic | n/a | n/a | n/a | |
| 46 | Ukraine | 1,163.29 | 13.89 | 0.57 | | n/a | El Salvador | n/a | n/a | n/a | |
| 47 | China | 1,071.07 | 12.79 | 0.56 | | n/a | Fiji | n/a | n/a | n/a | |
| 48 | Morocco (2011) | 864.46 | 10.31 | 0.55 | | n/a | Georgia | n/a | n/a | n/a | |
| 49 | Romania | 861.99 | 10.28 | 0.54 | | n/a | Guinea | n/a | n/a | n/a | |
| 50 | Cyprus | 775.52 | 9.24 | 0.53 | | n/a | Guyana | n/a | n/a | n/a | |
| 51 | Kazakhstan | 763.48 | 9.09 | 0.52 | | n/a | Honduras | n/a | n/a | n/a | |
| 52 | Montenegro (2011) | 762.92 | 9.09 | 0.51 | | n/a | Jamaica | n/a | n/a | n/a | |
| 53 | Moldova, Rep. | 752.18 | 8.96 | 0.50 | | n/a | Jordan | n/a | n/a | n/a | |
| 54 | Iran, Islamic Rep. (2010) | 736.12 | 8.77 | 0.49 | | n/a | Kyrgyzstan | n/a | n/a | n/a | |
| 55 | Brazil (2010) | 710.28 | 8.46 | 0.48 | | n/a | Lebanon | n/a | n/a | n/a | |
| 56 | Qatar (2012) | 586.90 | 6.97 | 0.47 | | n/a | Mongolia | n/a | n/a | n/a | |
| 57 | Thailand (2011) | 546.14 | 6.48 | 0.46 | | n/a | Myanmar | n/a | n/a | n/a | |
| 58 | Uzbekistan (2011) | 533.86 | 6.34 | 0.45 | | n/a | Namibia | n/a | n/a | n/a | |
| 59 | Uruguay | 529.19 | 6.28 | 0.44 | | n/a | Nepal | n/a | n/a | n/a | |
| 60 | Egypt | 465.97 | 5.52 | 0.43 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 61 | South Africa (2012) | 408.17 | 4.83 | 0.42 | | n/a | Peru | n/a | n/a | n/a | |
| 62 | Chile (2012) | 389.24 | 4.60 | 0.41 | | n/a | Saudi Arabia | n/a | n/a | n/a | |
| 63 | Mexico (2011) | 386.43 | 4.57 | 0.40 | | n/a | Sudan | n/a | n/a | n/a | |
| 64 | Senegal (2010) | 361.30 | 4.27 | 0.39 | | n/a | Swaziland | n/a | n/a | n/a | |
| 65 | TFYR of Macedonia (2011) | 331.05 | 3.90 | 0.38 | | n/a | Tajikistan | n/a | n/a | n/a | |
| 66 | Venezuela, Bolivarian Rep. (2012) | 289.97 | 3.41 | 0.38 | | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 67 | Kenya (2010) | 227.45 | 2.66 | 0.37 | | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 68 | Mauritius (2012) | 183.86 | 2.14 | 0.36 | | n/a | Viet Nam | n/a | n/a | n/a | |
| 69 | Ecuador (2011) | 179.48 | 2.08 | 0.35 | | n/a | Yemen | n/a | n/a | n/a | |
| 70 | Pakistan | 166.05 | 1.92 | 0.34 | | | | | | | |
| 71 | Algeria (2005) | 164.69 | 1.91 | 0.33 | | | | | | | |
| 72 | Bolivia, Plurinational St. (2010) | 162.06 | 1.87 | 0.32 | | | | | | | |

SOURCE: UNESCO Institute for Statistics, *UIS online database*

NOTE: ● indicates a strength; ○ a weakness

2.3.2 Gross expenditure on R&D (GERD)

GERD: Gross expenditure on R&D (% of GDP) | 2013

II: Data Tables

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|---------------------------------|-------|---------------|--------------|---|------|-----------------------------------|-------|---------------|--------------|---|
| 1 | Israel | 4.20 | 100.00 | 1.00 | ● | 73 | Moldova, Rep. | 0.36 | 8.20 | 0.38 | |
| 2 | Korea, Rep. | 4.15 | 98.81 | 0.99 | ● | 74 | Ecuador (2011) | 0.35 | 8.07 | 0.38 | |
| 3 | Japan | 3.49 | 82.94 | 0.98 | ● | 75 | Zambia (2008) | 0.34 | 7.81 | 0.37 | |
| 4 | Finland | 3.46 | 82.18 | 0.97 | | 76 | Nepal (2010) | 0.30 | 6.90 | 0.36 | |
| 5 | Sweden | 3.42 | 81.41 | 0.97 | ● | 77 | Seychelles (2005) | 0.30 | 6.90 | 0.35 | |
| 6 | Switzerland (2012) | 3.13 | 74.36 | 0.96 | | 78 | Sudan (2005) | 0.30 | 6.81 | 0.34 | ● |
| 7 | Denmark | 3.10 | 73.82 | 0.95 | | 79 | Pakistan | 0.29 | 6.52 | 0.33 | |
| 8 | Germany | 3.01 | 71.62 | 0.94 | | 80 | Bosnia and Herzegovina (2012) | 0.27 | 6.16 | 0.32 | |
| 9 | Austria | 2.90 | 68.89 | 0.93 | ● | 81 | Mongolia | 0.25 | 5.75 | 0.31 | |
| 10 | United States of America (2012) | 2.79 | 66.35 | 0.92 | | 82 | Uruguay (2012) | 0.24 | 5.44 | 0.32 | |
| 11 | Slovenia | 2.65 | 62.97 | 0.91 | ● | 83 | Armenia | 0.24 | 5.34 | 0.30 | |
| 12 | Iceland (2011) | 2.61 | 61.89 | 0.91 | | 84 | Colombia | 0.23 | 5.12 | 0.29 | |
| 13 | Belgium | 2.36 | 55.93 | 0.90 | | 85 | TFYR of Macedonia (2011) | 0.22 | 5.06 | 0.28 | ○ |
| 14 | France | 2.29 | 54.35 | 0.89 | | 86 | Togo (2012) | 0.22 | 4.96 | 0.27 | |
| 15 | Australia (2011) | 2.25 | 53.43 | 0.88 | | 87 | Nigeria (2007) | 0.22 | 4.92 | 0.26 | |
| 16 | Netherlands | 2.11 | 50.17 | 0.87 | | 88 | Azerbaijan | 0.21 | 4.74 | 0.26 | |
| 17 | China | 2.08 | 49.41 | 0.86 | | 89 | Burkina Faso (2009) | 0.20 | 4.48 | 0.25 | |
| 18 | Singapore (2012) | 2.02 | 47.93 | 0.85 | | 90 | Viet Nam (2011) | 0.19 | 4.24 | 0.24 | |
| 19 | Czech Republic | 2.00 | 47.55 | 0.85 | | 91 | Mauritius (2012) | 0.18 | 4.02 | 0.23 | ○ |
| 20 | Estonia | 1.77 | 41.90 | 0.84 | | 92 | Kazakhstan | 0.18 | 4.00 | 0.22 | |
| 21 | United Kingdom | 1.73 | 40.90 | 0.83 | | 93 | Panama (2011) | 0.18 | 4.00 | 0.21 | |
| 22 | Norway | 1.69 | 40.10 | 0.82 | | 94 | Georgia (2005) | 0.18 | 3.90 | 0.21 | |
| 23 | Ireland (2012) | 1.66 | 39.35 | 0.81 | | 95 | Peru (2004) | 0.16 | 3.47 | 0.20 | ○ |
| 24 | Canada | 1.63 | 38.71 | 0.80 | | 96 | Bolivia, Plurinational St. (2009) | 0.16 | 3.44 | 0.19 | |
| 25 | Hungary | 1.44 | 34.18 | 0.79 | | 97 | Sri Lanka (2010) | 0.16 | 3.43 | 0.18 | ○ |
| 26 | Portugal | 1.40 | 33.14 | 0.79 | | 98 | Kyrgyzstan (2011) | 0.16 | 3.42 | 0.17 | |
| 27 | Italy | 1.30 | 30.61 | 0.78 | | 99 | Albania (2008) | 0.15 | 3.37 | 0.16 | |
| 28 | Spain | 1.28 | 30.15 | 0.77 | | 100 | Namibia (2010) | 0.14 | 3.11 | 0.15 | |
| 29 | New Zealand (2011) | 1.27 | 29.91 | 0.76 | | 101 | Gambia (2011) | 0.13 | 2.87 | 0.15 | |
| 30 | Brazil (2012) | 1.24 | 29.18 | 0.75 | ● | 102 | Oman (2011) | 0.13 | 2.85 | 0.14 | ○ |
| 31 | Luxembourg | 1.15 | 27.15 | 0.74 | | 103 | Burundi (2011) | 0.12 | 2.58 | 0.13 | |
| 32 | Malaysia (2012) | 1.13 | 26.61 | 0.74 | | 104 | Tajikistan | 0.12 | 2.50 | 0.12 | |
| 33 | Russian Federation | 1.12 | 26.50 | 0.73 | | 105 | Philippines (2007) | 0.11 | 2.31 | 0.11 | ○ |
| 34 | Serbia (2012) | 0.97 | 22.86 | 0.72 | | 106 | Madagascar (2011) | 0.11 | 2.23 | 0.10 | |
| 35 | Kenya (2010) | 0.97 | 22.82 | 0.71 | | 107 | Kuwait (2012) | 0.09 | 1.89 | 0.09 | ○ |
| 36 | Lithuania | 0.96 | 22.61 | 0.70 | | 108 | Paraguay (2012) | 0.09 | 1.79 | 0.09 | ○ |
| 37 | Turkey | 0.95 | 22.33 | 0.69 | | 109 | Indonesia (2009) | 0.08 | 1.68 | 0.08 | ○ |
| 38 | Malta | 0.88 | 20.77 | 0.68 | | 110 | Saudi Arabia (2009) | 0.07 | 1.44 | 0.07 | ○ |
| 39 | Poland | 0.88 | 20.74 | 0.68 | | 111 | Cabo Verde (2011) | 0.07 | 1.42 | 0.06 | ○ |
| 40 | Slovakia | 0.85 | 19.91 | 0.67 | | 112 | Algeria (2005) | 0.07 | 1.27 | 0.05 | |
| 41 | Croatia | 0.82 | 19.24 | 0.66 | | 113 | Trinidad and Tobago (2012) | 0.05 | 0.85 | 0.04 | ○ |
| 42 | India (2011) | 0.81 | 18.93 | 0.65 | | 114 | Guatemala (2012) | 0.04 | 0.76 | 0.03 | ○ |
| 43 | Greece | 0.78 | 18.40 | 0.64 | | 115 | Bahrain | 0.04 | 0.69 | 0.03 | ○ |
| 44 | Ukraine | 0.77 | 18.00 | 0.63 | | 116 | Honduras (2004) | 0.04 | 0.68 | 0.02 | ○ |
| 45 | South Africa (2012) | 0.76 | 17.84 | 0.62 | | 117 | El Salvador (2012) | 0.03 | 0.42 | 0.01 | ○ |
| 46 | Iran, Islamic Rep. (2008) | 0.75 | 17.57 | 0.62 | | 118 | Lesotho (2011) | 0.01 | 0.00 | 0.00 | ○ |
| 47 | Morocco (2010) | 0.73 | 17.21 | 0.61 | | n/a | Angola | n/a | n/a | n/a | |
| 48 | Hong Kong (China) (2012) | 0.73 | 17.05 | 0.60 | | n/a | Bangladesh | n/a | n/a | n/a | |
| 49 | Belarus | 0.69 | 16.08 | 0.59 | | n/a | Barbados | n/a | n/a | n/a | |
| 50 | Tunisia (2012) | 0.68 | 15.91 | 0.58 | | n/a | Bhutan | n/a | n/a | n/a | |
| 51 | Egypt | 0.68 | 15.88 | 0.57 | | n/a | Cambodia | n/a | n/a | n/a | |
| 52 | Bulgaria | 0.67 | 15.62 | 0.56 | | n/a | Cameroon | n/a | n/a | n/a | |
| 53 | Mali (2010) | 0.66 | 15.48 | 0.56 | | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 54 | Ethiopia | 0.61 | 14.37 | 0.55 | ● | n/a | Dominican Republic | n/a | n/a | n/a | |
| 55 | Latvia | 0.60 | 13.95 | 0.54 | | n/a | Fiji | n/a | n/a | n/a | |
| 56 | Argentina (2012) | 0.58 | 13.63 | 0.53 | | n/a | Guinea | n/a | n/a | n/a | |
| 57 | Uganda (2010) | 0.56 | 13.01 | 0.52 | | n/a | Guyana | n/a | n/a | n/a | |
| 58 | Senegal (2010) | 0.54 | 12.60 | 0.51 | | n/a | Jamaica | n/a | n/a | n/a | |
| 59 | Botswana (2005) | 0.53 | 12.41 | 0.50 | | n/a | Lebanon | n/a | n/a | n/a | |
| 60 | Cyprus | 0.52 | 12.14 | 0.50 | | n/a | Malawi | n/a | n/a | n/a | |
| 61 | Tanzania, United Rep. (2010) | 0.52 | 12.01 | 0.49 | | n/a | Myanmar | n/a | n/a | n/a | |
| 62 | Mexico | 0.50 | 11.59 | 0.48 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 63 | United Arab Emirates (2011) | 0.49 | 11.37 | 0.47 | | n/a | Niger | n/a | n/a | n/a | |
| 64 | Costa Rica (2011) | 0.47 | 11.01 | 0.46 | | n/a | Rwanda | n/a | n/a | n/a | |
| 65 | Qatar (2012) | 0.47 | 10.93 | 0.45 | | n/a | Swaziland | n/a | n/a | n/a | |
| 66 | Mozambique (2010) | 0.46 | 10.73 | 0.44 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 67 | Jordan (2008) | 0.43 | 10.07 | 0.44 | | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 68 | Montenegro (2011) | 0.41 | 9.45 | 0.43 | | n/a | Yemen | n/a | n/a | n/a | |
| 69 | Romania | 0.39 | 9.01 | 0.42 | | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Thailand (2011) | 0.39 | 8.95 | 0.41 | | | | | | | |
| 71 | Ghana (2010) | 0.38 | 8.68 | 0.40 | | | | | | | |
| 72 | Chile (2012) | 0.36 | 8.36 | 0.39 | | | | | | | |

SOURCE: UNESCO Institute for Statistics, *UIS online database*

NOTE: ● indicates a strength; ○ a weakness

2.3.3

QS university ranking average score top 3 universities

Average score of the top 3 universities at the QS world university ranking | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | United Kingdom | 99.33 | 99.33 | 1.00 | ● | 73 | Albania | 0.00 | 0.00 | 0.00 | ○ |
| 2 | United States of America | 99.20 | 99.20 | 0.99 | ● | 73 | Algeria | 0.00 | 0.00 | 0.00 | ○ |
| 3 | Switzerland | 88.97 | 88.97 | 0.99 | ● | 73 | Angola | 0.00 | 0.00 | 0.00 | ○ |
| 4 | Canada | 88.77 | 88.77 | 0.98 | ● | 73 | Armenia | 0.00 | 0.00 | 0.00 | ○ |
| 5 | Australia | 86.83 | 86.83 | 0.97 | ● | 73 | Barbados | 0.00 | 0.00 | 0.00 | ○ |
| 6 | Hong Kong (China) | 84.67 | 84.67 | 0.96 | | 73 | Bhutan | 0.00 | 0.00 | 0.00 | ○ |
| 7 | Japan | 83.67 | 83.67 | 0.96 | | 73 | Bolivia, Plurinational St. | 0.00 | 0.00 | 0.00 | ○ |
| 8 | France | 80.47 | 80.47 | 0.95 | ● | 73 | Bosnia and Herzegovina | 0.00 | 0.00 | 0.00 | ○ |
| 9 | Germany | 80.20 | 80.20 | 0.94 | | 73 | Botswana | 0.00 | 0.00 | 0.00 | ○ |
| 10 | Korea, Rep. | 79.83 | 79.83 | 0.94 | | 73 | Burkina Faso | 0.00 | 0.00 | 0.00 | ○ |
| 11 | China | 78.47 | 78.47 | 0.93 | | 73 | Burundi | 0.00 | 0.00 | 0.00 | ○ |
| 12 | Netherlands | 76.73 | 76.73 | 0.92 | | 73 | Cabo Verde | 0.00 | 0.00 | 0.00 | ○ |
| 13 | Sweden | 73.47 | 73.47 | 0.91 | | 73 | Cambodia | 0.00 | 0.00 | 0.00 | ○ |
| 14 | Denmark | 72.70 | 72.70 | 0.91 | | 73 | Cameroon | 0.00 | 0.00 | 0.00 | ○ |
| 15 | Belgium | 66.33 | 66.33 | 0.90 | | 73 | Costa Rica | 0.00 | 0.00 | 0.00 | ○ |
| 16 | Ireland | 62.47 | 62.47 | 0.89 | | 73 | Côte d'Ivoire | 0.00 | 0.00 | 0.00 | ○ |
| 17 | Finland | 61.77 | 61.77 | 0.89 | | 73 | Cyprus | 0.00 | 0.00 | 0.00 | ○ |
| 18 | New Zealand | 59.70 | 59.70 | 0.88 | | 73 | Dominican Republic | 0.00 | 0.00 | 0.00 | ○ |
| 19 | Norway | 58.93 | 58.93 | 0.87 | | 73 | Ecuador | 0.00 | 0.00 | 0.00 | ○ |
| 20 | Singapore | 58.37 | 58.37 | 0.86 | | 73 | El Salvador | 0.00 | 0.00 | 0.00 | ○ |
| 21 | Spain | 57.57 | 57.57 | 0.86 | | 73 | Ethiopia | 0.00 | 0.00 | 0.00 | ○ |
| 22 | Israel | 57.53 | 57.53 | 0.85 | | 73 | Fiji | 0.00 | 0.00 | 0.00 | ○ |
| 23 | Brazil | 53.97 | 53.97 | 0.84 | ● | 73 | Gambia | 0.00 | 0.00 | 0.00 | ○ |
| 24 | Italy | 53.17 | 53.17 | 0.84 | | 73 | Georgia | 0.00 | 0.00 | 0.00 | ○ |
| 25 | Russian Federation | 52.07 | 52.07 | 0.83 | | 73 | Guatemala | 0.00 | 0.00 | 0.00 | ○ |
| 26 | Austria | 49.77 | 49.77 | 0.82 | | 73 | Guinea | 0.00 | 0.00 | 0.00 | ○ |
| 27 | Malaysia | 49.43 | 49.43 | 0.81 | | 73 | Guyana | 0.00 | 0.00 | 0.00 | ○ |
| 28 | India | 46.97 | 46.97 | 0.81 | ● | 73 | Honduras | 0.00 | 0.00 | 0.00 | ○ |
| 29 | Chile | 46.83 | 46.83 | 0.80 | | 73 | Iceland | 0.00 | 0.00 | 0.00 | ○ |
| 30 | South Africa | 45.97 | 45.97 | 0.79 | | 73 | Jamaica | 0.00 | 0.00 | 0.00 | ○ |
| 31 | Saudi Arabia | 45.43 | 45.43 | 0.79 | | 73 | Kyrgyzstan | 0.00 | 0.00 | 0.00 | ○ |
| 32 | Argentina | 43.80 | 43.80 | 0.78 | ● | 73 | Latvia | 0.00 | 0.00 | 0.00 | ○ |
| 33 | Mexico | 43.20 | 43.20 | 0.77 | ● | 73 | Lesotho | 0.00 | 0.00 | 0.00 | ○ |
| 34 | Colombia | 41.43 | 41.43 | 0.76 | | 73 | Luxembourg | 0.00 | 0.00 | 0.00 | ○ |
| 35 | Portugal | 40.37 | 40.37 | 0.76 | | 73 | Madagascar | 0.00 | 0.00 | 0.00 | ○ |
| 36 | Thailand | 40.17 | 40.17 | 0.75 | | 73 | Malawi | 0.00 | 0.00 | 0.00 | ○ |
| 37 | Czech Republic | 35.47 | 35.47 | 0.74 | | 73 | Mali | 0.00 | 0.00 | 0.00 | ○ |
| 38 | Kazakhstan | 35.10 | 35.10 | 0.74 | | 73 | Malta | 0.00 | 0.00 | 0.00 | ○ |
| 39 | Turkey | 34.53 | 34.53 | 0.73 | | 73 | Mauritius | 0.00 | 0.00 | 0.00 | ○ |
| 40 | United Arab Emirates | 34.47 | 34.47 | 0.72 | | 73 | Moldova, Rep. | 0.00 | 0.00 | 0.00 | ○ |
| 41 | Indonesia | 32.90 | 32.90 | 0.71 | ● | 73 | Mongolia | 0.00 | 0.00 | 0.00 | ○ |
| 42 | Poland | 32.83 | 32.83 | 0.71 | | 73 | Montenegro | 0.00 | 0.00 | 0.00 | ○ |
| 43 | Lebanon | 31.47 | 31.47 | 0.70 | | 73 | Morocco | 0.00 | 0.00 | 0.00 | ○ |
| 44 | Greece | 31.43 | 31.43 | 0.69 | | 73 | Mozambique | 0.00 | 0.00 | 0.00 | ○ |
| 45 | Philippines | 29.93 | 29.93 | 0.69 | ● | 73 | Myanmar | 0.00 | 0.00 | 0.00 | ○ |
| 46 | Ukraine | 29.40 | 29.40 | 0.68 | | 73 | Namibia | 0.00 | 0.00 | 0.00 | ○ |
| 47 | Egypt | 27.90 | 27.90 | 0.67 | ● | 73 | Nepal | 0.00 | 0.00 | 0.00 | ○ |
| 48 | Venezuela, Bolivarian Rep. | 26.63 | 26.63 | 0.66 | ● | 73 | Nicaragua | 0.00 | 0.00 | 0.00 | ○ |
| 49 | Hungary | 25.33 | 25.33 | 0.66 | | 73 | Niger | 0.00 | 0.00 | 0.00 | ○ |
| 50 | Peru | 24.10 | 24.10 | 0.65 | | 73 | Nigeria | 0.00 | 0.00 | 0.00 | ○ |
| 51 | Pakistan | 22.10 | 22.10 | 0.64 | ● | 73 | Panama | 0.00 | 0.00 | 0.00 | ○ |
| 52 | Estonia | 21.47 | 21.47 | 0.64 | | 73 | Paraguay | 0.00 | 0.00 | 0.00 | ○ |
| 53 | Lithuania | 19.90 | 19.90 | 0.63 | | 73 | Rwanda | 0.00 | 0.00 | 0.00 | ○ |
| 54 | Azerbaijan | 19.77 | 19.77 | 0.62 | | 73 | Senegal | 0.00 | 0.00 | 0.00 | ○ |
| 55 | Romania | 17.07 | 17.07 | 0.61 | | 73 | Seychelles | 0.00 | 0.00 | 0.00 | ○ |
| 56 | Iran, Islamic Rep. | 15.63 | 15.63 | 0.61 | | 73 | Slovakia | 0.00 | 0.00 | 0.00 | ○ |
| 57 | Belarus | 15.50 | 15.50 | 0.60 | | 73 | Sudan | 0.00 | 0.00 | 0.00 | ○ |
| 58 | Jordan | 14.70 | 14.70 | 0.59 | | 73 | Swaziland | 0.00 | 0.00 | 0.00 | ○ |
| 59 | Bahrain | 14.30 | 14.30 | 0.59 | | 73 | Tajikistan | 0.00 | 0.00 | 0.00 | ○ |
| 60 | Uruguay | 13.97 | 13.97 | 0.58 | | 73 | TFYR of Macedonia | 0.00 | 0.00 | 0.00 | ○ |
| 61 | Slovenia | 9.20 | 9.20 | 0.57 | | 73 | Togo | 0.00 | 0.00 | 0.00 | ○ |
| 62 | Qatar | 8.60 | 8.60 | 0.56 | | 73 | Trinidad and Tobago | 0.00 | 0.00 | 0.00 | ○ |
| 63 | Oman | 8.30 | 8.30 | 0.56 | | 73 | Tunisia | 0.00 | 0.00 | 0.00 | ○ |
| 64 | Croatia | 7.93 | 7.93 | 0.55 | | 73 | Uganda | 0.00 | 0.00 | 0.00 | ○ |
| 65 | Bulgaria | 7.33 | 7.33 | 0.54 | | 73 | Uzbekistan | 0.00 | 0.00 | 0.00 | ○ |
| 66 | Sri Lanka | 5.93 | 5.93 | 0.54 | | 73 | Viet Nam | 0.00 | 0.00 | 0.00 | ○ |
| 67 | Bangladesh | 5.60 | 5.60 | 0.53 | | 73 | Yemen | 0.00 | 0.00 | 0.00 | ○ |
| 68 | Kuwait | 5.03 | 5.03 | 0.52 | | 73 | Zambia | 0.00 | 0.00 | 0.00 | ○ |
| 69 | Kenya | 4.93 | 4.93 | 0.51 | | 73 | Zimbabwe | 0.00 | 0.00 | 0.00 | ○ |
| 70 | Serbia | 4.47 | 4.47 | 0.51 | | | | | | | |
| 71 | Tanzania, United Rep. | 2.80 | 2.80 | 0.50 | ● | | | | | | |
| 72 | Ghana | 2.27 | 2.27 | 0.49 | | | | | | | |

SOURCE: QS Quacquarelli Symonds Ltd, QS World University Ranking 2014/2015, Top Universities

NOTE: ● indicates a strength; ○ a weakness

3.1.1 ICT access

ICT access index | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Luxembourg | 9.46 | 94.60 | 1.00 | ● | 73 | Jordan | 5.47 | 54.70 | 0.47 | |
| 2 | Switzerland | 9.36 | 93.60 | 0.99 | ● | 74 | Colombia | 5.44 | 54.40 | 0.46 | |
| 3 | Iceland | 9.28 | 92.80 | 0.99 | ● | 75 | Venezuela, Bolivarian Rep. | 5.36 | 53.60 | 0.46 | |
| 4 | Hong Kong (China) | 9.24 | 92.40 | 0.98 | | 76 | Ecuador | 5.16 | 51.60 | 0.45 | |
| 5 | Germany | 9.19 | 91.90 | 0.97 | ● | 77 | China | 5.10 | 51.00 | 0.44 | |
| 6 | United Kingdom | 9.18 | 91.80 | 0.96 | | 78 | Egypt | 5.09 | 50.90 | 0.43 | |
| 7 | Malta | 8.98 | 89.80 | 0.96 | ● | 79 | Thailand | 4.88 | 48.80 | 0.43 | |
| 8 | Korea, Rep. | 8.94 | 89.40 | 0.95 | | 80 | South Africa | 4.82 | 48.20 | 0.42 | |
| 9 | Netherlands | 8.93 | 89.30 | 0.93 | | 81 | Mexico | 4.80 | 48.00 | 0.41 | |
| 9 | Sweden | 8.93 | 89.30 | 0.93 | | 82 | Mongolia | 4.79 | 47.90 | 0.40 | |
| 11 | Denmark | 8.80 | 88.00 | 0.93 | | 83 | El Salvador | 4.76 | 47.60 | 0.40 | |
| 12 | France | 8.65 | 86.50 | 0.92 | ● | 84 | Albania | 4.62 | 46.20 | 0.39 | |
| 13 | Singapore | 8.61 | 86.10 | 0.91 | | 85 | Fiji | 4.60 | 46.00 | 0.38 | |
| 14 | Japan | 8.40 | 84.00 | 0.90 | | 86 | Jamaica | 4.58 | 45.80 | 0.38 | |
| 15 | Norway | 8.36 | 83.60 | 0.90 | | 87 | Tunisia | 4.56 | 45.60 | 0.37 | |
| 16 | Israel | 8.31 | 83.10 | 0.89 | | 88 | Cabo Verde | 4.55 | 45.50 | 0.36 | |
| 17 | Austria | 8.28 | 82.80 | 0.88 | | 89 | Peru | 4.54 | 45.40 | 0.35 | |
| 18 | Belgium | 8.26 | 82.60 | 0.88 | | 90 | Paraguay | 4.49 | 44.90 | 0.35 | |
| 19 | Ireland | 8.24 | 82.40 | 0.87 | | 91 | Viet Nam | 4.48 | 44.80 | 0.34 | |
| 20 | Australia | 8.23 | 82.30 | 0.86 | | 92 | Ghana | 4.47 | 44.70 | 0.33 | |
| 21 | Qatar | 8.09 | 80.90 | 0.85 | | 93 | Algeria | 4.46 | 44.60 | 0.32 | |
| 22 | Canada | 8.01 | 80.10 | 0.85 | | 94 | Guatemala | 4.35 | 43.50 | 0.32 | |
| 23 | Slovenia | 7.91 | 79.10 | 0.84 | | 95 | Indonesia | 4.32 | 43.20 | 0.31 | |
| 24 | Barbados | 7.86 | 78.60 | 0.83 | | 96 | Philippines | 4.30 | 43.00 | 0.30 | |
| 25 | Estonia | 7.82 | 78.20 | 0.82 | | 97 | Dominican Republic | 4.15 | 41.50 | 0.29 | |
| 26 | Finland | 7.80 | 78.00 | 0.82 | | 98 | Bolivia, Plurinational St. | 4.11 | 41.10 | 0.29 | |
| 27 | New Zealand | 7.79 | 77.90 | 0.81 | | 99 | Botswana | 4.06 | 40.60 | 0.28 | |
| 28 | United States of America | 7.78 | 77.80 | 0.80 | | 100 | Kyrgyzstan | 4.05 | 40.50 | 0.27 | |
| 29 | Bahrain | 7.72 | 77.20 | 0.79 | | 101 | Guyana | 4.04 | 40.40 | 0.26 | |
| 30 | Spain | 7.70 | 77.00 | 0.79 | | 102 | Nicaragua | 3.98 | 39.80 | 0.26 | |
| 31 | Portugal | 7.67 | 76.70 | 0.77 | | 103 | Honduras | 3.94 | 39.40 | 0.25 | |
| 31 | United Arab Emirates | 7.67 | 76.70 | 0.77 | | 104 | Namibia | 3.93 | 39.30 | 0.24 | |
| 33 | Italy | 7.62 | 76.20 | 0.76 | | 105 | Sri Lanka | 3.85 | 38.50 | 0.24 | |
| 34 | Greece | 7.53 | 75.30 | 0.76 | | 106 | Cambodia | 3.73 | 37.30 | 0.23 | |
| 35 | Belarus | 7.39 | 73.90 | 0.75 | | 107 | Mali | 3.55 | 35.50 | 0.22 | |
| 36 | Hungary | 7.32 | 73.20 | 0.74 | | 108 | Sudan | 3.46 | 34.60 | 0.21 | |
| 37 | Croatia | 7.31 | 73.10 | 0.74 | | 109 | Gambia | 3.39 | 33.90 | 0.21 | |
| 38 | Latvia | 7.29 | 72.90 | 0.73 | | 110 | Kenya | 3.29 | 32.90 | 0.20 | |
| 39 | Czech Republic | 7.26 | 72.60 | 0.72 | | 111 | Senegal | 3.23 | 32.30 | 0.19 | |
| 40 | Russian Federation | 7.25 | 72.50 | 0.71 | | 112 | Côte d'Ivoire | 3.19 | 31.90 | 0.18 | |
| 41 | Serbia | 7.22 | 72.20 | 0.71 | | 113 | Bhutan | 3.18 | 31.80 | 0.18 | |
| 42 | Oman | 7.12 | 71.20 | 0.70 | ● | 114 | Zimbabwe | 3.12 | 31.20 | 0.17 | |
| 43 | Uruguay | 7.05 | 70.50 | 0.69 | | 115 | India | 3.05 | 30.50 | 0.16 | |
| 44 | Poland | 7.04 | 70.40 | 0.68 | | 116 | Pakistan | 3.03 | 30.30 | 0.15 | |
| 44 | Saudi Arabia | 7.04 | 70.40 | 0.68 | | 117 | Lesotho | 3.02 | 30.20 | 0.14 | |
| 46 | Slovakia | 7.03 | 70.30 | 0.67 | | 117 | Swaziland | 3.02 | 30.20 | 0.14 | |
| 47 | Lithuania | 7.00 | 70.00 | 0.66 | | 119 | Uzbekistan | 2.95 | 29.50 | 0.13 | |
| 48 | Cyprus | 6.93 | 69.30 | 0.65 | | 120 | Cameroon | 2.75 | 27.50 | 0.13 | |
| 49 | Kazakhstan | 6.84 | 68.40 | 0.65 | | 121 | Nepal | 2.70 | 27.00 | 0.12 | |
| 50 | Bulgaria | 6.77 | 67.70 | 0.64 | | 122 | Zambia | 2.68 | 26.80 | 0.11 | |
| 51 | Montenegro | 6.74 | 67.40 | 0.63 | | 123 | Yemen | 2.66 | 26.60 | 0.10 | |
| 52 | Argentina | 6.62 | 66.20 | 0.62 | | 124 | Bangladesh | 2.57 | 25.70 | 0.10 | |
| 52 | Romania | 6.62 | 66.20 | 0.62 | | 125 | Nigeria | 2.53 | 25.30 | 0.09 | |
| 54 | Malaysia | 6.58 | 65.80 | 0.61 | | 126 | Angola | 2.52 | 25.20 | 0.08 | |
| 55 | Moldova, Rep. | 6.56 | 65.60 | 0.60 | | 127 | Burkina Faso | 2.46 | 24.60 | 0.07 | ○ |
| 56 | TFYR of Macedonia | 6.55 | 65.50 | 0.60 | | 128 | Rwanda | 2.43 | 24.30 | 0.07 | ○ |
| 57 | Seychelles | 6.46 | 64.60 | 0.59 | | 129 | Tanzania, United Rep. | 2.37 | 23.70 | 0.06 | ○ |
| 58 | Lebanon | 6.45 | 64.50 | 0.58 | | 130 | Guinea | 2.28 | 22.80 | 0.05 | |
| 59 | Trinidad and Tobago | 6.36 | 63.60 | 0.57 | | 131 | Mozambique | 2.21 | 22.10 | 0.04 | ○ |
| 60 | Chile | 6.35 | 63.50 | 0.57 | | 132 | Uganda | 2.18 | 21.80 | 0.04 | ○ |
| 61 | Mauritius | 6.32 | 63.20 | 0.56 | | 133 | Niger | 1.95 | 19.50 | 0.03 | |
| 62 | Costa Rica | 6.27 | 62.70 | 0.55 | | 134 | Malawi | 1.89 | 18.90 | 0.02 | ○ |
| 63 | Ukraine | 6.16 | 61.60 | 0.54 | | 135 | Ethiopia | 1.87 | 18.70 | 0.01 | ○ |
| 64 | Brazil | 6.14 | 61.40 | 0.54 | | 136 | Myanmar | 1.85 | 18.50 | 0.01 | ○ |
| 65 | Azerbaijan | 6.07 | 60.70 | 0.53 | | 137 | Madagascar | 1.68 | 16.80 | 0.00 | ○ |
| 66 | Georgia | 5.99 | 59.90 | 0.52 | | n/a | Burundi | n/a | n/a | n/a | |
| 67 | Turkey | 5.83 | 58.30 | 0.51 | | n/a | Kuwait | n/a | n/a | n/a | |
| 68 | Armenia | 5.64 | 56.40 | 0.51 | | n/a | Tajikistan | n/a | n/a | n/a | |
| 69 | Bosnia and Herzegovina | 5.63 | 56.30 | 0.49 | | n/a | Togo | n/a | n/a | n/a | |
| 69 | Morocco | 5.63 | 56.30 | 0.49 | | | | | | | |
| 71 | Iran, Islamic Rep. | 5.53 | 55.30 | 0.48 | | | | | | | |
| 71 | Panama | 5.53 | 55.30 | 0.48 | | | | | | | |

SOURCE: International Telecommunication Union, *Measuring the Information Society 2014*, ICT Development Index 2014

NOTE: ● indicates a strength; ○ a weakness

3.1.2 ICT use

ICT use index | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Denmark | 8.71 | 87.10 | 1.00 | ● | 73 | Cabo Verde | 2.90 | 29.00 | 0.47 | |
| 2 | Sweden | 8.29 | 82.90 | 0.99 | ● | 74 | Egypt | 2.87 | 28.70 | 0.46 | |
| 3 | Korea, Rep. | 8.26 | 82.60 | 0.99 | ● | 75 | South Africa | 2.75 | 27.50 | 0.46 | |
| 4 | Finland | 8.09 | 80.90 | 0.98 | | 76 | Seychelles | 2.74 | 27.40 | 0.45 | |
| 5 | Norway | 8.07 | 80.70 | 0.97 | ● | 77 | Panama | 2.70 | 27.00 | 0.44 | |
| 6 | United Kingdom | 7.88 | 78.80 | 0.96 | | 78 | Dominican Republic | 2.65 | 26.50 | 0.43 | |
| 7 | Japan | 7.80 | 78.00 | 0.96 | | 79 | Jamaica | 2.62 | 26.20 | 0.43 | |
| 8 | Luxembourg | 7.66 | 76.60 | 0.95 | | 80 | Tunisia | 2.59 | 25.90 | 0.42 | |
| 9 | Iceland | 7.65 | 76.50 | 0.94 | | 81 | Ecuador | 2.58 | 25.80 | 0.40 | |
| 10 | United States of America | 7.50 | 75.00 | 0.93 | | 81 | Georgia | 2.58 | 25.80 | 0.40 | |
| 11 | Australia | 7.48 | 74.80 | 0.93 | | 83 | Morocco | 2.50 | 25.00 | 0.39 | |
| 12 | Netherlands | 7.43 | 74.30 | 0.92 | | 83 | Viet Nam | 2.50 | 25.00 | 0.39 | |
| 13 | Hong Kong (China) | 7.36 | 73.60 | 0.91 | | 85 | Mexico | 2.45 | 24.50 | 0.38 | |
| 14 | Singapore | 7.19 | 71.90 | 0.90 | | 86 | Venezuela, Bolivarian Rep. | 2.36 | 23.60 | 0.38 | |
| 15 | New Zealand | 7.10 | 71.00 | 0.90 | | 87 | Philippines | 2.28 | 22.80 | 0.37 | |
| 16 | Bahrain | 7.06 | 70.60 | 0.89 | ● | 88 | Jordan | 2.22 | 22.20 | 0.36 | |
| 17 | Estonia | 6.77 | 67.70 | 0.88 | | 89 | Ukraine | 2.11 | 21.10 | 0.35 | |
| 18 | Switzerland | 6.75 | 67.50 | 0.88 | | 90 | Uzbekistan | 2.09 | 20.90 | 0.35 | |
| 19 | France | 6.74 | 67.40 | 0.87 | | 91 | Zimbabwe | 1.92 | 19.20 | 0.34 | |
| 20 | Canada | 6.63 | 66.30 | 0.86 | | 92 | Bolivia, Plurinational St. | 1.86 | 18.60 | 0.33 | |
| 21 | United Arab Emirates | 6.51 | 65.10 | 0.85 | | 93 | Indonesia | 1.80 | 18.00 | 0.32 | |
| 22 | Austria | 6.28 | 62.80 | 0.85 | | 94 | Ghana | 1.76 | 17.60 | 0.32 | |
| 23 | Ireland | 6.24 | 62.40 | 0.84 | | 95 | Mongolia | 1.69 | 16.90 | 0.30 | |
| 24 | Germany | 6.21 | 62.10 | 0.83 | | 95 | Peru | 1.69 | 16.90 | 0.30 | |
| 25 | Belgium | 6.18 | 61.80 | 0.82 | | 97 | Bhutan | 1.67 | 16.70 | 0.29 | |
| 26 | Spain | 6.04 | 60.40 | 0.82 | | 97 | Namibia | 1.67 | 16.70 | 0.29 | |
| 27 | Qatar | 5.95 | 59.50 | 0.81 | | 99 | Sudan | 1.65 | 16.50 | 0.28 | ● |
| 28 | Latvia | 5.91 | 59.10 | 0.80 | | 100 | Nigeria | 1.60 | 16.00 | 0.27 | |
| 29 | Croatia | 5.62 | 56.20 | 0.79 | ● | 101 | Kyrgyzstan | 1.59 | 15.90 | 0.26 | |
| 30 | Israel | 5.53 | 55.30 | 0.79 | | 102 | Paraguay | 1.50 | 15.00 | 0.26 | |
| 31 | Malta | 5.48 | 54.80 | 0.78 | | 103 | Iran, Islamic Rep. | 1.44 | 14.40 | 0.25 | |
| 32 | Italy | 5.38 | 53.80 | 0.77 | | 104 | Kenya | 1.41 | 14.10 | 0.24 | |
| 33 | Lithuania | 5.29 | 52.90 | 0.76 | | 105 | Guyana | 1.36 | 13.60 | 0.24 | |
| 34 | Slovakia | 5.28 | 52.80 | 0.76 | | 106 | El Salvador | 1.27 | 12.70 | 0.23 | |
| 35 | Czech Republic | 5.22 | 52.20 | 0.75 | | 107 | Senegal | 1.25 | 12.50 | 0.22 | |
| 36 | Slovenia | 5.21 | 52.10 | 0.74 | | 108 | Sri Lanka | 1.10 | 11.00 | 0.21 | |
| 37 | Barbados | 5.20 | 52.00 | 0.74 | | 109 | Angola | 1.06 | 10.60 | 0.21 | |
| 38 | Belarus | 4.99 | 49.90 | 0.73 | | 110 | Honduras | 1.03 | 10.30 | 0.20 | |
| 39 | Russian Federation | 4.97 | 49.70 | 0.72 | | 111 | Swaziland | 0.99 | 9.90 | 0.19 | |
| 40 | Poland | 4.94 | 49.40 | 0.71 | | 112 | Guatemala | 0.96 | 9.60 | 0.18 | |
| 41 | Bulgaria | 4.77 | 47.70 | 0.70 | | 113 | Nepal | 0.92 | 9.20 | 0.18 | |
| 41 | Saudi Arabia | 4.77 | 47.70 | 0.70 | | 114 | Uganda | 0.83 | 8.30 | 0.17 | |
| 43 | Hungary | 4.67 | 46.70 | 0.69 | | 115 | Algeria | 0.73 | 7.30 | 0.15 | |
| 44 | Greece | 4.65 | 46.50 | 0.68 | | 115 | Yemen | 0.73 | 7.30 | 0.15 | |
| 44 | Oman | 4.65 | 46.50 | 0.68 | | 117 | India | 0.68 | 6.80 | 0.14 | |
| 46 | Portugal | 4.61 | 46.10 | 0.67 | | 117 | Nicaragua | 0.68 | 6.80 | 0.14 | |
| 47 | Uruguay | 4.56 | 45.60 | 0.66 | | 119 | Cambodia | 0.55 | 5.50 | 0.13 | |
| 48 | Costa Rica | 4.48 | 44.80 | 0.65 | | 119 | Lesotho | 0.55 | 5.50 | 0.13 | |
| 49 | Azerbaijan | 4.40 | 44.00 | 0.65 | | 121 | Zambia | 0.54 | 5.40 | 0.12 | |
| 50 | Cyprus | 4.34 | 43.40 | 0.63 | | 122 | Gambia | 0.51 | 5.10 | 0.11 | |
| 50 | Serbia | 4.34 | 43.40 | 0.63 | | 123 | Rwanda | 0.49 | 4.90 | 0.10 | |
| 52 | Kazakhstan | 4.33 | 43.30 | 0.62 | | 124 | Burkina Faso | 0.45 | 4.50 | 0.10 | |
| 52 | Lebanon | 4.33 | 43.30 | 0.62 | | 125 | Pakistan | 0.42 | 4.20 | 0.09 | |
| 54 | TFYR of Macedonia | 4.22 | 42.20 | 0.61 | | 126 | Malawi | 0.31 | 3.10 | 0.08 | ○ |
| 55 | Chile | 4.08 | 40.80 | 0.60 | | 127 | Cameroon | 0.28 | 2.80 | 0.07 | ○ |
| 56 | Brazil | 4.01 | 40.10 | 0.60 | | 128 | Bangladesh | 0.27 | 2.70 | 0.07 | |
| 57 | Moldova, Rep. | 3.94 | 39.40 | 0.59 | | 129 | Ethiopia | 0.24 | 2.40 | 0.04 | |
| 58 | Romania | 3.87 | 38.70 | 0.58 | | 129 | Mozambique | 0.24 | 2.40 | 0.04 | ○ |
| 59 | Bosnia and Herzegovina | 3.71 | 37.10 | 0.57 | | 129 | Tanzania, United Rep. | 0.24 | 2.40 | 0.04 | ○ |
| 60 | Trinidad and Tobago | 3.60 | 36.00 | 0.57 | | 132 | Côte d'Ivoire | 0.16 | 1.60 | 0.04 | ○ |
| 61 | Argentina | 3.42 | 34.20 | 0.56 | | 133 | Mali | 0.14 | 1.40 | 0.03 | ○ |
| 62 | Montenegro | 3.37 | 33.70 | 0.55 | | 134 | Madagascar | 0.09 | 0.90 | 0.01 | ○ |
| 63 | Albania | 3.26 | 32.60 | 0.54 | | 134 | Niger | 0.09 | 0.90 | 0.01 | ○ |
| 64 | Turkey | 3.24 | 32.40 | 0.54 | | 136 | Myanmar | 0.08 | 0.80 | 0.01 | ○ |
| 65 | Malaysia | 3.16 | 31.60 | 0.53 | | 137 | Guinea | 0.05 | 0.50 | 0.00 | ○ |
| 66 | Thailand | 3.12 | 31.20 | 0.52 | | n/a | Burundi | n/a | n/a | n/a | |
| 67 | Fiji | 3.08 | 30.80 | 0.51 | | n/a | Kuwait | n/a | n/a | n/a | |
| 68 | Colombia | 3.07 | 30.70 | 0.51 | | n/a | Tajikistan | n/a | n/a | n/a | |
| 69 | Botswana | 3.03 | 30.30 | 0.50 | | n/a | Togo | n/a | n/a | n/a | |
| 70 | Armenia | 3.02 | 30.20 | 0.49 | | | | | | | |
| 71 | China | 2.99 | 29.90 | 0.49 | | | | | | | |
| 72 | Mauritius | 2.97 | 29.70 | 0.48 | | | | | | | |

SOURCE: International Telecommunication Union, *Measuring the Information Society 2014*, ICT Development Index 2014

NOTE: ● indicates a strength; ○ a weakness

3.1.3 Government's online service

Government's online service index | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | France | 1.00 | 100.00 | 1.00 | ● | 72 | Uzbekistan | 0.45 | 44.88 | 0.48 | |
| 2 | Singapore | 0.99 | 99.21 | 0.99 | ● | 74 | Romania | 0.44 | 44.09 | 0.47 | |
| 3 | Korea, Rep. | 0.98 | 97.64 | 0.99 | ● | 74 | Thailand | 0.44 | 44.09 | 0.47 | |
| 4 | Japan | 0.94 | 94.49 | 0.96 | ● | 76 | Azerbaijan | 0.43 | 43.31 | 0.46 | |
| 4 | Spain | 0.94 | 94.49 | 0.96 | ● | 77 | Kenya | 0.43 | 42.52 | 0.45 | |
| 4 | United States of America | 0.94 | 94.49 | 0.96 | ● | 77 | Slovenia | 0.43 | 42.52 | 0.45 | |
| 7 | Bahrain | 0.94 | 93.70 | 0.96 | ● | 79 | Viet Nam | 0.42 | 41.73 | 0.44 | |
| 8 | Australia | 0.93 | 92.91 | 0.94 | | 80 | Honduras | 0.40 | 40.16 | 0.42 | |
| 8 | Netherlands | 0.93 | 92.91 | 0.94 | | 80 | Malta | 0.40 | 40.16 | 0.42 | |
| 10 | Canada | 0.91 | 91.34 | 0.94 | | 82 | Bolivia, Plurinational St. | 0.39 | 39.37 | 0.40 | |
| 11 | United Kingdom | 0.90 | 89.76 | 0.93 | | 82 | Fiji | 0.39 | 39.37 | 0.40 | |
| 12 | United Arab Emirates | 0.88 | 88.19 | 0.92 | ● | 82 | Serbia | 0.39 | 39.37 | 0.40 | |
| 13 | Israel | 0.87 | 87.40 | 0.91 | | 85 | Dominican Republic | 0.39 | 38.58 | 0.39 | |
| 14 | Uruguay | 0.85 | 85.04 | 0.91 | ● | 85 | South Africa | 0.39 | 38.58 | 0.39 | |
| 15 | New Zealand | 0.84 | 84.25 | 0.90 | | 87 | Czech Republic | 0.37 | 37.01 | 0.37 | ○ |
| 16 | Chile | 0.82 | 81.89 | 0.89 | ● | 87 | Iran, Islamic Rep. | 0.37 | 37.01 | 0.37 | |
| 17 | Colombia | 0.79 | 78.74 | 0.88 | ● | 87 | Panama | 0.37 | 37.01 | 0.37 | |
| 18 | Estonia | 0.77 | 77.17 | 0.86 | | 90 | Indonesia | 0.36 | 36.22 | 0.36 | |
| 18 | Finland | 0.77 | 77.17 | 0.86 | | 91 | Lebanon | 0.35 | 35.43 | 0.35 | |
| 18 | Saudi Arabia | 0.77 | 77.17 | 0.86 | ● | 92 | Bangladesh | 0.35 | 34.65 | 0.35 | |
| 21 | Lithuania | 0.76 | 75.59 | 0.85 | ● | 93 | Seychelles | 0.33 | 33.07 | 0.33 | |
| 21 | Norway | 0.76 | 75.59 | 0.85 | | 93 | Trinidad and Tobago | 0.33 | 33.07 | 0.33 | |
| 23 | Austria | 0.75 | 74.80 | 0.83 | | 95 | Belarus | 0.32 | 32.28 | 0.31 | |
| 23 | Italy | 0.75 | 74.80 | 0.83 | | 95 | Namibia | 0.32 | 32.28 | 0.31 | |
| 23 | Kazakhstan | 0.75 | 74.80 | 0.83 | ● | 95 | Pakistan | 0.32 | 32.28 | 0.31 | |
| 26 | Oman | 0.73 | 73.23 | 0.82 | ● | 98 | Ghana | 0.31 | 31.50 | 0.29 | |
| 27 | Russian Federation | 0.71 | 70.87 | 0.81 | | 98 | Jamaica | 0.31 | 31.50 | 0.29 | |
| 28 | Latvia | 0.70 | 70.08 | 0.80 | | 98 | Mozambique | 0.31 | 31.50 | 0.29 | |
| 28 | Sweden | 0.70 | 70.08 | 0.80 | | 101 | Botswana | 0.31 | 30.71 | 0.25 | |
| 30 | Morocco | 0.69 | 69.29 | 0.79 | ● | 101 | Nigeria | 0.31 | 30.71 | 0.25 | |
| 31 | Belgium | 0.68 | 67.72 | 0.77 | | 101 | Senegal | 0.31 | 30.71 | 0.25 | |
| 31 | Ireland | 0.68 | 67.72 | 0.77 | | 101 | Yemen | 0.31 | 30.71 | 0.25 | |
| 31 | Malaysia | 0.68 | 67.72 | 0.77 | | 101 | Zimbabwe | 0.31 | 30.71 | 0.25 | |
| 34 | Germany | 0.67 | 66.93 | 0.76 | | 106 | Angola | 0.30 | 29.92 | 0.23 | |
| 35 | Denmark | 0.66 | 66.14 | 0.75 | | 106 | Burkina Faso | 0.30 | 29.92 | 0.23 | |
| 35 | Mexico | 0.66 | 66.14 | 0.75 | | 106 | Tanzania, United Rep. | 0.30 | 29.92 | 0.23 | |
| 37 | Qatar | 0.65 | 65.35 | 0.73 | | 109 | Sudan | 0.29 | 29.13 | 0.22 | |
| 37 | Sri Lanka | 0.65 | 65.35 | 0.73 | ● | 110 | Bosnia and Herzegovina | 0.28 | 28.35 | 0.22 | |
| 39 | Portugal | 0.64 | 63.78 | 0.72 | | 111 | Kyrgyzstan | 0.28 | 27.56 | 0.21 | |
| 39 | Tunisia | 0.64 | 63.78 | 0.72 | ● | 112 | Ukraine | 0.27 | 26.77 | 0.20 | ○ |
| 41 | Peru | 0.63 | 62.99 | 0.71 | | 113 | Bhutan | 0.24 | 24.41 | 0.17 | |
| 42 | Luxembourg | 0.62 | 62.20 | 0.71 | | 113 | Guyana | 0.24 | 24.41 | 0.17 | |
| 43 | Armenia | 0.61 | 61.42 | 0.68 | | 113 | Madagascar | 0.24 | 24.41 | 0.17 | |
| 43 | Costa Rica | 0.61 | 61.42 | 0.68 | | 113 | TFYR of Macedonia | 0.24 | 24.41 | 0.17 | ○ |
| 43 | Iceland | 0.61 | 61.42 | 0.68 | | 117 | Bulgaria | 0.24 | 23.62 | 0.17 | ○ |
| 43 | Mongolia | 0.61 | 61.42 | 0.68 | | 118 | Paraguay | 0.23 | 22.83 | 0.16 | |
| 47 | China | 0.61 | 60.63 | 0.66 | | 119 | Barbados | 0.22 | 22.05 | 0.15 | ○ |
| 47 | Greece | 0.61 | 60.63 | 0.66 | | 120 | Gambia | 0.20 | 20.47 | 0.14 | |
| 49 | Brazil | 0.60 | 59.84 | 0.65 | | 121 | Cameroon | 0.20 | 19.69 | 0.14 | |
| 49 | Georgia | 0.60 | 59.84 | 0.65 | | 122 | Cambodia | 0.17 | 17.32 | 0.12 | ○ |
| 51 | Egypt | 0.59 | 59.06 | 0.64 | ● | 122 | Côte d'Ivoire | 0.17 | 17.32 | 0.12 | |
| 52 | Kuwait | 0.57 | 57.48 | 0.63 | | 122 | Malawi | 0.17 | 17.32 | 0.12 | |
| 53 | Hungary | 0.56 | 55.91 | 0.62 | | 125 | Cabo Verde | 0.17 | 16.54 | 0.11 | |
| 53 | Turkey | 0.56 | 55.91 | 0.62 | | 126 | Lesotho | 0.16 | 15.75 | 0.09 | |
| 55 | Argentina | 0.55 | 55.12 | 0.60 | | 126 | Nepal | 0.16 | 15.75 | 0.09 | ○ |
| 55 | Venezuela, Bolivarian Rep. | 0.55 | 55.12 | 0.60 | ● | 128 | Guatemala | 0.15 | 14.96 | 0.08 | |
| 57 | India | 0.54 | 54.33 | 0.59 | | 128 | Uganda | 0.15 | 14.96 | 0.08 | |
| 57 | Poland | 0.54 | 54.33 | 0.59 | | 130 | Zambia | 0.14 | 14.17 | 0.07 | ○ |
| 59 | El Salvador | 0.54 | 53.54 | 0.58 | | 131 | Mali | 0.13 | 13.39 | 0.06 | |
| 60 | Moldova, Rep. | 0.53 | 52.76 | 0.57 | | 131 | Swaziland | 0.13 | 13.39 | 0.06 | ○ |
| 60 | Montenegro | 0.53 | 52.76 | 0.57 | | 133 | Niger | 0.13 | 12.60 | 0.05 | |
| 62 | Jordan | 0.52 | 51.97 | 0.56 | | 134 | Togo | 0.11 | 11.02 | 0.04 | ○ |
| 63 | Rwanda | 0.51 | 51.18 | 0.55 | | 135 | Nicaragua | 0.09 | 9.45 | 0.04 | ○ |
| 64 | Switzerland | 0.50 | 50.39 | 0.55 | ○ | 136 | Algeria | 0.08 | 7.87 | 0.03 | ○ |
| 65 | Slovakia | 0.49 | 48.82 | 0.54 | | 137 | Tajikistan | 0.06 | 6.30 | 0.02 | ○ |
| 66 | Ecuador | 0.48 | 48.03 | 0.53 | | 138 | Myanmar | 0.02 | 2.36 | 0.01 | |
| 66 | Philippines | 0.48 | 48.03 | 0.53 | | 139 | Burundi | 0.02 | 1.57 | 0.01 | ○ |
| 68 | Cyprus | 0.47 | 47.24 | 0.51 | | 140 | Guinea | 0.00 | 0.00 | 0.00 | ○ |
| 68 | Mauritius | 0.47 | 47.24 | 0.51 | | n/a | Hong Kong (China) | n/a | n/a | n/a | |
| 70 | Croatia | 0.46 | 46.46 | 0.50 | | | | | | | |
| 71 | Ethiopia | 0.46 | 45.67 | 0.50 | ● | | | | | | |
| 72 | Albania | 0.45 | 44.88 | 0.48 | | | | | | | |

SOURCE: United Nations Public Administration Network, *e-Government Survey 2014*

NOTE: ● indicates a strength; ○ a weakness

3.1.4 Online e-participation

E-participation index | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Korea, Rep. | 1.00 | 100.00 | 0.99 | ● | 70 | Uzbekistan | 0.47 | 47.06 | 0.48 | |
| 1 | Netherlands | 1.00 | 100.00 | 0.99 | ● | 74 | Hungary | 0.45 | 45.10 | 0.47 | |
| 3 | Uruguay | 0.98 | 98.04 | 0.99 | ● | 74 | Zimbabwe | 0.45 | 45.10 | 0.47 | |
| 4 | France | 0.96 | 96.08 | 0.96 | ● | 76 | Azerbaijan | 0.43 | 43.14 | 0.45 | |
| 4 | Japan | 0.96 | 96.08 | 0.96 | ● | 76 | Kuwait | 0.43 | 43.14 | 0.45 | |
| 4 | United Kingdom | 0.96 | 96.08 | 0.96 | ● | 76 | Ukraine | 0.43 | 43.14 | 0.45 | |
| 7 | Australia | 0.94 | 94.12 | 0.95 | ● | 79 | Bolivia, Plurinational St. | 0.41 | 41.18 | 0.42 | |
| 7 | Chile | 0.94 | 94.12 | 0.95 | ● | 79 | Kyrgyzstan | 0.41 | 41.18 | 0.42 | |
| 9 | United States of America | 0.92 | 92.16 | 0.94 | ● | 79 | Serbia | 0.41 | 41.18 | 0.42 | |
| 10 | Singapore | 0.90 | 90.20 | 0.94 | ● | 82 | Bangladesh | 0.39 | 39.22 | 0.39 | |
| 11 | Colombia | 0.88 | 88.24 | 0.93 | ● | 82 | Fiji | 0.39 | 39.22 | 0.39 | |
| 12 | Israel | 0.86 | 86.27 | 0.92 | ● | 82 | Ghana | 0.39 | 39.22 | 0.39 | |
| 13 | United Arab Emirates | 0.84 | 84.31 | 0.91 | ● | 82 | Slovenia | 0.39 | 39.22 | 0.39 | ○ |
| 14 | Bahrain | 0.82 | 82.35 | 0.89 | ● | 82 | Tanzania, United Rep. | 0.39 | 39.22 | 0.39 | |
| 14 | Canada | 0.82 | 82.35 | 0.89 | ● | 87 | Switzerland | 0.37 | 37.25 | 0.38 | ○ |
| 14 | Costa Rica | 0.82 | 82.35 | 0.89 | ● | 88 | Belarus | 0.35 | 35.29 | 0.35 | |
| 17 | Greece | 0.80 | 80.39 | 0.88 | ● | 88 | Bhutan | 0.35 | 35.29 | 0.35 | |
| 17 | Morocco | 0.80 | 80.39 | 0.88 | ● | 88 | Madagascar | 0.35 | 35.29 | 0.35 | |
| 19 | Italy | 0.78 | 78.43 | 0.86 | ● | 88 | Senegal | 0.35 | 35.29 | 0.35 | |
| 19 | New Zealand | 0.78 | 78.43 | 0.86 | ● | 92 | Croatia | 0.33 | 33.33 | 0.29 | ○ |
| 19 | Spain | 0.78 | 78.43 | 0.86 | ● | 92 | Dominican Republic | 0.33 | 33.33 | 0.29 | |
| 22 | Estonia | 0.76 | 76.47 | 0.84 | ● | 92 | Guyana | 0.33 | 33.33 | 0.29 | |
| 22 | Kazakhstan | 0.76 | 76.47 | 0.84 | ● | 92 | Honduras | 0.33 | 33.33 | 0.29 | |
| 24 | Brazil | 0.71 | 70.59 | 0.80 | ● | 92 | Mozambique | 0.33 | 33.33 | 0.29 | |
| 24 | Finland | 0.71 | 70.59 | 0.80 | ● | 92 | Namibia | 0.33 | 33.33 | 0.29 | |
| 24 | Germany | 0.71 | 70.59 | 0.80 | ● | 92 | Nigeria | 0.33 | 33.33 | 0.29 | |
| 24 | Latvia | 0.71 | 70.59 | 0.80 | ● | 92 | Pakistan | 0.33 | 33.33 | 0.29 | |
| 24 | Oman | 0.71 | 70.59 | 0.80 | ● | 92 | South Africa | 0.33 | 33.33 | 0.29 | ○ |
| 24 | Peru | 0.71 | 70.59 | 0.80 | ● | 101 | Botswana | 0.31 | 31.37 | 0.27 | |
| 30 | Mongolia | 0.69 | 68.63 | 0.78 | ● | 101 | Cyprus | 0.31 | 31.37 | 0.27 | ○ |
| 30 | Norway | 0.69 | 68.63 | 0.78 | ● | 101 | Trinidad and Tobago | 0.31 | 31.37 | 0.27 | |
| 30 | Russian Federation | 0.69 | 68.63 | 0.78 | ● | 104 | Indonesia | 0.29 | 29.41 | 0.24 | |
| 33 | China | 0.65 | 64.71 | 0.73 | ● | 104 | Iran, Islamic Rep. | 0.29 | 29.41 | 0.24 | |
| 33 | Ireland | 0.65 | 64.71 | 0.73 | ● | 104 | Lebanon | 0.29 | 29.41 | 0.24 | |
| 33 | Kenya | 0.65 | 64.71 | 0.73 | ● | 104 | Nepal | 0.29 | 29.41 | 0.24 | |
| 33 | Lithuania | 0.65 | 64.71 | 0.73 | ● | 108 | Sudan | 0.27 | 27.45 | 0.22 | |
| 33 | Portugal | 0.65 | 64.71 | 0.73 | ● | 108 | Yemen | 0.27 | 27.45 | 0.22 | |
| 33 | Sri Lanka | 0.65 | 64.71 | 0.73 | ● | 110 | Bulgaria | 0.25 | 25.49 | 0.19 | ○ |
| 33 | Tunisia | 0.65 | 64.71 | 0.73 | ● | 110 | Czech Republic | 0.25 | 25.49 | 0.19 | ○ |
| 40 | Austria | 0.63 | 62.75 | 0.69 | ● | 110 | Ethiopia | 0.25 | 25.49 | 0.19 | |
| 40 | Belgium | 0.63 | 62.75 | 0.69 | ● | 110 | Paraguay | 0.25 | 25.49 | 0.19 | |
| 40 | India | 0.63 | 62.75 | 0.69 | ● | 110 | Seychelles | 0.25 | 25.49 | 0.19 | ○ |
| 40 | Moldova, Rep. | 0.63 | 62.75 | 0.69 | ● | 115 | Angola | 0.24 | 23.53 | 0.16 | |
| 40 | Slovakia | 0.63 | 62.75 | 0.69 | ● | 115 | Bosnia and Herzegovina | 0.24 | 23.53 | 0.16 | ○ |
| 45 | El Salvador | 0.61 | 60.78 | 0.66 | ● | 115 | Malawi | 0.24 | 23.53 | 0.16 | |
| 45 | Mexico | 0.61 | 60.78 | 0.66 | ● | 115 | Niger | 0.24 | 23.53 | 0.16 | |
| 45 | Qatar | 0.61 | 60.78 | 0.66 | ● | 119 | Gambia | 0.22 | 21.57 | 0.14 | |
| 45 | Sweden | 0.61 | 60.78 | 0.66 | ● | 119 | TFYR of Macedonia | 0.22 | 21.57 | 0.14 | ○ |
| 49 | Georgia | 0.59 | 58.82 | 0.65 | ● | 121 | Cambodia | 0.20 | 19.61 | 0.12 | |
| 49 | Montenegro | 0.59 | 58.82 | 0.65 | ● | 121 | Guatemala | 0.20 | 19.61 | 0.12 | |
| 51 | Philippines | 0.57 | 56.86 | 0.63 | ● | 121 | Jamaica | 0.20 | 19.61 | 0.12 | ○ |
| 51 | Saudi Arabia | 0.57 | 56.86 | 0.63 | ● | 124 | Côte d'Ivoire | 0.18 | 17.65 | 0.11 | ○ |
| 51 | Venezuela, Bolivarian Rep. | 0.57 | 56.86 | 0.63 | ● | 124 | Zambia | 0.18 | 17.65 | 0.11 | |
| 54 | Argentina | 0.55 | 54.90 | 0.59 | ○ | 126 | Cameroon | 0.16 | 15.69 | 0.09 | |
| 54 | Denmark | 0.55 | 54.90 | 0.59 | ○ | 126 | Mali | 0.16 | 15.69 | 0.09 | |
| 54 | Egypt | 0.55 | 54.90 | 0.59 | ○ | 126 | Swaziland | 0.16 | 15.69 | 0.09 | ○ |
| 54 | Luxembourg | 0.55 | 54.90 | 0.59 | ○ | 129 | Burkina Faso | 0.14 | 13.73 | 0.06 | ○ |
| 54 | Thailand | 0.55 | 54.90 | 0.59 | ○ | 129 | Lesotho | 0.14 | 13.73 | 0.06 | ○ |
| 59 | Albania | 0.53 | 52.94 | 0.56 | ○ | 129 | Uganda | 0.14 | 13.73 | 0.06 | ○ |
| 59 | Armenia | 0.53 | 52.94 | 0.56 | ○ | 132 | Tajikistan | 0.12 | 11.76 | 0.06 | ○ |
| 59 | Malaysia | 0.53 | 52.94 | 0.56 | ○ | 133 | Barbados | 0.10 | 9.80 | 0.03 | ○ |
| 59 | Mauritius | 0.53 | 52.94 | 0.56 | ○ | 133 | Cabo Verde | 0.10 | 9.80 | 0.03 | ○ |
| 63 | Rwanda | 0.51 | 50.98 | 0.55 | ○ | 133 | Nicaragua | 0.10 | 9.80 | 0.03 | ○ |
| 64 | Ecuador | 0.49 | 49.02 | 0.51 | ○ | 133 | Togo | 0.10 | 9.80 | 0.03 | ○ |
| 64 | Iceland | 0.49 | 49.02 | 0.51 | ○ | 137 | Algeria | 0.08 | 7.84 | 0.01 | ○ |
| 64 | Panama | 0.49 | 49.02 | 0.51 | ○ | 137 | Myanmar | 0.08 | 7.84 | 0.01 | ○ |
| 64 | Poland | 0.49 | 49.02 | 0.51 | ○ | 139 | Burundi | 0.06 | 5.88 | 0.01 | ○ |
| 64 | Turkey | 0.49 | 49.02 | 0.51 | ○ | 140 | Guinea | 0.02 | 1.96 | 0.00 | ○ |
| 64 | Viet Nam | 0.49 | 49.02 | 0.51 | ○ | n/a | Hong Kong (China) | n/a | n/a | n/a | ○ |
| 70 | Jordan | 0.47 | 47.06 | 0.48 | ○ | | | | | | |
| 70 | Malta | 0.47 | 47.06 | 0.48 | ○ | | | | | | |
| 70 | Romania | 0.47 | 47.06 | 0.48 | ○ | | | | | | |

SOURCE: United Nations Public Administration Network, e-Government Survey 2014
NOTE: ● indicates a strength; ○ a weakness

3.2.1 Electricity output

Electricity output (kWh per capita) | 2012

II: Data Tables

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|---------------------------------|-----------|---------------|--------------|---|------|----------------------------|----------|---------------|--------------|---|
| 1 | Iceland (2013) | 56,612.50 | 100.00 | 0.98 | ● | 73 | Panama | 2,264.74 | 11.67 | 0.41 | |
| 1 | Kuwait | 19,278.46 | 100.00 | 0.98 | ● | 74 | Mauritius | 2,168.22 | 11.17 | 0.40 | |
| 1 | Norway (2013) | 26,317.91 | 100.00 | 0.98 | ● | 75 | Georgia | 2,159.24 | 11.12 | 0.39 | |
| 4 | Bahrain | 18,765.15 | 97.34 | 0.98 | ● | 76 | Tajikistan | 2,119.10 | 10.91 | 0.39 | |
| 5 | Canada (2013) | 18,511.78 | 96.02 | 0.97 | ● | 77 | Costa Rica | 2,115.38 | 10.90 | 0.38 | |
| 6 | Qatar | 16,969.27 | 88.01 | 0.96 | ● | 78 | Egypt | 2,036.22 | 10.48 | 0.37 | |
| 7 | Sweden (2013) | 15,884.17 | 82.38 | 0.95 | | 79 | Uzbekistan | 1,762.93 | 9.07 | 0.36 | |
| 8 | United States of America (2013) | 13,492.68 | 69.96 | 0.94 | | 80 | Mongolia | 1,720.00 | 8.84 | 0.35 | |
| 9 | Finland (2013) | 13,035.85 | 67.59 | 0.93 | | 81 | Tunisia | 1,668.37 | 8.57 | 0.34 | |
| 10 | United Arab Emirates | 10,958.41 | 56.81 | 0.93 | ● | 82 | Dominican Republic | 1,650.39 | 8.48 | 0.34 | |
| 11 | Korea, Rep. (2013) | 10,643.90 | 55.17 | 0.92 | | 83 | Moldova, Rep. | 1,629.78 | 8.37 | 0.33 | |
| 12 | Australia (2013) | 10,544.53 | 54.66 | 0.91 | | 84 | Jamaica | 1,578.23 | 8.11 | 0.32 | |
| 13 | Estonia (2013) | 9,918.66 | 51.41 | 0.90 | | 85 | Lithuania | 1,514.72 | 7.78 | 0.31 | |
| 14 | Saudi Arabia | 9,603.39 | 49.77 | 0.89 | ● | 86 | Albania | 1,495.25 | 7.68 | 0.30 | |
| 15 | New Zealand (2013) | 9,456.35 | 49.01 | 0.89 | | 87 | Algeria | 1,491.61 | 7.66 | 0.30 | |
| 16 | Paraguay | 9,003.59 | 46.66 | 0.88 | ● | 88 | Ecuador | 1,474.95 | 7.57 | 0.29 | |
| 17 | Singapore | 8,835.40 | 45.78 | 0.87 | | 89 | Viet Nam | 1,383.86 | 7.10 | 0.28 | |
| 18 | France (2013) | 8,672.89 | 44.94 | 0.86 | | 90 | Peru | 1,330.74 | 6.82 | 0.27 | |
| 19 | Switzerland (2013) | 8,540.27 | 44.25 | 0.85 | | 91 | Colombia | 1,306.86 | 6.70 | 0.26 | |
| 20 | Japan (2013) | 8,257.65 | 42.78 | 0.84 | | 92 | Honduras | 956.30 | 4.88 | 0.25 | |
| 21 | Czech Republic (2013) | 8,199.33 | 42.48 | 0.84 | | 93 | El Salvador | 931.11 | 4.75 | 0.25 | |
| 22 | Israel (2013) | 7,758.06 | 40.19 | 0.83 | | 94 | India | 911.77 | 4.65 | 0.24 | |
| 23 | Slovenia (2013) | 7,666.50 | 39.71 | 0.82 | | 95 | Zambia | 841.62 | 4.28 | 0.23 | |
| 24 | Germany (2013) | 7,660.85 | 39.69 | 0.81 | | 96 | Morocco | 840.56 | 4.28 | 0.22 | ○ |
| 25 | Austria (2013) | 7,618.89 | 39.47 | 0.80 | | 97 | Indonesia | 793.55 | 4.03 | 0.21 | |
| 26 | Oman | 7,558.01 | 39.15 | 0.80 | ● | 98 | Philippines | 754.02 | 3.83 | 0.20 | |
| 27 | Russian Federation | 7,450.10 | 38.59 | 0.79 | | 99 | Bolivia, Plurinational St. | 729.62 | 3.70 | 0.20 | |
| 28 | Belgium (2013) | 7,430.51 | 38.49 | 0.78 | | 100 | Namibia | 726.99 | 3.69 | 0.19 | |
| 29 | Trinidad and Tobago | 6,814.93 | 35.29 | 0.77 | ● | 101 | Nicaragua | 672.95 | 3.41 | 0.18 | |
| 30 | Bulgaria | 6,371.96 | 32.99 | 0.76 | | 102 | Zimbabwe | 662.39 | 3.35 | 0.17 | |
| 31 | Denmark (2013) | 6,164.17 | 31.92 | 0.75 | | 103 | Guatemala | 624.14 | 3.15 | 0.16 | |
| 32 | Spain (2013) | 6,118.66 | 31.68 | 0.75 | | 104 | Mozambique | 601.83 | 3.04 | 0.16 | |
| 33 | Netherlands (2013) | 5,879.46 | 30.44 | 0.74 | | 105 | Sri Lanka | 585.39 | 2.95 | 0.15 | ○ |
| 34 | Ireland (2013) | 5,561.90 | 28.79 | 0.73 | | 106 | Pakistan | 536.53 | 2.70 | 0.14 | |
| 35 | United Kingdom (2013) | 5,519.52 | 28.57 | 0.72 | | 107 | Ghana | 473.95 | 2.37 | 0.13 | |
| 36 | Cyprus | 5,484.88 | 28.39 | 0.71 | | 108 | Côte d'Ivoire | 353.63 | 1.75 | 0.12 | |
| 37 | Malta | 5,452.38 | 28.22 | 0.70 | | 109 | Bangladesh | 316.99 | 1.56 | 0.11 | |
| 38 | Kazakhstan | 5,432.22 | 28.12 | 0.70 | | 110 | Cameroon | 290.41 | 1.42 | 0.11 | |
| 39 | Hong Kong (China) | 5,423.88 | 28.07 | 0.69 | | 111 | Yemen | 275.85 | 1.35 | 0.10 | |
| 40 | Slovakia (2013) | 5,216.64 | 27.00 | 0.68 | | 112 | Angola | 269.60 | 1.31 | 0.09 | |
| 41 | Greece (2013) | 5,194.15 | 26.88 | 0.67 | | 113 | Senegal | 251.27 | 1.22 | 0.08 | ○ |
| 42 | Serbia | 5,009.83 | 25.92 | 0.66 | | 114 | Myanmar | 203.26 | 0.97 | 0.07 | |
| 43 | South Africa | 4,878.56 | 25.24 | 0.66 | | 115 | Sudan | 196.46 | 0.93 | 0.07 | |
| 44 | Portugal (2013) | 4,818.80 | 24.93 | 0.65 | | 116 | Kenya | 191.99 | 0.91 | 0.06 | ○ |
| 45 | Italy (2013) | 4,685.36 | 24.24 | 0.64 | | 117 | Nigeria | 170.03 | 0.80 | 0.05 | |
| 46 | Malaysia | 4,595.79 | 23.77 | 0.63 | | 118 | Nepal | 129.30 | 0.58 | 0.04 | ○ |
| 47 | Montenegro | 4,587.10 | 23.73 | 0.62 | | 119 | Botswana | 125.00 | 0.56 | 0.03 | ○ |
| 48 | Ukraine | 4,351.02 | 22.50 | 0.61 | | 120 | Tanzania, United Rep. | 121.29 | 0.54 | 0.02 | ○ |
| 49 | Chile (2013) | 4,282.74 | 22.15 | 0.61 | | 121 | Cambodia | 96.44 | 0.41 | 0.02 | ○ |
| 50 | Poland (2013) | 4,255.93 | 22.01 | 0.60 | | 122 | Ethiopia | 73.04 | 0.29 | 0.01 | ○ |
| 51 | Venezuela, Bolivarian Rep. | 4,222.83 | 21.84 | 0.59 | | 123 | Togo | 16.72 | 0.00 | 0.00 | ○ |
| 52 | China | 3,690.51 | 19.07 | 0.58 | | n/a | Barbados | n/a | n/a | n/a | |
| 53 | Bosnia and Herzegovina | 3,676.76 | 19.00 | 0.57 | | n/a | Bhutan | n/a | n/a | n/a | |
| 54 | Lebanon | 3,346.73 | 17.29 | 0.57 | | n/a | Burkina Faso | n/a | n/a | n/a | |
| 55 | Iran, Islamic Rep. | 3,327.35 | 17.19 | 0.56 | | n/a | Burundi | n/a | n/a | n/a | |
| 56 | Luxembourg (2013) | 3,301.82 | 17.06 | 0.55 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 57 | Argentina | 3,280.02 | 16.94 | 0.54 | | n/a | Fiji | n/a | n/a | n/a | |
| 58 | Belarus | 3,255.71 | 16.82 | 0.53 | | n/a | Gambia | n/a | n/a | n/a | |
| 59 | Turkey (2013) | 3,179.39 | 16.42 | 0.52 | | n/a | Guinea | n/a | n/a | n/a | |
| 60 | Uruguay | 3,117.65 | 16.10 | 0.52 | | n/a | Guyana | n/a | n/a | n/a | |
| 61 | Hungary (2013) | 3,065.22 | 15.83 | 0.51 | | n/a | Lesotho | n/a | n/a | n/a | |
| 62 | Latvia | 3,038.42 | 15.69 | 0.50 | | n/a | Madagascar | n/a | n/a | n/a | |
| 63 | TFYR of Macedonia | 2,967.77 | 15.32 | 0.49 | | n/a | Malawi | n/a | n/a | n/a | |
| 64 | Romania | 2,926.99 | 15.11 | 0.48 | | n/a | Mali | n/a | n/a | n/a | |
| 65 | Brazil | 2,780.98 | 14.35 | 0.48 | | n/a | Niger | n/a | n/a | n/a | |
| 66 | Armenia | 2,705.72 | 13.96 | 0.47 | | n/a | Rwanda | n/a | n/a | n/a | |
| 67 | Kyrgyzstan | 2,703.74 | 13.95 | 0.46 | | n/a | Seychelles | n/a | n/a | n/a | |
| 68 | Jordan | 2,625.95 | 13.55 | 0.45 | | n/a | Swaziland | n/a | n/a | n/a | |
| 69 | Mexico (2013) | 2,518.70 | 12.99 | 0.44 | | n/a | Uganda | n/a | n/a | n/a | |
| 70 | Thailand | 2,494.70 | 12.86 | 0.43 | | | | | | | |
| 71 | Azerbaijan | 2,471.83 | 12.75 | 0.43 | | | | | | | |
| 72 | Croatia | 2,434.43 | 12.55 | 0.42 | | | | | | | |

SOURCE: International Energy Agency (IEA) Statistics© OECD/IEA, 2014

NOTE: ● indicates a strength; ○ a weakness

3.2.2 Logistics performance

Logistics Performance Index | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Germany | 4.12 | 100.00 | 1.00 | ● | 73 | Venezuela, Bolivarian Rep. | 2.81 | 33.00 | 0.45 | |
| 2 | Netherlands | 4.05 | 96.22 | 0.99 | ● | 74 | Guatemala | 2.80 | 32.46 | 0.44 | |
| 3 | Belgium | 4.04 | 96.06 | 0.98 | ● | 75 | Paraguay | 2.78 | 31.55 | 0.43 | |
| 4 | United Kingdom | 4.01 | 94.53 | 0.98 | ● | 76 | Côte d'Ivoire | 2.76 | 30.65 | 0.42 | ● |
| 5 | Singapore | 4.00 | 94.01 | 0.97 | | 77 | Rwanda | 2.76 | 30.50 | 0.42 | |
| 6 | Sweden | 3.96 | 91.81 | 0.96 | ● | 78 | Bosnia and Herzegovina | 2.75 | 29.92 | 0.41 | |
| 7 | Norway | 3.96 | 91.65 | 0.95 | ● | 79 | Cambodia | 2.74 | 29.60 | 0.40 | |
| 8 | Luxembourg | 3.95 | 91.06 | 0.95 | | 80 | Lebanon | 2.73 | 28.80 | 0.39 | |
| 9 | United States of America | 3.92 | 89.59 | 0.94 | | 81 | Ecuador | 2.71 | 28.05 | 0.38 | |
| 10 | Japan | 3.91 | 89.43 | 0.93 | | 82 | Costa Rica | 2.70 | 27.52 | 0.38 | |
| 11 | Ireland | 3.87 | 87.05 | 0.92 | | 83 | Kazakhstan | 2.70 | 27.46 | 0.37 | |
| 12 | Canada | 3.86 | 86.41 | 0.92 | | 84 | Sri Lanka | 2.70 | 27.25 | 0.36 | |
| 13 | France | 3.85 | 85.99 | 0.91 | ● | 85 | Russian Federation | 2.69 | 27.21 | 0.35 | |
| 14 | Switzerland | 3.84 | 85.82 | 0.90 | | 86 | Uruguay | 2.68 | 26.40 | 0.35 | |
| 15 | Hong Kong (China) | 3.83 | 84.95 | 0.89 | | 87 | Armenia | 2.67 | 26.10 | 0.34 | |
| 16 | Australia | 3.81 | 84.13 | 0.88 | | 88 | Namibia | 2.66 | 25.34 | 0.33 | |
| 17 | Denmark | 3.78 | 82.69 | 0.88 | | 89 | Moldova, Rep. | 2.65 | 25.11 | 0.32 | |
| 18 | Spain | 3.72 | 79.43 | 0.87 | | 90 | Nicaragua | 2.65 | 25.11 | 0.32 | |
| 19 | Italy | 3.69 | 78.03 | 0.86 | ● | 91 | Algeria | 2.65 | 24.91 | 0.31 | |
| 20 | Korea, Rep. | 3.67 | 76.76 | 0.85 | | 92 | Colombia | 2.64 | 24.41 | 0.30 | |
| 21 | Austria | 3.65 | 75.86 | 0.85 | | 93 | Burkina Faso | 2.64 | 24.34 | 0.29 | |
| 22 | New Zealand | 3.64 | 75.62 | 0.84 | | 94 | Belarus | 2.64 | 24.33 | 0.28 | |
| 23 | Finland | 3.62 | 74.56 | 0.83 | | 95 | Ghana | 2.63 | 23.76 | 0.28 | |
| 24 | Malaysia | 3.59 | 72.89 | 0.82 | | 96 | Senegal | 2.62 | 23.52 | 0.27 | |
| 25 | Portugal | 3.56 | 71.36 | 0.82 | | 97 | Honduras | 2.61 | 22.77 | 0.26 | |
| 26 | United Arab Emirates | 3.54 | 70.28 | 0.81 | | 98 | Ethiopia | 2.59 | 22.06 | 0.25 | |
| 27 | China | 3.53 | 69.89 | 0.80 | | 99 | Nepal | 2.59 | 21.77 | 0.25 | |
| 28 | Qatar | 3.52 | 69.13 | 0.79 | | 100 | Burundi | 2.57 | 20.64 | 0.24 | |
| 29 | Turkey | 3.50 | 68.29 | 0.78 | ● | 101 | Bangladesh | 2.56 | 20.52 | 0.23 | |
| 30 | Poland | 3.49 | 67.97 | 0.78 | | 102 | Tunisia | 2.55 | 19.89 | 0.22 | |
| 31 | Czech Republic | 3.49 | 67.90 | 0.77 | | 103 | Fiji | 2.55 | 19.58 | 0.22 | |
| 32 | Hungary | 3.46 | 66.47 | 0.76 | | 104 | Angola | 2.54 | 19.48 | 0.21 | |
| 33 | South Africa | 3.43 | 64.78 | 0.75 | | 105 | Tajikistan | 2.53 | 18.69 | 0.20 | |
| 34 | Thailand | 3.43 | 64.69 | 0.75 | | 106 | Mauritius | 2.51 | 18.05 | 0.19 | ○ |
| 35 | Latvia | 3.40 | 63.33 | 0.74 | | 107 | Georgia | 2.51 | 17.67 | 0.18 | ○ |
| 36 | Iceland | 3.39 | 62.77 | 0.73 | | 108 | TFYR of Macedonia | 2.50 | 17.25 | 0.18 | ○ |
| 37 | Slovenia | 3.38 | 62.33 | 0.72 | | 109 | Mali | 2.50 | 17.05 | 0.17 | |
| 38 | Estonia | 3.35 | 60.43 | 0.72 | | 110 | Botswana | 2.49 | 16.92 | 0.16 | |
| 39 | Israel | 3.26 | 56.07 | 0.71 | | 111 | Bolivia, Plurinational St. | 2.48 | 16.31 | 0.15 | |
| 40 | Chile | 3.26 | 55.83 | 0.70 | | 112 | Guinea | 2.46 | 15.46 | 0.15 | |
| 41 | Slovakia | 3.25 | 55.77 | 0.69 | | 113 | Zambia | 2.46 | 15.39 | 0.14 | |
| 42 | Greece | 3.20 | 53.07 | 0.68 | | 114 | Guyana | 2.46 | 15.21 | 0.13 | |
| 43 | Panama | 3.19 | 52.67 | 0.68 | | 115 | Azerbaijan | 2.45 | 14.66 | 0.12 | ○ |
| 44 | Lithuania | 3.18 | 51.88 | 0.67 | | 116 | Uzbekistan | 2.39 | 11.92 | 0.12 | |
| 45 | Bulgaria | 3.16 | 50.80 | 0.66 | | 117 | Niger | 2.39 | 11.85 | 0.11 | |
| 46 | Viet Nam | 3.15 | 50.68 | 0.65 | | 118 | Madagascar | 2.38 | 11.29 | 0.10 | |
| 47 | Saudi Arabia | 3.15 | 50.36 | 0.65 | | 119 | Lesotho | 2.37 | 10.81 | 0.09 | |
| 48 | Mexico | 3.13 | 49.33 | 0.64 | | 120 | Mongolia | 2.36 | 9.93 | 0.08 | ○ |
| 49 | Malta | 3.11 | 48.21 | 0.63 | | 121 | Zimbabwe | 2.34 | 9.09 | 0.08 | |
| 50 | Bahrain | 3.08 | 47.02 | 0.62 | | 122 | Tanzania, United Rep. | 2.33 | 8.66 | 0.07 | ○ |
| 51 | Indonesia | 3.08 | 46.96 | 0.62 | | 123 | Togo | 2.32 | 8.03 | 0.06 | |
| 52 | India | 3.08 | 46.87 | 0.61 | | 124 | Cameroon | 2.30 | 6.92 | 0.05 | ○ |
| 53 | Croatia | 3.05 | 45.49 | 0.60 | | 125 | Bhutan | 2.29 | 6.59 | 0.05 | ○ |
| 54 | Kuwait | 3.01 | 43.36 | 0.59 | | 126 | Myanmar | 2.25 | 4.54 | 0.04 | |
| 55 | Philippines | 3.00 | 42.98 | 0.58 | | 127 | Gambia | 2.25 | 4.49 | 0.03 | ○ |
| 56 | Cyprus | 3.00 | 42.82 | 0.58 | | 128 | Mozambique | 2.23 | 3.47 | 0.02 | ○ |
| 57 | Oman | 3.00 | 42.53 | 0.57 | | 129 | Kyrgyzstan | 2.21 | 2.47 | 0.02 | ○ |
| 58 | Argentina | 2.99 | 42.10 | 0.56 | | 130 | Yemen | 2.18 | 1.17 | 0.01 | ○ |
| 59 | Ukraine | 2.98 | 41.58 | 0.55 | | 131 | Sudan | 2.16 | 0.00 | 0.00 | ○ |
| 60 | Egypt | 2.97 | 41.05 | 0.55 | | n/a | Albania | n/a | n/a | n/a | |
| 61 | Serbia | 2.96 | 40.88 | 0.54 | | n/a | Barbados | n/a | n/a | n/a | |
| 62 | El Salvador | 2.96 | 40.77 | 0.53 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 63 | Brazil | 2.94 | 39.93 | 0.52 | | n/a | Iran, Islamic Rep. | n/a | n/a | n/a | |
| 64 | Montenegro | 2.88 | 36.44 | 0.52 | | n/a | Morocco | n/a | n/a | n/a | |
| 65 | Jordan | 2.87 | 36.36 | 0.51 | | n/a | Romania | n/a | n/a | n/a | |
| 66 | Dominican Republic | 2.86 | 35.67 | 0.50 | | n/a | Seychelles | n/a | n/a | n/a | |
| 67 | Jamaica | 2.84 | 34.75 | 0.49 | | n/a | Swaziland | n/a | n/a | n/a | |
| 68 | Peru | 2.84 | 34.66 | 0.48 | | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 69 | Pakistan | 2.83 | 33.88 | 0.48 | | n/a | Uganda | n/a | n/a | n/a | |
| 70 | Malawi | 2.81 | 33.25 | 0.47 | | | | | | | |
| 71 | Kenya | 2.81 | 33.20 | 0.46 | | | | | | | |
| 72 | Nigeria | 2.81 | 33.03 | 0.45 | | | | | | | |

SOURCE: World Bank and Turku School of Economics, *Logistics Performance Index 2014*; Arvis et al., 2014, *Connecting to Compete 2014: Trade Logistics in the Global Economy*
NOTE: ● indicates a strength; ○ a weakness

3.2.3 Gross capital formation

Gross capital formation (% of GDP) | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-----------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Mongolia | 54.31 | 100.00 | 1.00 | ● | 73 | Switzerland | 21.15 | 28.14 | 0.48 | ○ |
| 2 | Bhutan | 51.53 | 93.97 | 0.99 | ● | 74 | Austria | 20.92 | 27.65 | 0.47 | ○ |
| 3 | Mozambique | 50.09 | 90.85 | 0.99 | ● | 75 | Finland | 20.91 | 27.61 | 0.47 | ○ |
| 4 | China | 47.68 | 85.63 | 0.98 | ● | 76 | Bolivia, Plurinational St. | 20.77 | 27.31 | 0.46 | |
| 5 | Niger | 46.40 | 82.86 | 0.97 | ● | 77 | Togo | 20.76 | 27.30 | 0.45 | ● |
| 6 | Iran, Islamic Rep. | 43.04 | 75.56 | 0.96 | ● | 78 | Serbia | 20.70 | 27.16 | 0.45 | |
| 7 | Cabo Verde | 39.40 | 67.68 | 0.96 | ● | 79 | Poland | 20.62 | 26.99 | 0.44 | |
| 8 | Belarus | 37.74 | 64.10 | 0.95 | ● | 80 | Tunisia | 20.56 | 26.86 | 0.43 | |
| 9 | Algeria | 37.66 | 63.90 | 0.94 | ● | 81 | Russian Federation | 20.46 | 26.64 | 0.42 | |
| 10 | Seychelles | 35.97 | 60.26 | 0.94 | ● | 82 | Belgium | 20.27 | 26.23 | 0.42 | ○ |
| 11 | Lesotho | 35.62 | 59.50 | 0.93 | ● | 83 | Cameroon | 20.21 | 26.10 | 0.41 | |
| 12 | Morocco | 34.32 | 56.68 | 0.92 | ● | 84 | Slovenia | 20.09 | 25.85 | 0.40 | |
| 13 | Indonesia | 33.40 | 54.69 | 0.91 | ● | 85 | Turkey | 19.87 | 25.37 | 0.40 | |
| 14 | India | 32.17 | 52.01 | 0.91 | ● | 86 | Malawi | 19.87 | 25.37 | 0.39 | |
| 15 | Sri Lanka | 31.97 | 51.58 | 0.90 | ● | 87 | Venezuela, Bolivarian Rep. | 19.85 | 25.33 | 0.38 | |
| 16 | Botswana | 31.88 | 51.39 | 0.89 | ● | 88 | Bosnia and Herzegovina | 19.82 | 25.26 | 0.37 | |
| 17 | Zambia | 31.86 | 51.34 | 0.88 | ● | 89 | United States of America | 19.75 | 25.12 | 0.37 | ○ |
| 18 | Tanzania, United Rep. | 31.55 | 50.67 | 0.88 | ● | 90 | Guyana | 19.66 | 24.92 | 0.36 | |
| 19 | Uzbekistan | 30.85 | 49.16 | 0.87 | ● | 91 | Burundi | 19.65 | 24.88 | 0.35 | |
| 20 | Saudi Arabia | 30.75 | 48.94 | 0.86 | ● | 92 | Montenegro | 19.62 | 24.83 | 0.35 | |
| 21 | Ethiopia | 30.10 | 47.54 | 0.86 | ● | 93 | Lithuania | 19.60 | 24.79 | 0.34 | |
| 22 | Panama | 29.80 | 46.89 | 0.85 | ● | 94 | Fiji | 19.59 | 24.76 | 0.33 | |
| 23 | Singapore | 29.23 | 45.65 | 0.84 | | 95 | Kenya | 19.57 | 24.71 | 0.32 | |
| 24 | Bangladesh | 29.19 | 45.56 | 0.83 | ● | 96 | Israel | 19.52 | 24.61 | 0.32 | ○ |
| 25 | Estonia | 29.10 | 45.37 | 0.83 | | 97 | South Africa | 19.36 | 24.26 | 0.31 | |
| 26 | Qatar | 28.97 | 45.09 | 0.82 | | 98 | Sweden | 19.19 | 23.91 | 0.30 | ○ |
| 27 | Korea, Rep. | 28.91 | 44.96 | 0.81 | | 99 | Philippines | 19.14 | 23.78 | 0.29 | |
| 28 | Nepal | 28.88 | 44.90 | 0.81 | ● | 100 | Croatia | 19.12 | 23.75 | 0.29 | ○ |
| 29 | Ecuador | 28.50 | 44.07 | 0.80 | ● | 101 | Nicaragua | 18.99 | 23.46 | 0.28 | |
| 30 | Oman | 28.40 | 43.85 | 0.79 | ● | 102 | Bahrain | 18.87 | 23.21 | 0.27 | |
| 31 | Kazakhstan | 28.37 | 43.79 | 0.78 | ● | 103 | Hungary | 18.82 | 23.10 | 0.27 | ○ |
| 32 | Peru | 27.76 | 42.47 | 0.78 | ● | 104 | Côte d'Ivoire | 18.81 | 23.07 | 0.26 | |
| 33 | Senegal | 27.42 | 41.72 | 0.77 | ● | 105 | Luxembourg | 18.75 | 22.95 | 0.25 | ○ |
| 34 | Namibia | 27.31 | 41.49 | 0.76 | ● | 106 | Slovakia | 18.58 | 22.58 | 0.24 | ○ |
| 35 | Kyrgyzstan | 27.17 | 41.19 | 0.76 | ● | 107 | Jamaica | 18.47 | 22.33 | 0.24 | ○ |
| 36 | Thailand | 26.99 | 40.79 | 0.75 | | 108 | Netherlands | 18.12 | 21.57 | 0.23 | ○ |
| 37 | Australia | 26.91 | 40.63 | 0.74 | | 109 | Burkina Faso | 18.04 | 21.41 | 0.22 | |
| 38 | Norway | 26.83 | 40.45 | 0.73 | | 110 | Spain | 18.01 | 21.34 | 0.22 | ○ |
| 39 | Malaysia | 26.74 | 40.25 | 0.73 | | 111 | Argentina | 17.96 | 21.24 | 0.21 | |
| 40 | Georgia | 25.95 | 38.54 | 0.72 | | 112 | Germany | 17.70 | 20.67 | 0.20 | ○ |
| 41 | Mali | 25.60 | 37.78 | 0.71 | ● | 113 | Sudan | 17.50 | 20.24 | 0.19 | |
| 42 | Uganda | 25.44 | 37.43 | 0.71 | ● | 114 | Italy | 17.40 | 20.02 | 0.19 | ○ |
| 43 | Viet Nam | 25.22 | 36.96 | 0.70 | | 115 | Denmark | 17.32 | 19.84 | 0.18 | ○ |
| 44 | Colombia | 24.98 | 36.44 | 0.69 | | 116 | Brazil | 17.03 | 19.22 | 0.17 | ○ |
| 45 | Albania | 24.92 | 36.31 | 0.68 | | 117 | Malta | 16.90 | 18.92 | 0.17 | ○ |
| 46 | Honduras | 24.80 | 36.04 | 0.68 | ● | 118 | Ireland | 16.43 | 17.92 | 0.16 | ○ |
| 47 | Myanmar | 24.72 | 35.88 | 0.67 | ● | 119 | Paraguay | 15.73 | 16.40 | 0.15 | |
| 48 | Ghana | 24.58 | 35.58 | 0.66 | ● | 120 | Portugal | 15.70 | 16.34 | 0.14 | ○ |
| 49 | Lebanon | 24.47 | 35.34 | 0.65 | | 121 | Madagascar | 15.58 | 16.07 | 0.14 | |
| 50 | Rwanda | 23.93 | 34.16 | 0.65 | | 122 | United Kingdom | 15.05 | 14.92 | 0.13 | ○ |
| 51 | Canada | 23.84 | 33.97 | 0.64 | | 123 | Nigeria | 14.99 | 14.79 | 0.12 | |
| 52 | Hong Kong (China) | 23.75 | 33.77 | 0.63 | | 124 | El Salvador | 14.80 | 14.38 | 0.12 | ○ |
| 53 | Azerbaijan | 23.54 | 33.32 | 0.63 | | 125 | Angola | 14.76 | 14.30 | 0.11 | |
| 54 | Bulgaria | 23.49 | 33.20 | 0.62 | | 126 | Egypt | 14.48 | 13.68 | 0.10 | ○ |
| 55 | Mauritius | 23.19 | 32.57 | 0.61 | | 127 | Barbados | 14.46 | 13.64 | 0.09 | ○ |
| 56 | Uruguay | 23.06 | 32.27 | 0.60 | | 128 | Iceland | 14.38 | 13.48 | 0.09 | ○ |
| 57 | Moldova, Rep. | 22.69 | 31.47 | 0.60 | | 129 | Guatemala | 14.26 | 13.22 | 0.08 | |
| 58 | Latvia | 22.53 | 31.13 | 0.59 | | 130 | Pakistan | 13.99 | 12.63 | 0.07 | ○ |
| 59 | Romania | 22.51 | 31.09 | 0.58 | | 131 | Trinidad and Tobago | 13.99 | 12.62 | 0.06 | ○ |
| 60 | Czech Republic | 22.41 | 30.87 | 0.58 | | 132 | Kuwait | 13.92 | 12.48 | 0.06 | ○ |
| 61 | Dominican Republic | 22.37 | 30.78 | 0.57 | ● | 133 | Greece | 13.80 | 12.21 | 0.05 | ○ |
| 62 | Armenia | 22.36 | 30.77 | 0.56 | | 134 | Zimbabwe | 13.70 | 12.01 | 0.04 | |
| 63 | United Arab Emirates | 22.34 | 30.72 | 0.55 | | 135 | Guinea | 12.92 | 10.31 | 0.04 | |
| 64 | Chile | 22.19 | 30.39 | 0.55 | | 136 | Tajikistan | 12.64 | 9.70 | 0.03 | ○ |
| 65 | Japan | 22.15 | 30.32 | 0.54 | | 137 | Swaziland | 11.49 | 7.22 | 0.02 | ○ |
| 66 | New Zealand | 22.13 | 30.27 | 0.53 | | 138 | Cyprus | 9.70 | 3.33 | 0.01 | ○ |
| 67 | France | 22.11 | 30.22 | 0.53 | ○ | 139 | Yemen | 8.35 | 0.41 | 0.01 | ○ |
| 68 | Costa Rica | 21.93 | 29.83 | 0.52 | | 140 | Ukraine | 8.16 | 0.00 | 0.00 | ○ |
| 69 | Mexico | 21.86 | 29.69 | 0.51 | | n/a | TFYR of Macedonia | n/a | n/a | n/a | |
| 70 | Jordan | 21.67 | 29.27 | 0.50 | | | | | | | |
| 71 | Cambodia | 21.50 | 28.90 | 0.50 | ● | | | | | | |
| 72 | Gambia | 21.41 | 28.70 | 0.49 | ● | | | | | | |

SOURCE: International Monetary Fund, *World Economic Outlook Database*, 2014

NOTE: ● indicates a strength; ○ a weakness

3.3.1

GDP per unit of energy use

GDP per unit of energy use (2005 PPP\$ per kg of oil equivalent) | 2012

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | Rank | Country/Economy | Value | Score (0–100) | Percent rank |
|------|-----------------------|-------|---------------|--------------|------|---------------------------------|-------|---------------|--------------|
| 1 | Hong Kong (China) | 21.74 | 100.00 | 1.00 | 73 | Jamaica | 6.80 | 29.97 | 0.41 |
| 2 | Colombia | 15.63 | 71.33 | 0.99 | 74 | Cambodia | 6.76 | 29.75 | 0.40 |
| 3 | Malta | 14.49 | 66.02 | 0.98 | 75 | Sudan | 6.71 | 29.54 | 0.39 |
| 4 | Peru | 14.29 | 65.05 | 0.97 | 76 | TFYR of Macedonia | 6.62 | 29.12 | 0.38 |
| 4 | Sri Lanka | 14.29 | 65.05 | 0.97 | 76 | United States of America (2013) | 6.62 | 29.12 | 0.38 |
| 6 | Mauritius | 13.89 | 63.19 | 0.96 | 78 | Qatar | 6.54 | 28.72 | 0.37 |
| 7 | Panama | 13.51 | 61.43 | 0.94 | 79 | Armenia | 6.49 | 28.52 | 0.36 |
| 7 | Singapore | 13.51 | 61.43 | 0.94 | 80 | Belgium (2013) | 6.49 | 28.52 | 0.35 |
| 9 | Dominican Republic | 13.33 | 60.59 | 0.93 | 81 | Senegal | 6.45 | 28.32 | 0.34 |
| 10 | Albania | 12.35 | 55.96 | 0.91 | 82 | New Zealand (2013) | 6.41 | 28.13 | 0.33 |
| 10 | Ireland (2013) | 12.35 | 55.96 | 0.91 | 82 | Saudi Arabia | 6.41 | 28.13 | 0.33 |
| 10 | Yemen | 12.35 | 55.96 | 0.91 | 84 | Thailand | 6.41 | 28.13 | 0.32 |
| 13 | Philippines | 12.20 | 55.25 | 0.90 | 85 | Montenegro | 6.21 | 27.19 | 0.31 |
| 14 | Switzerland (2013) | 12.05 | 54.56 | 0.89 | 86 | Bolivia, Plurinational St. | 6.21 | 27.19 | 0.30 |
| 15 | Botswana | 11.90 | 53.89 | 0.88 | 87 | Honduras | 6.17 | 27.01 | 0.30 |
| 15 | Costa Rica | 11.90 | 53.89 | 0.88 | 88 | Venezuela, Bolivarian Rep. | 6.17 | 27.01 | 0.29 |
| 17 | Uruguay | 11.76 | 53.23 | 0.87 | 89 | Nigeria | 6.13 | 26.84 | 0.28 |
| 18 | Namibia | 11.36 | 51.35 | 0.86 | 90 | Myanmar | 6.13 | 26.84 | 0.27 |
| 19 | United Kingdom (2013) | 11.11 | 50.17 | 0.85 | 91 | Czech Republic (2013) | 5.99 | 26.15 | 0.25 |
| 20 | Morocco | 10.75 | 48.49 | 0.84 | 91 | Viet Nam | 5.99 | 26.15 | 0.25 |
| 21 | Tunisia | 10.31 | 46.41 | 0.84 | 93 | Korea, Rep. (2013) | 5.49 | 23.83 | 0.25 |
| 22 | Denmark (2013) | 10.31 | 46.41 | 0.82 | 94 | Canada (2013) | 5.24 | 22.62 | 0.22 |
| 22 | Spain (2013) | 10.31 | 46.41 | 0.82 | 94 | Finland (2013) | 5.24 | 22.62 | 0.22 |
| 24 | Italy (2013) | 10.20 | 45.92 | 0.81 | 94 | Mongolia | 5.24 | 22.62 | 0.22 |
| 25 | Portugal (2013) | 9.90 | 44.49 | 0.80 | 97 | Nepal | 5.15 | 22.24 | 0.21 |
| 26 | Bangladesh | 9.80 | 44.04 | 0.79 | 98 | Oman | 5.00 | 21.51 | 0.20 |
| 26 | Egypt | 9.80 | 44.04 | 0.79 | 99 | Bulgaria | 4.85 | 20.83 | 0.20 |
| 28 | Azerbaijan | 9.62 | 43.16 | 0.78 | 100 | Serbia | 4.83 | 20.72 | 0.19 |
| 29 | Angola | 9.52 | 42.73 | 0.75 | 101 | Iran, Islamic Rep. | 4.81 | 20.61 | 0.18 |
| 29 | Ecuador | 9.52 | 42.73 | 0.75 | 102 | Belarus | 4.67 | 19.98 | 0.17 |
| 29 | El Salvador | 9.52 | 42.73 | 0.75 | 103 | China | 4.48 | 19.10 | 0.16 |
| 29 | Israel (2013) | 9.52 | 42.73 | 0.75 | 104 | Estonia (2013) | 4.33 | 18.37 | 0.16 |
| 33 | Algeria | 9.43 | 42.30 | 0.73 | 105 | Kazakhstan | 4.29 | 18.19 | 0.15 |
| 33 | Greece (2013) | 9.43 | 42.30 | 0.73 | 106 | Bosnia and Herzegovina | 4.24 | 17.94 | 0.14 |
| 35 | Austria (2013) | 9.26 | 41.49 | 0.72 | 107 | Zambia | 4.13 | 17.45 | 0.13 |
| 36 | Cyprus | 9.17 | 41.09 | 0.70 | 108 | Moldova, Rep. | 4.02 | 16.90 | 0.12 |
| 36 | Germany (2013) | 9.17 | 41.09 | 0.70 | 109 | South Africa | 3.98 | 16.75 | 0.11 |
| 38 | Indonesia | 9.09 | 40.70 | 0.69 | 110 | Kenya | 3.95 | 16.60 | 0.11 |
| 38 | Turkey (2013) | 9.09 | 40.70 | 0.69 | 111 | Côte d'Ivoire | 3.85 | 16.10 | 0.10 |
| 40 | Lebanon | 9.09 | 40.70 | 0.68 | 112 | Bahrain | 3.79 | 15.83 | 0.09 |
| 41 | Brazil | 9.01 | 40.31 | 0.67 | 113 | Kyrgyzstan | 3.45 | 14.24 | 0.08 |
| 42 | Japan (2013) | 8.93 | 39.93 | 0.66 | 114 | Tanzania, United Rep. | 3.09 | 12.54 | 0.07 |
| 43 | Luxembourg (2013) | 8.93 | 39.93 | 0.66 | 115 | Russian Federation | 2.88 | 11.58 | 0.07 |
| 44 | Mexico (2013) | 8.70 | 38.84 | 0.65 | 116 | Ukraine | 2.76 | 11.02 | 0.06 |
| 45 | Croatia | 8.62 | 38.49 | 0.63 | 117 | Uzbekistan | 2.58 | 10.19 | 0.05 |
| 45 | Paraguay | 8.62 | 38.49 | 0.63 | 118 | Togo | 2.44 | 9.51 | 0.04 |
| 47 | Guatemala | 8.47 | 37.81 | 0.62 | 119 | Ethiopia | 2.19 | 8.33 | 0.03 |
| 48 | Jordan | 8.40 | 37.47 | 0.61 | 120 | Mozambique | 2.09 | 7.88 | 0.02 |
| 49 | Argentina | 8.20 | 36.50 | 0.61 | 121 | Iceland (2013) | 2.07 | 7.80 | 0.02 |
| 50 | Pakistan | 8.13 | 36.19 | 0.60 | 122 | Trinidad and Tobago | 1.81 | 6.53 | 0.01 |
| 51 | Ghana | 8.13 | 36.19 | 0.59 | 123 | Zimbabwe | 0.41 | 0.00 | 0.00 |
| 52 | Netherlands (2013) | 7.87 | 34.99 | 0.58 | n/a | Barbados | n/a | n/a | n/a |
| 53 | France (2013) | 7.75 | 34.42 | 0.57 | n/a | Bhutan | n/a | n/a | n/a |
| 54 | Lithuania | 7.63 | 33.86 | 0.57 | n/a | Burkina Faso | n/a | n/a | n/a |
| 55 | Slovenia (2013) | 7.58 | 33.59 | 0.56 | n/a | Burundi | n/a | n/a | n/a |
| 56 | Chile (2013) | 7.52 | 33.32 | 0.55 | n/a | Cabo Verde | n/a | n/a | n/a |
| 57 | Hungary (2013) | 7.46 | 33.06 | 0.54 | n/a | Fiji | n/a | n/a | n/a |
| 58 | Poland (2013) | 7.41 | 32.80 | 0.53 | n/a | Gambia | n/a | n/a | n/a |
| 59 | Norway (2013) | 7.30 | 32.30 | 0.52 | n/a | Guinea | n/a | n/a | n/a |
| 59 | Tajikistan | 7.30 | 32.30 | 0.52 | n/a | Guyana | n/a | n/a | n/a |
| 61 | Georgia | 7.25 | 32.05 | 0.50 | n/a | Lesotho | n/a | n/a | n/a |
| 61 | Latvia | 7.25 | 32.05 | 0.50 | n/a | Madagascar | n/a | n/a | n/a |
| 63 | Kuwait | 7.04 | 31.09 | 0.48 | n/a | Malawi | n/a | n/a | n/a |
| 63 | Sweden (2013) | 7.04 | 31.09 | 0.48 | n/a | Mali | n/a | n/a | n/a |
| 65 | Cameroon | 7.04 | 31.09 | 0.46 | n/a | Niger | n/a | n/a | n/a |
| 65 | India | 7.04 | 31.09 | 0.46 | n/a | Rwanda | n/a | n/a | n/a |
| 65 | Malaysia | 7.04 | 31.09 | 0.46 | n/a | Seychelles | n/a | n/a | n/a |
| 68 | United Arab Emirates | 6.94 | 30.63 | 0.45 | n/a | Swaziland | n/a | n/a | n/a |
| 69 | Australia (2013) | 6.90 | 30.41 | 0.44 | n/a | Uganda | n/a | n/a | n/a |
| 70 | Nicaragua | 6.85 | 30.19 | 0.43 | | | | | |
| 70 | Slovakia (2013) | 6.85 | 30.19 | 0.43 | | | | | |
| 72 | Romania | 6.85 | 30.19 | 0.42 | | | | | |

SOURCE: International Energy Agency (IEA) Statistics© OECD/IEA, 2014

NOTE: ● indicates a strength; ○ a weakness

3.3.2 Environmental performance

Environmental Performance Index | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Switzerland | 87.67 | 87.67 | 1.00 | ● | 73 | Bahrain | 51.83 | 51.83 | 0.48 | |
| 2 | Luxembourg | 83.29 | 83.29 | 0.99 | ● | 74 | Iran, Islamic Rep. | 51.08 | 51.08 | 0.47 | |
| 3 | Australia | 82.40 | 82.40 | 0.99 | ● | 75 | Kazakhstan | 51.07 | 51.07 | 0.46 | |
| 4 | Singapore | 81.78 | 81.78 | 0.98 | ● | 76 | Colombia | 50.77 | 50.77 | 0.46 | |
| 5 | Czech Republic | 81.47 | 81.47 | 0.97 | ● | 77 | Romania | 50.52 | 50.52 | 0.45 | |
| 6 | Germany | 80.47 | 80.47 | 0.96 | ● | 78 | Bolivia, Plurinational St. | 50.48 | 50.48 | 0.44 | |
| 7 | Spain | 79.79 | 79.79 | 0.96 | ● | 79 | TFYR of Macedonia | 50.41 | 50.41 | 0.43 | |
| 8 | Austria | 78.32 | 78.32 | 0.95 | ● | 80 | Nicaragua | 50.32 | 50.32 | 0.43 | |
| 9 | Sweden | 78.09 | 78.09 | 0.94 | | 81 | Lebanon | 50.15 | 50.15 | 0.42 | |
| 10 | Norway | 78.04 | 78.04 | 0.93 | | 82 | Algeria | 50.08 | 50.08 | 0.41 | |
| 11 | Netherlands | 77.75 | 77.75 | 0.93 | | 83 | Argentina | 49.55 | 49.55 | 0.41 | |
| 12 | United Kingdom | 77.35 | 77.35 | 0.92 | | 84 | Zimbabwe | 49.54 | 49.54 | 0.40 | |
| 13 | Denmark | 76.92 | 76.92 | 0.91 | | 85 | Ukraine | 49.01 | 49.01 | 0.39 | |
| 14 | Iceland | 76.50 | 76.50 | 0.91 | | 86 | Honduras | 48.87 | 48.87 | 0.38 | |
| 15 | Slovenia | 76.43 | 76.43 | 0.90 | | 87 | Guatemala | 48.06 | 48.06 | 0.38 | |
| 16 | New Zealand | 76.41 | 76.41 | 0.89 | | 88 | Oman | 47.75 | 47.75 | 0.37 | |
| 17 | Portugal | 75.80 | 75.80 | 0.88 | ● | 89 | Botswana | 47.60 | 47.60 | 0.36 | |
| 18 | Finland | 75.72 | 75.72 | 0.88 | | 90 | Georgia | 47.23 | 47.23 | 0.36 | |
| 19 | Ireland | 74.67 | 74.67 | 0.87 | | 91 | Bhutan | 46.86 | 46.86 | 0.35 | |
| 20 | Estonia | 74.66 | 74.66 | 0.86 | | 92 | Bosnia and Herzegovina | 45.79 | 45.79 | 0.34 | |
| 21 | Slovakia | 74.45 | 74.45 | 0.86 | ● | 93 | Barbados | 45.50 | 45.50 | 0.33 | |
| 22 | Italy | 74.36 | 74.36 | 0.85 | ● | 94 | Peru | 45.05 | 45.05 | 0.33 | |
| 23 | Greece | 73.28 | 73.28 | 0.84 | ● | 95 | Mongolia | 44.67 | 44.67 | 0.32 | |
| 24 | Canada | 73.14 | 73.14 | 0.83 | | 96 | Indonesia | 44.36 | 44.36 | 0.31 | |
| 25 | United Arab Emirates | 72.91 | 72.91 | 0.83 | | 97 | Cabo Verde | 44.07 | 44.07 | 0.30 | |
| 26 | Japan | 72.35 | 72.35 | 0.82 | | 98 | Philippines | 44.02 | 44.02 | 0.30 | |
| 27 | France | 71.05 | 71.05 | 0.81 | | 99 | El Salvador | 43.79 | 43.79 | 0.29 | |
| 28 | Hungary | 70.28 | 70.28 | 0.80 | | 100 | Namibia | 43.71 | 43.71 | 0.28 | |
| 29 | Chile | 69.93 | 69.93 | 0.80 | | 101 | Uzbekistan | 43.23 | 43.23 | 0.28 | |
| 30 | Poland | 69.53 | 69.53 | 0.79 | | 102 | China | 43.00 | 43.00 | 0.27 | |
| 31 | Serbia | 69.13 | 69.13 | 0.78 | | 103 | Zambia | 41.72 | 41.72 | 0.26 | |
| 32 | Belarus | 67.69 | 67.69 | 0.78 | | 104 | Senegal | 40.83 | 40.83 | 0.25 | |
| 33 | United States of America | 67.52 | 67.52 | 0.77 | | 105 | Kyrgyzstan | 40.63 | 40.63 | 0.25 | |
| 34 | Malta | 67.42 | 67.42 | 0.76 | | 106 | Burkina Faso | 40.52 | 40.52 | 0.24 | |
| 35 | Saudi Arabia | 66.66 | 66.66 | 0.75 | | 107 | Malawi | 40.06 | 40.06 | 0.23 | |
| 36 | Belgium | 66.61 | 66.61 | 0.75 | | 108 | Côte d'Ivoire | 39.72 | 39.72 | 0.22 | |
| 37 | Cyprus | 66.23 | 66.23 | 0.74 | | 109 | Ethiopia | 39.43 | 39.43 | 0.22 | |
| 38 | Israel | 65.78 | 65.78 | 0.73 | | 110 | Paraguay | 39.25 | 39.25 | 0.21 | |
| 39 | Latvia | 64.05 | 64.05 | 0.72 | | 111 | Nigeria | 39.20 | 39.20 | 0.20 | |
| 40 | Bulgaria | 64.01 | 64.01 | 0.72 | | 112 | Uganda | 39.18 | 39.18 | 0.20 | |
| 41 | Kuwait | 63.94 | 63.94 | 0.71 | ● | 113 | Viet Nam | 38.17 | 38.17 | 0.19 | ○ |
| 42 | Korea, Rep. | 63.79 | 63.79 | 0.70 | | 114 | Guyana | 38.07 | 38.07 | 0.18 | |
| 43 | Qatar | 63.03 | 63.03 | 0.70 | | 115 | Swaziland | 37.35 | 37.35 | 0.17 | |
| 44 | Croatia | 62.23 | 62.23 | 0.69 | | 116 | Nepal | 37.00 | 37.00 | 0.17 | |
| 45 | Armenia | 61.67 | 61.67 | 0.68 | | 117 | Kenya | 36.99 | 36.99 | 0.16 | |
| 46 | Lithuania | 61.26 | 61.26 | 0.67 | | 118 | Cameroon | 36.68 | 36.68 | 0.15 | |
| 47 | Egypt | 61.11 | 61.11 | 0.67 | ● | 119 | Niger | 36.28 | 36.28 | 0.14 | |
| 48 | Malaysia | 59.31 | 59.31 | 0.66 | | 120 | Tanzania, United Rep. | 36.19 | 36.19 | 0.14 | |
| 49 | Tunisia | 58.99 | 58.99 | 0.65 | | 121 | Cambodia | 35.44 | 35.44 | 0.13 | |
| 50 | Ecuador | 58.54 | 58.54 | 0.64 | ● | 122 | Rwanda | 35.41 | 35.41 | 0.12 | |
| 51 | Costa Rica | 58.53 | 58.53 | 0.64 | | 123 | Pakistan | 34.58 | 34.58 | 0.12 | |
| 52 | Jamaica | 58.26 | 58.26 | 0.63 | ● | 124 | Ghana | 32.07 | 32.07 | 0.11 | |
| 53 | Mauritius | 58.09 | 58.09 | 0.62 | | 125 | Tajikistan | 31.34 | 31.34 | 0.10 | |
| 54 | Panama | 56.84 | 56.84 | 0.62 | | 126 | India | 31.23 | 31.23 | 0.09 | ○ |
| 55 | Jordan | 55.78 | 55.78 | 0.61 | | 127 | Yemen | 30.16 | 30.16 | 0.09 | |
| 56 | Seychelles | 55.56 | 55.56 | 0.60 | | 128 | Mozambique | 29.97 | 29.97 | 0.08 | |
| 57 | Montenegro | 55.52 | 55.52 | 0.59 | | 129 | Gambia | 29.30 | 29.30 | 0.07 | |
| 58 | Azerbaijan | 55.47 | 55.47 | 0.59 | | 130 | Angola | 28.69 | 28.69 | 0.07 | |
| 59 | Mexico | 55.03 | 55.03 | 0.58 | | 131 | Guinea | 28.03 | 28.03 | 0.06 | |
| 60 | Turkey | 54.91 | 54.91 | 0.57 | | 132 | Togo | 27.91 | 27.91 | 0.05 | ○ |
| 61 | Albania | 54.73 | 54.73 | 0.57 | | 133 | Myanmar | 27.44 | 27.44 | 0.04 | |
| 62 | Sri Lanka | 53.88 | 53.88 | 0.56 | | 134 | Madagascar | 26.70 | 26.70 | 0.04 | ○ |
| 63 | Uruguay | 53.61 | 53.61 | 0.55 | | 135 | Burundi | 25.78 | 25.78 | 0.03 | ○ |
| 64 | South Africa | 53.51 | 53.51 | 0.54 | | 136 | Bangladesh | 25.61 | 25.61 | 0.02 | ○ |
| 65 | Russian Federation | 53.45 | 53.45 | 0.54 | | 137 | Sudan | 24.64 | 24.64 | 0.01 | ○ |
| 66 | Moldova, Rep. | 53.36 | 53.36 | 0.53 | | 138 | Lesotho | 20.81 | 20.81 | 0.01 | ○ |
| 67 | Dominican Republic | 53.24 | 53.24 | 0.52 | | 139 | Mali | 18.43 | 18.43 | 0.00 | ○ |
| 68 | Fiji | 53.08 | 53.08 | 0.51 | | n/a | Hong Kong (China) | n/a | n/a | n/a | |
| 69 | Brazil | 52.97 | 52.97 | 0.51 | | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 70 | Thailand | 52.83 | 52.83 | 0.50 | | | | | | | |
| 71 | Trinidad and Tobago | 52.28 | 52.28 | 0.49 | | | | | | | |
| 72 | Morocco | 51.89 | 51.89 | 0.49 | | | | | | | |

SOURCE: Yale University and Columbia University Environmental Performance Index 2014

NOTE: ● indicates a strength; ○ a weakness

3.3.3

ISO 14001 environmental certificates

ISO 14001 Environmental management systems—Requirements with guidance for use: Number of certificates issued (per billion PPP\$ GDP) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Czech Republic | 15.77 | 100.00 | 0.99 | ● | 73 | Swaziland | 0.72 | 5.61 | 0.47 | ● |
| 1 | Estonia | 12.79 | 100.00 | 0.99 | ● | 74 | Mauritius | 0.63 | 4.91 | 0.47 | |
| 1 | Romania | 23.24 | 100.00 | 0.99 | ● | 75 | Indonesia | 0.62 | 4.85 | 0.46 | |
| 4 | Italy | 11.71 | 91.54 | 0.98 | ● | 76 | Fiji | 0.58 | 4.53 | 0.45 | |
| 5 | Bulgaria | 11.01 | 86.09 | 0.97 | ● | 77 | Mozambique | 0.56 | 4.38 | 0.45 | |
| 6 | Spain | 10.54 | 82.40 | 0.96 | ● | 78 | Iran, Islamic Rep. | 0.55 | 4.29 | 0.44 | |
| 7 | Slovakia | 9.84 | 76.89 | 0.96 | ● | 79 | Mexico | 0.52 | 4.05 | 0.43 | |
| 8 | Croatia | 9.46 | 73.91 | 0.95 | ● | 80 | Jordan | 0.51 | 4.01 | 0.42 | |
| 9 | Sweden | 8.53 | 66.68 | 0.94 | | 81 | Oman | 0.51 | 3.97 | 0.42 | |
| 10 | Lithuania | 8.51 | 66.53 | 0.93 | ● | 82 | Ukraine | 0.50 | 3.91 | 0.41 | |
| 11 | Hungary | 8.34 | 65.22 | 0.93 | ● | 83 | Namibia | 0.50 | 3.90 | 0.40 | |
| 12 | Slovenia | 7.97 | 62.32 | 0.92 | ● | 84 | Moldova, Rep. | 0.48 | 3.75 | 0.39 | |
| 13 | Serbia | 7.95 | 62.14 | 0.91 | ● | 85 | Malawi | 0.47 | 3.66 | 0.39 | |
| 14 | United Kingdom | 6.89 | 53.86 | 0.91 | | 86 | Jamaica | 0.47 | 3.64 | 0.38 | |
| 15 | Switzerland | 6.55 | 51.20 | 0.90 | | 87 | Lebanon | 0.43 | 3.39 | 0.37 | |
| 16 | Finland | 6.52 | 50.96 | 0.89 | | 88 | Belarus | 0.41 | 3.23 | 0.36 | |
| 17 | China | 6.48 | 50.62 | 0.88 | | 89 | Kenya | 0.41 | 3.22 | 0.36 | |
| 18 | Latvia | 6.38 | 49.87 | 0.88 | ● | 90 | Azerbaijan | 0.41 | 3.21 | 0.35 | |
| 19 | Japan | 5.06 | 39.58 | 0.87 | | 91 | Kazakhstan | 0.38 | 2.98 | 0.34 | |
| 20 | TFYR of Macedonia | 4.99 | 39.03 | 0.86 | ● | 92 | Morocco | 0.38 | 2.98 | 0.34 | |
| 21 | Portugal | 4.84 | 37.85 | 0.85 | | 93 | Honduras | 0.37 | 2.93 | 0.33 | |
| 22 | Tajikistan | 4.66 | 36.40 | 0.85 | ● | 94 | Zambia | 0.37 | 2.88 | 0.32 | |
| 23 | Colombia | 4.62 | 36.09 | 0.84 | ● | 95 | Russian Federation | 0.36 | 2.85 | 0.31 | |
| 24 | Singapore | 4.30 | 33.61 | 0.83 | | 96 | United States of America | 0.36 | 2.83 | 0.31 | ○ |
| 25 | Bosnia and Herzegovina | 3.79 | 29.61 | 0.82 | ● | 97 | Nicaragua | 0.36 | 2.81 | 0.30 | |
| 26 | Greece | 3.69 | 28.82 | 0.82 | | 98 | Kuwait | 0.34 | 2.63 | 0.29 | |
| 27 | Denmark | 3.33 | 26.06 | 0.81 | | 99 | Pakistan | 0.33 | 2.57 | 0.28 | |
| 28 | Ireland | 3.27 | 25.58 | 0.80 | | 100 | Cabo Verde | 0.31 | 2.44 | 0.28 | |
| 29 | Thailand | 3.27 | 25.53 | 0.80 | | 101 | Tanzania, United Rep. | 0.31 | 2.41 | 0.27 | |
| 30 | Malaysia | 3.24 | 25.29 | 0.79 | | 102 | Senegal | 0.28 | 2.22 | 0.26 | |
| 31 | Australia | 3.18 | 24.83 | 0.78 | | 103 | Botswana | 0.28 | 2.22 | 0.26 | |
| 32 | Norway | 3.15 | 24.59 | 0.77 | | 104 | Trinidad and Tobago | 0.28 | 2.22 | 0.25 | |
| 33 | France | 3.13 | 24.49 | 0.77 | | 105 | Panama | 0.27 | 2.09 | 0.24 | |
| 34 | Netherlands | 3.10 | 24.23 | 0.76 | | 106 | El Salvador | 0.26 | 2.06 | 0.23 | |
| 35 | Israel | 2.87 | 22.46 | 0.75 | | 107 | Uganda | 0.26 | 2.05 | 0.23 | |
| 36 | Korea, Rep. | 2.78 | 21.74 | 0.74 | | 108 | Paraguay | 0.25 | 1.99 | 0.22 | |
| 37 | Iceland | 2.76 | 21.58 | 0.74 | | 109 | Dominican Republic | 0.25 | 1.97 | 0.21 | |
| 38 | Austria | 2.75 | 21.51 | 0.73 | | 110 | Georgia | 0.25 | 1.94 | 0.20 | |
| 39 | Montenegro | 2.63 | 20.57 | 0.72 | | 111 | Niger | 0.24 | 1.89 | 0.20 | |
| 40 | Malta | 2.60 | 20.34 | 0.72 | | 112 | Côte d'Ivoire | 0.21 | 1.68 | 0.19 | |
| 41 | Chile | 2.49 | 19.47 | 0.71 | | 113 | Togo | 0.21 | 1.64 | 0.18 | |
| 42 | Belgium | 2.45 | 19.19 | 0.70 | | 114 | Guinea | 0.20 | 1.60 | 0.18 | |
| 43 | Poland | 2.44 | 19.05 | 0.69 | | 115 | Algeria | 0.19 | 1.51 | 0.17 | |
| 44 | Germany | 2.21 | 17.28 | 0.69 | | 116 | Saudi Arabia | 0.19 | 1.47 | 0.16 | ○ |
| 45 | Cyprus | 2.06 | 16.12 | 0.68 | | 117 | Ghana | 0.18 | 1.37 | 0.15 | |
| 46 | Uruguay | 1.98 | 15.46 | 0.67 | | 118 | Cameroon | 0.17 | 1.36 | 0.15 | |
| 47 | United Arab Emirates | 1.96 | 15.33 | 0.66 | | 119 | Cambodia | 0.17 | 1.36 | 0.14 | |
| 48 | Viet Nam | 1.90 | 14.86 | 0.66 | | 120 | Armenia | 0.17 | 1.35 | 0.13 | ○ |
| 49 | New Zealand | 1.84 | 14.38 | 0.65 | | 121 | Venezuela, Bolivarian Rep. | 0.15 | 1.20 | 0.12 | |
| 50 | Luxembourg | 1.81 | 14.13 | 0.64 | | 122 | Guatemala | 0.13 | 1.04 | 0.12 | |
| 51 | Hong Kong (China) | 1.80 | 14.04 | 0.64 | | 123 | Nepal | 0.13 | 1.00 | 0.11 | |
| 52 | Tunisia | 1.65 | 12.93 | 0.63 | | 124 | Rwanda | 0.12 | 0.90 | 0.10 | |
| 53 | Argentina | 1.41 | 11.00 | 0.62 | | 125 | Bangladesh | 0.11 | 0.90 | 0.09 | |
| 54 | South Africa | 1.31 | 10.22 | 0.61 | | 126 | Burkina Faso | 0.11 | 0.84 | 0.09 | |
| 55 | Seychelles | 1.30 | 10.18 | 0.61 | | 127 | Mongolia | 0.09 | 0.74 | 0.08 | ○ |
| 56 | Zimbabwe | 1.23 | 9.65 | 0.60 | ● | 128 | Sudan | 0.09 | 0.72 | 0.07 | |
| 57 | Turkey | 1.20 | 9.38 | 0.59 | | 129 | Uzbekistan | 0.09 | 0.70 | 0.07 | ○ |
| 58 | Costa Rica | 1.18 | 9.25 | 0.58 | | 130 | Madagascar | 0.06 | 0.48 | 0.06 | |
| 59 | Ecuador | 1.17 | 9.17 | 0.58 | | 131 | Angola | 0.06 | 0.47 | 0.05 | |
| 60 | Canada | 1.16 | 9.07 | 0.57 | | 132 | Kyrgyzstan | 0.05 | 0.43 | 0.04 | ○ |
| 61 | Brazil | 1.15 | 8.99 | 0.56 | | 133 | Nigeria | 0.05 | 0.39 | 0.04 | ○ |
| 62 | Barbados | 1.12 | 8.75 | 0.55 | | 134 | Mali | 0.04 | 0.31 | 0.03 | ○ |
| 63 | Albania | 1.12 | 8.72 | 0.55 | | 135 | Ethiopia | 0.04 | 0.30 | 0.02 | ○ |
| 64 | Bahrain | 1.12 | 8.72 | 0.54 | | 136 | Myanmar | 0.03 | 0.25 | 0.01 | |
| 65 | Peru | 0.96 | 7.52 | 0.53 | | 137 | Yemen | 0.01 | 0.08 | 0.01 | ○ |
| 66 | Philippines | 0.95 | 7.43 | 0.53 | | 138 | Guyana | 0.00 | 0.00 | 0.00 | ○ |
| 67 | Sri Lanka | 0.93 | 7.25 | 0.52 | | n/a | Burundi | n/a | n/a | n/a | |
| 68 | Bhutan | 0.92 | 7.20 | 0.51 | | n/a | Gambia | n/a | n/a | n/a | |
| 69 | Egypt | 0.92 | 7.16 | 0.50 | | n/a | Lesotho | n/a | n/a | n/a | |
| 70 | India | 0.87 | 6.77 | 0.50 | | | | | | | |
| 71 | Bolivia, Plurinational St. | 0.81 | 6.33 | 0.49 | | | | | | | |
| 72 | Qatar | 0.78 | 6.09 | 0.48 | | | | | | | |

SOURCE: International Organization for Standardization, *The ISO Survey of Certifications 2013*; International Monetary Fund World Economic Outlook 2015 (PPP\$ GDP)

NOTE: ● indicates a strength; ○ a weakness

4.1.1

Ease of getting credit

Ease of getting credit (distance to frontier) | 2014

II: Data Tables

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|--------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | New Zealand | 100.00 | 100.00 | 1.00 | ● | 65 | Greece | 50.00 | 50.00 | 0.44 | |
| 2 | Colombia | 95.00 | 95.00 | 0.99 | ● | 65 | Indonesia | 50.00 | 50.00 | 0.44 | |
| 2 | United States of America | 95.00 | 95.00 | 0.99 | ● | 65 | Japan | 50.00 | 50.00 | 0.44 | |
| 4 | Australia | 90.00 | 90.00 | 0.96 | ● | 65 | Kazakhstan | 50.00 | 50.00 | 0.44 | |
| 4 | Montenegro | 90.00 | 90.00 | 0.96 | ● | 65 | Netherlands | 50.00 | 50.00 | 0.44 | ○ |
| 4 | Rwanda | 90.00 | 90.00 | 0.96 | ● | 65 | Paraguay | 50.00 | 50.00 | 0.44 | |
| 7 | Canada | 85.00 | 85.00 | 0.94 | ● | 65 | Saudi Arabia | 50.00 | 50.00 | 0.44 | |
| 7 | Georgia | 85.00 | 85.00 | 0.94 | ● | 80 | Belgium | 45.00 | 45.00 | 0.35 | ○ |
| 7 | Honduras | 85.00 | 85.00 | 0.94 | ● | 80 | Brazil | 45.00 | 45.00 | 0.35 | |
| 7 | Romania | 85.00 | 85.00 | 0.94 | ● | 80 | Costa Rica | 45.00 | 45.00 | 0.35 | |
| 11 | Cambodia | 80.00 | 80.00 | 0.90 | ● | 80 | Dominican Republic | 45.00 | 45.00 | 0.35 | |
| 11 | Guatemala | 80.00 | 80.00 | 0.90 | ● | 80 | Ecuador | 45.00 | 45.00 | 0.35 | |
| 11 | Jamaica | 80.00 | 80.00 | 0.90 | ● | 80 | Iran, Islamic Rep. | 45.00 | 45.00 | 0.35 | |
| 11 | Mexico | 80.00 | 80.00 | 0.90 | ● | 80 | Italy | 45.00 | 45.00 | 0.35 | ○ |
| 11 | Peru | 80.00 | 80.00 | 0.90 | ● | 80 | Nicaragua | 45.00 | 45.00 | 0.35 | |
| 16 | Hungary | 75.00 | 75.00 | 0.86 | ● | 80 | Portugal | 45.00 | 45.00 | 0.35 | ○ |
| 16 | Panama | 75.00 | 75.00 | 0.86 | ● | 80 | Sri Lanka | 45.00 | 45.00 | 0.35 | |
| 16 | Poland | 75.00 | 75.00 | 0.86 | ● | 80 | Thailand | 45.00 | 45.00 | 0.35 | |
| 16 | Singapore | 75.00 | 75.00 | 0.86 | ● | 80 | Turkey | 45.00 | 45.00 | 0.35 | |
| 16 | Ukraine | 75.00 | 75.00 | 0.86 | ● | 80 | United Arab Emirates | 45.00 | 45.00 | 0.35 | |
| 16 | United Kingdom | 75.00 | 75.00 | 0.86 | ● | 93 | Azerbaijan | 40.00 | 40.00 | 0.29 | |
| 22 | Bulgaria | 70.00 | 70.00 | 0.77 | ● | 93 | Bahrain | 40.00 | 40.00 | 0.29 | |
| 22 | Czech Republic | 70.00 | 70.00 | 0.77 | ● | 93 | Belarus | 40.00 | 40.00 | 0.29 | |
| 22 | Denmark | 70.00 | 70.00 | 0.77 | ● | 93 | Cabo Verde | 40.00 | 40.00 | 0.29 | |
| 22 | Estonia | 70.00 | 70.00 | 0.77 | ● | 93 | Morocco | 40.00 | 40.00 | 0.29 | |
| 22 | Germany | 70.00 | 70.00 | 0.77 | ● | 93 | Philippines | 40.00 | 40.00 | 0.29 | |
| 22 | Hong Kong (China) | 70.00 | 70.00 | 0.77 | ● | 93 | Uzbekistan | 40.00 | 40.00 | 0.29 | |
| 22 | Ireland | 70.00 | 70.00 | 0.77 | ● | 93 | Venezuela, Bolivarian Rep. | 40.00 | 40.00 | 0.29 | |
| 22 | Latvia | 70.00 | 70.00 | 0.77 | ● | 93 | Zimbabwe | 40.00 | 40.00 | 0.29 | |
| 22 | Lithuania | 70.00 | 70.00 | 0.77 | ● | 102 | Barbados | 35.00 | 35.00 | 0.21 | ○ |
| 22 | Malaysia | 70.00 | 70.00 | 0.77 | ● | 102 | Bolivia, Plurinational St. | 35.00 | 35.00 | 0.21 | |
| 22 | Moldova, Rep. | 70.00 | 70.00 | 0.77 | ● | 102 | Cameroon | 35.00 | 35.00 | 0.21 | |
| 22 | Zambia | 70.00 | 70.00 | 0.77 | ● | 102 | Kenya | 35.00 | 35.00 | 0.21 | |
| 34 | Albania | 65.00 | 65.00 | 0.67 | ● | 102 | Kuwait | 35.00 | 35.00 | 0.21 | |
| 34 | Armenia | 65.00 | 65.00 | 0.67 | ● | 102 | Lebanon | 35.00 | 35.00 | 0.21 | |
| 34 | Bosnia and Herzegovina | 65.00 | 65.00 | 0.67 | ● | 102 | Nepal | 35.00 | 35.00 | 0.21 | |
| 34 | Finland | 65.00 | 65.00 | 0.67 | ● | 102 | Oman | 35.00 | 35.00 | 0.21 | |
| 34 | Ghana | 65.00 | 65.00 | 0.67 | ● | 102 | Slovenia | 35.00 | 35.00 | 0.21 | ○ |
| 34 | India | 65.00 | 65.00 | 0.67 | ● | 102 | Tajikistan | 35.00 | 35.00 | 0.21 | |
| 34 | Israel | 65.00 | 65.00 | 0.67 | ● | 102 | Tunisia | 35.00 | 35.00 | 0.21 | |
| 34 | Korea, Rep. | 65.00 | 65.00 | 0.67 | ● | 113 | Bangladesh | 30.00 | 30.00 | 0.12 | |
| 34 | Kyrgyzstan | 65.00 | 65.00 | 0.67 | ● | 113 | Burkina Faso | 30.00 | 30.00 | 0.12 | |
| 34 | Mauritius | 65.00 | 65.00 | 0.67 | ● | 113 | Côte d'Ivoire | 30.00 | 30.00 | 0.12 | |
| 34 | Slovakia | 65.00 | 65.00 | 0.67 | ● | 113 | Guinea | 30.00 | 30.00 | 0.12 | |
| 34 | TFYR of Macedonia | 65.00 | 65.00 | 0.67 | ● | 113 | Mali | 30.00 | 30.00 | 0.12 | |
| 34 | Trinidad and Tobago | 65.00 | 65.00 | 0.67 | ● | 113 | Mozambique | 30.00 | 30.00 | 0.12 | |
| 34 | Viet Nam | 65.00 | 65.00 | 0.67 | ● | 113 | Niger | 30.00 | 30.00 | 0.12 | |
| 48 | Austria | 60.00 | 60.00 | 0.61 | ● | 113 | Pakistan | 30.00 | 30.00 | 0.12 | |
| 48 | Iceland | 60.00 | 60.00 | 0.61 | ● | 113 | Qatar | 30.00 | 30.00 | 0.12 | ○ |
| 48 | Nigeria | 60.00 | 60.00 | 0.61 | ● | 113 | Senegal | 30.00 | 30.00 | 0.12 | |
| 48 | Serbia | 60.00 | 60.00 | 0.61 | ● | 113 | Togo | 30.00 | 30.00 | 0.12 | |
| 48 | South Africa | 60.00 | 60.00 | 0.61 | ● | 113 | Uganda | 30.00 | 30.00 | 0.12 | |
| 48 | Spain | 60.00 | 60.00 | 0.61 | ● | 125 | Lesotho | 25.00 | 25.00 | 0.10 | |
| 48 | Switzerland | 60.00 | 60.00 | 0.61 | ○ | 125 | Malawi | 25.00 | 25.00 | 0.10 | ○ |
| 48 | Uruguay | 60.00 | 60.00 | 0.61 | ○ | 125 | Tanzania, United Rep. | 25.00 | 25.00 | 0.10 | |
| 56 | Botswana | 55.00 | 55.00 | 0.55 | ○ | 128 | Gambia | 20.00 | 20.00 | 0.09 | |
| 56 | Croatia | 55.00 | 55.00 | 0.55 | ○ | 129 | Ethiopia | 15.00 | 15.00 | 0.06 | |
| 56 | Cyprus | 55.00 | 55.00 | 0.55 | ○ | 129 | Guyana | 15.00 | 15.00 | 0.06 | ○ |
| 56 | Mongolia | 55.00 | 55.00 | 0.55 | ○ | 129 | Luxembourg | 15.00 | 15.00 | 0.06 | ○ |
| 56 | Namibia | 55.00 | 55.00 | 0.55 | ○ | 129 | Sudan | 15.00 | 15.00 | 0.06 | |
| 56 | Norway | 55.00 | 55.00 | 0.55 | ○ | 133 | Algeria | 10.00 | 10.00 | 0.03 | ○ |
| 56 | Russian Federation | 55.00 | 55.00 | 0.55 | ○ | 133 | Burundi | 10.00 | 10.00 | 0.03 | ○ |
| 56 | Swaziland | 55.00 | 55.00 | 0.55 | ○ | 133 | Malta | 10.00 | 10.00 | 0.03 | ○ |
| 56 | Sweden | 55.00 | 55.00 | 0.55 | ○ | 133 | Myanmar | 10.00 | 10.00 | 0.03 | |
| 65 | Argentina | 50.00 | 50.00 | 0.44 | ○ | 133 | Seychelles | 10.00 | 10.00 | 0.03 | ○ |
| 65 | Bhutan | 50.00 | 50.00 | 0.44 | ○ | 138 | Angola | 5.00 | 5.00 | 0.01 | ○ |
| 65 | Chile | 50.00 | 50.00 | 0.44 | ○ | 138 | Madagascar | 5.00 | 5.00 | 0.01 | ○ |
| 65 | China | 50.00 | 50.00 | 0.44 | ○ | 140 | Jordan | 0.00 | 0.00 | 0.00 | ○ |
| 65 | Egypt | 50.00 | 50.00 | 0.44 | ○ | 140 | Yemen | 0.00 | 0.00 | 0.00 | ○ |
| 65 | El Salvador | 50.00 | 50.00 | 0.44 | ○ | | | | | | |
| 65 | Fiji | 50.00 | 50.00 | 0.44 | ○ | | | | | | |
| 65 | France | 50.00 | 50.00 | 0.44 | ○ | | | | | | |

SOURCE: World Bank. Doing Business 2015: Going Beyond Efficiency

NOTE: ● indicates a strength; ○ a weakness

4.1.2

Domestic credit to private sector

Domestic credit to private sector (% of GDP) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-----------------------------|--------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Cyprus | 300.60 | 100.00 | 1.00 | ● | 73 | Paraguay | 45.80 | 13.88 | 0.48 | |
| 2 | Hong Kong (China) | 219.49 | 72.59 | 0.99 | ● | 74 | Cambodia | 45.34 | 13.72 | 0.47 | |
| 3 | Denmark | 199.60 | 65.86 | 0.99 | ● | 75 | Armenia | 45.18 | 13.67 | 0.46 | |
| 4 | United States of America | 192.31 | 63.40 | 0.98 | ● | 76 | Slovakia (2008) | 44.12 | 13.31 | 0.46 | |
| 5 | Japan | 188.34 | 62.06 | 0.97 | ● | 77 | Serbia | 43.57 | 13.12 | 0.45 | |
| 6 | Netherlands | 177.99 | 58.56 | 0.96 | ● | 78 | Guyana | 43.33 | 13.04 | 0.44 | |
| 7 | Spain | 171.97 | 56.52 | 0.96 | ● | 79 | El Salvador | 42.69 | 12.83 | 0.43 | |
| 8 | Portugal | 169.78 | 55.78 | 0.95 | ● | 80 | Oman | 42.21 | 12.66 | 0.43 | |
| 9 | Switzerland | 169.04 | 55.53 | 0.94 | | 81 | Bangladesh | 41.79 | 12.52 | 0.42 | |
| 10 | Ireland | 168.03 | 55.19 | 0.93 | | 82 | Romania | 41.42 | 12.40 | 0.41 | |
| 11 | Luxembourg | 162.42 | 53.30 | 0.93 | | 83 | Saudi Arabia | 40.29 | 12.02 | 0.41 | |
| 12 | South Africa | 156.05 | 51.14 | 0.92 | ● | 84 | Georgia | 39.85 | 11.87 | 0.40 | |
| 13 | United Kingdom | 155.49 | 50.95 | 0.91 | | 85 | Moldova, Rep. | 39.74 | 11.83 | 0.39 | |
| 14 | Thailand | 154.41 | 50.59 | 0.91 | ● | 86 | Qatar | 39.27 | 11.67 | 0.38 | |
| 15 | New Zealand (2010) | 145.42 | 47.55 | 0.90 | | 87 | Indonesia | 37.89 | 11.21 | 0.38 | |
| 16 | China | 140.01 | 45.72 | 0.89 | | 88 | Albania | 37.58 | 11.10 | 0.37 | |
| 17 | Sweden | 135.34 | 44.14 | 0.88 | | 89 | Philippines | 35.83 | 10.51 | 0.36 | |
| 18 | Korea, Rep. | 135.02 | 44.03 | 0.88 | | 90 | Kazakhstan | 35.58 | 10.42 | 0.36 | |
| 19 | Singapore | 128.94 | 41.98 | 0.87 | | 91 | Senegal | 33.04 | 9.56 | 0.35 | |
| 20 | Australia | 125.80 | 40.92 | 0.86 | | 92 | Guatemala | 32.64 | 9.43 | 0.34 | |
| 21 | Canada (2008) | 124.93 | 40.62 | 0.86 | | 93 | Togo | 32.22 | 9.29 | 0.33 | |
| 22 | Malaysia | 123.99 | 40.31 | 0.85 | | 94 | Botswana | 32.05 | 9.23 | 0.33 | |
| 23 | Greece | 122.59 | 39.83 | 0.84 | ● | 95 | Kenya | 31.63 | 9.09 | 0.32 | |
| 24 | Malta | 119.32 | 38.73 | 0.83 | | 96 | Peru | 31.39 | 9.01 | 0.31 | |
| 25 | Italy | 117.03 | 37.95 | 0.83 | | 97 | Trinidad and Tobago | 31.13 | 8.92 | 0.30 | |
| 26 | Austria | 112.07 | 36.28 | 0.82 | | 98 | Sri Lanka (2012) | 31.09 | 8.91 | 0.30 | |
| 27 | France | 111.35 | 36.03 | 0.81 | | 99 | Mexico | 30.60 | 8.74 | 0.29 | |
| 28 | Mauritius | 108.10 | 34.93 | 0.80 | | 100 | Jamaica | 29.61 | 8.41 | 0.28 | |
| 29 | Chile | 105.89 | 34.19 | 0.80 | | 101 | Mozambique | 28.90 | 8.17 | 0.28 | |
| 30 | Lebanon | 98.64 | 31.74 | 0.79 | ● | 102 | Nicaragua | 28.81 | 8.14 | 0.27 | |
| 31 | Finland | 98.14 | 31.57 | 0.78 | | 103 | Egypt | 27.82 | 7.80 | 0.26 | |
| 32 | Viet Nam | 96.80 | 31.12 | 0.78 | ● | 104 | Uruguay | 26.84 | 7.47 | 0.25 | |
| 33 | Germany | 93.13 | 29.88 | 0.77 | | 105 | Ecuador | 26.72 | 7.43 | 0.25 | |
| 34 | Iceland | 91.51 | 29.33 | 0.76 | | 106 | Burkina Faso | 26.06 | 7.21 | 0.24 | |
| 35 | Israel (2011) | 89.46 | 28.64 | 0.75 | | 107 | Azerbaijan | 25.46 | 7.00 | 0.23 | |
| 36 | Belgium | 89.39 | 28.61 | 0.75 | | 108 | Venezuela, Bolivarian Rep. | 25.33 | 6.96 | 0.22 | |
| 37 | Norway (2006) | 86.19 | 27.53 | 0.74 | | 109 | Swaziland | 25.27 | 6.94 | 0.22 | |
| 38 | Fiji | 81.40 | 25.91 | 0.73 | ● | 110 | Belarus | 24.15 | 6.56 | 0.21 | ○ |
| 39 | Barbados (2009) | 80.57 | 25.63 | 0.72 | | 111 | Dominican Republic | 24.02 | 6.52 | 0.20 | |
| 40 | Croatia | 76.72 | 24.33 | 0.72 | | 112 | Angola | 23.53 | 6.35 | 0.20 | |
| 41 | Tunisia | 75.74 | 24.00 | 0.71 | ● | 113 | Mali | 22.79 | 6.10 | 0.19 | |
| 42 | Ukraine | 73.96 | 23.40 | 0.70 | | 114 | Seychelles | 21.85 | 5.78 | 0.18 | ○ |
| 43 | Estonia | 73.70 | 23.31 | 0.70 | | 115 | Lesotho | 20.20 | 5.23 | 0.17 | |
| 44 | Jordan | 72.33 | 22.85 | 0.69 | | 116 | Malawi | 18.55 | 4.67 | 0.17 | |
| 45 | Slovenia | 70.79 | 22.32 | 0.68 | | 117 | Côte d'Ivoire | 18.43 | 4.63 | 0.16 | |
| 46 | Panama | 70.72 | 22.30 | 0.67 | | 118 | Burundi | 18.01 | 4.48 | 0.15 | |
| 47 | Brazil | 70.68 | 22.29 | 0.67 | | 119 | Tajikistan | 17.86 | 4.43 | 0.14 | |
| 48 | Turkey | 70.19 | 22.12 | 0.66 | | 120 | Ethiopia (2008) | 17.71 | 4.38 | 0.14 | |
| 49 | Morocco | 70.17 | 22.11 | 0.65 | | 121 | Tanzania, United Rep. | 17.21 | 4.21 | 0.13 | |
| 50 | Bulgaria | 69.64 | 21.94 | 0.64 | | 122 | Ghana | 16.99 | 4.14 | 0.12 | |
| 51 | Bahrain | 69.10 | 21.75 | 0.64 | | 123 | Algeria | 16.69 | 4.04 | 0.12 | |
| 52 | Mongolia | 67.28 | 21.14 | 0.63 | | 124 | Zambia | 16.54 | 3.99 | 0.11 | |
| 53 | Cabo Verde | 63.24 | 19.77 | 0.62 | ● | 125 | Pakistan | 16.04 | 3.82 | 0.10 | |
| 54 | Bosnia and Herzegovina | 62.01 | 19.36 | 0.62 | | 126 | Argentina | 15.77 | 3.73 | 0.09 | ○ |
| 55 | Latvia | 60.70 | 18.92 | 0.61 | | 127 | Uganda | 15.52 | 3.64 | 0.09 | |
| 56 | United Arab Emirates (2012) | 59.07 | 18.36 | 0.60 | | 128 | Gambia | 15.41 | 3.60 | 0.08 | |
| 57 | Nepal | 58.11 | 18.04 | 0.59 | ● | 129 | Kyrgyzstan (2007) | 15.05 | 3.49 | 0.07 | ○ |
| 58 | Kuwait (2012) | 55.76 | 17.24 | 0.59 | | 130 | Cameroon | 14.78 | 3.39 | 0.07 | ○ |
| 59 | Czech Republic | 55.36 | 17.11 | 0.58 | | 131 | Niger | 14.20 | 3.20 | 0.06 | |
| 60 | Honduras | 55.23 | 17.06 | 0.57 | | 132 | Nigeria | 12.59 | 2.65 | 0.05 | |
| 61 | Poland | 53.93 | 16.63 | 0.57 | | 133 | Iran, Islamic Rep. | 12.24 | 2.54 | 0.04 | ○ |
| 62 | Montenegro | 53.61 | 16.52 | 0.56 | | 134 | Madagascar | 11.92 | 2.43 | 0.04 | ○ |
| 63 | Russian Federation | 52.51 | 16.15 | 0.55 | | 135 | Rwanda (2005) | 11.21 | 2.19 | 0.03 | ○ |
| 64 | India | 51.82 | 15.91 | 0.54 | | 136 | Sudan | 10.45 | 1.93 | 0.02 | ○ |
| 65 | Hungary | 50.76 | 15.55 | 0.54 | | 137 | Guinea (2011) | 9.13 | 1.48 | 0.01 | ○ |
| 66 | Costa Rica | 50.44 | 15.44 | 0.53 | | 138 | Yemen | 6.34 | 0.54 | 0.01 | ○ |
| 67 | Colombia | 50.23 | 15.38 | 0.52 | | 139 | Myanmar (2004) | 4.74 | 0.00 | 0.00 | ○ |
| 68 | TFYR of Macedonia | 49.20 | 15.03 | 0.51 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 69 | Namibia | 46.98 | 14.28 | 0.51 | | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Bolivia, Plurinational St | 46.96 | 14.27 | 0.50 | | | | | | | |
| 71 | Lithuania | 46.22 | 14.02 | 0.49 | | | | | | | |
| 72 | Bhutan | 46.08 | 13.97 | 0.49 | | | | | | | |

SOURCE: International Monetary Fund (with World Bank and OECD GDP estimates), extracted from World Bank *World Development Indicators* database

NOTE: ● indicates a strength; ○ a weakness

4.1.3 Microfinance institutions' gross loan portfolio

Microfinance institutions: Gross loan portfolio (% of GDP) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|-------|---------------|--------------|---|------|-----------------------------------|-------|---------------|--------------|---|
| 1 | Armenia | 8.36 | 100.00 | 0.97 | ● | 73 | Venezuela, Bolivarian Rep. (2011) | 0.05 | 0.58 | 0.19 | |
| 1 | Bolivia, Plurinational St. | 14.72 | 100.00 | 0.97 | ● | 74 | Ethiopia | 0.04 | 0.42 | 0.18 | |
| 1 | Cambodia | 17.31 | 100.00 | 0.97 | ● | 75 | Namibia (2012) | 0.03 | 0.35 | 0.17 | |
| 1 | Mongolia | 18.91 | 100.00 | 0.97 | ● | 76 | Fiji | 0.02 | 0.29 | 0.16 | ○ |
| 5 | Bhutan (2012) | 6.10 | 72.97 | 0.96 | ● | 77 | Yemen | 0.02 | 0.29 | 0.15 | |
| 6 | Rwanda | 5.77 | 68.96 | 0.94 | ● | 78 | Uruguay (2011) | 0.02 | 0.18 | 0.13 | ○ |
| 7 | Georgia | 5.15 | 61.64 | 0.93 | ● | 79 | Angola (2011) | 0.01 | 0.15 | 0.12 | |
| 8 | Tajikistan | 5.01 | 59.92 | 0.92 | ● | 80 | Croatia (2007) | 0.01 | 0.13 | 0.11 | ○ |
| 9 | Peru | 4.96 | 59.34 | 0.91 | ● | 81 | Russian Federation | 0.01 | 0.11 | 0.10 | ○ |
| 10 | Kyrgyzstan | 4.77 | 57.02 | 0.90 | ● | 82 | South Africa | 0.01 | 0.08 | 0.09 | ○ |
| 11 | Paraguay | 4.72 | 56.41 | 0.89 | ● | 83 | Argentina | 0.01 | 0.07 | 0.08 | ○ |
| 12 | Kenya | 4.69 | 56.10 | 0.88 | ● | 84 | Zambia | 0.01 | 0.07 | 0.07 | ○ |
| 13 | Togo | 4.20 | 50.24 | 0.87 | ● | 85 | Indonesia | 0.01 | 0.07 | 0.06 | ○ |
| 14 | Ecuador | 4.04 | 48.31 | 0.85 | ● | 86 | China | 0.00 | 0.04 | 0.04 | ○ |
| 15 | Tanzania, United Rep. | 3.84 | 45.88 | 0.84 | ● | 87 | Turkey | 0.00 | 0.02 | 0.03 | ○ |
| 16 | Viet Nam | 3.45 | 41.21 | 0.83 | ● | 88 | Trinidad and Tobago | 0.00 | 0.02 | 0.02 | ○ |
| 17 | TFYR of Macedonia | 3.12 | 37.28 | 0.82 | ● | 89 | Hungary (2007) | 0.00 | 0.01 | 0.01 | ○ |
| 18 | Azerbaijan | 2.79 | 33.43 | 0.81 | ● | 90 | Thailand (2011) | 0.00 | 0.00 | 0.00 | ○ |
| 19 | Nicaragua | 2.78 | 33.26 | 0.80 | ● | n/a | Algeria | n/a | n/a | n/a | |
| 20 | Malawi | 2.74 | 32.72 | 0.79 | ● | n/a | Australia | n/a | n/a | n/a | |
| 21 | Senegal | 2.73 | 32.66 | 0.78 | ● | n/a | Austria | n/a | n/a | n/a | |
| 22 | Albania | 2.62 | 31.35 | 0.76 | ● | n/a | Bahrain | n/a | n/a | n/a | |
| 23 | Moldova, Rep. | 2.34 | 28.00 | 0.75 | | n/a | Barbados | n/a | n/a | n/a | |
| 24 | Bangladesh | 2.21 | 26.43 | 0.74 | ● | n/a | Belarus | n/a | n/a | n/a | |
| 25 | Burundi | 2.13 | 25.46 | 0.73 | ● | n/a | Belgium | n/a | n/a | n/a | |
| 26 | Honduras | 2.09 | 25.01 | 0.72 | ● | n/a | Botswana | n/a | n/a | n/a | |
| 27 | Colombia | 2.01 | 24.05 | 0.71 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 28 | Bosnia and Herzegovina | 1.83 | 21.85 | 0.70 | | n/a | Canada | n/a | n/a | n/a | |
| 29 | Uganda | 1.79 | 21.40 | 0.69 | ● | n/a | Cyprus | n/a | n/a | n/a | |
| 30 | Serbia | 1.68 | 20.08 | 0.67 | | n/a | Czech Republic | n/a | n/a | n/a | |
| 31 | Swaziland (2012) | 1.63 | 19.53 | 0.66 | ● | n/a | Denmark | n/a | n/a | n/a | |
| 32 | El Salvador | 1.52 | 18.16 | 0.65 | ● | n/a | Estonia | n/a | n/a | n/a | |
| 33 | Burkina Faso | 1.39 | 16.59 | 0.64 | ● | n/a | Finland | n/a | n/a | n/a | |
| 34 | Bulgaria | 1.38 | 16.49 | 0.63 | | n/a | France | n/a | n/a | n/a | |
| 35 | Cameroon | 1.18 | 14.17 | 0.62 | ● | n/a | Germany | n/a | n/a | n/a | |
| 36 | Dominican Republic | 1.17 | 14.01 | 0.61 | ● | n/a | Greece | n/a | n/a | n/a | |
| 37 | Sri Lanka (2012) | 1.06 | 12.72 | 0.60 | | n/a | Hong Kong (China) | n/a | n/a | n/a | |
| 38 | Madagascar | 1.02 | 12.23 | 0.58 | ● | n/a | Iceland | n/a | n/a | n/a | |
| 39 | Uzbekistan (2012) | 0.87 | 10.40 | 0.57 | ● | n/a | Iran, Islamic Rep. | n/a | n/a | n/a | |
| 40 | Nepal (2012) | 0.80 | 9.55 | 0.56 | ● | n/a | Ireland | n/a | n/a | n/a | |
| 41 | Mali | 0.71 | 8.43 | 0.55 | | n/a | Israel | n/a | n/a | n/a | |
| 42 | Montenegro | 0.69 | 8.25 | 0.54 | | n/a | Italy | n/a | n/a | n/a | |
| 43 | Chile | 0.66 | 7.95 | 0.53 | | n/a | Japan | n/a | n/a | n/a | |
| 44 | Morocco | 0.55 | 6.53 | 0.52 | | n/a | Korea, Rep. | n/a | n/a | n/a | |
| 45 | Niger | 0.42 | 5.06 | 0.51 | ● | n/a | Kuwait | n/a | n/a | n/a | |
| 46 | Guyana (2012) | 0.39 | 4.60 | 0.49 | | n/a | Latvia | n/a | n/a | n/a | |
| 47 | Panama | 0.39 | 4.60 | 0.48 | | n/a | Lesotho | n/a | n/a | n/a | |
| 48 | Jordan | 0.35 | 4.22 | 0.47 | | n/a | Lithuania | n/a | n/a | n/a | |
| 49 | Guatemala | 0.35 | 4.20 | 0.46 | | n/a | Luxembourg | n/a | n/a | n/a | |
| 50 | India | 0.29 | 3.48 | 0.45 | | n/a | Malta | n/a | n/a | n/a | |
| 51 | Guinea (2012) | 0.25 | 2.95 | 0.44 | ● | n/a | Mauritius | n/a | n/a | n/a | |
| 52 | Gambia (2012) | 0.24 | 2.89 | 0.43 | ● | n/a | Myanmar | n/a | n/a | n/a | |
| 53 | Mozambique | 0.24 | 2.84 | 0.42 | | n/a | Netherlands | n/a | n/a | n/a | |
| 54 | Romania | 0.24 | 2.81 | 0.40 | | n/a | New Zealand | n/a | n/a | n/a | |
| 55 | Ghana | 0.22 | 2.64 | 0.39 | | n/a | Norway | n/a | n/a | n/a | |
| 56 | Tunisia | 0.22 | 2.62 | 0.38 | | n/a | Oman | n/a | n/a | n/a | |
| 57 | Kazakhstan | 0.20 | 2.37 | 0.37 | | n/a | Portugal | n/a | n/a | n/a | |
| 58 | Philippines | 0.20 | 2.35 | 0.36 | | n/a | Qatar | n/a | n/a | n/a | |
| 59 | Côte d'Ivoire | 0.19 | 2.28 | 0.35 | | n/a | Saudi Arabia | n/a | n/a | n/a | |
| 60 | Jamaica | 0.15 | 1.83 | 0.34 | | n/a | Seychelles | n/a | n/a | n/a | |
| 61 | Pakistan | 0.15 | 1.78 | 0.33 | | n/a | Singapore | n/a | n/a | n/a | |
| 62 | Costa Rica | 0.15 | 1.78 | 0.31 | | n/a | Slovakia | n/a | n/a | n/a | |
| 63 | Lebanon | 0.14 | 1.62 | 0.30 | | n/a | Slovenia | n/a | n/a | n/a | |
| 64 | Ukraine | 0.13 | 1.59 | 0.29 | | n/a | Spain | n/a | n/a | n/a | |
| 65 | Malaysia (2011) | 0.13 | 1.58 | 0.28 | ○ | n/a | Sweden | n/a | n/a | n/a | |
| 66 | Mexico | 0.12 | 1.38 | 0.27 | | n/a | Switzerland | n/a | n/a | n/a | |
| 67 | Poland | 0.11 | 1.35 | 0.26 | ○ | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 68 | Zimbabwe | 0.08 | 0.99 | 0.25 | | n/a | United Kingdom | n/a | n/a | n/a | |
| 69 | Brazil | 0.07 | 0.89 | 0.24 | | n/a | United States of America | n/a | n/a | n/a | |
| 70 | Sudan | 0.07 | 0.82 | 0.22 | | | | | | | |
| 71 | Nigeria | 0.07 | 0.80 | 0.21 | | | | | | | |
| 72 | Egypt | 0.05 | 0.64 | 0.20 | | | | | | | |

SOURCE: Microfinance Information Exchange, *Mix Market database*; International Monetary Fund *World Economic Outlook Database*, 2014

NOTE: ● indicates a strength; ○ a weakness

4.2.1 Ease of protecting investors

Ease of protecting investors (distance to frontier) | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | New Zealand | 81.67 | 81.67 | 1.00 | ● | 72 | Switzerland | 55.00 | 55.00 | 0.48 | ○ |
| 2 | Hong Kong (China) | 80.83 | 80.83 | 0.99 | ● | 72 | Tunisia | 55.00 | 55.00 | 0.48 | ○ |
| 3 | Singapore | 80.00 | 80.00 | 0.99 | ● | 75 | Bosnia and Herzegovina | 54.17 | 54.17 | 0.45 | ○ |
| 4 | United Kingdom | 78.33 | 78.33 | 0.98 | ● | 75 | Czech Republic | 54.17 | 54.17 | 0.45 | ○ |
| 5 | Malaysia | 74.17 | 74.17 | 0.97 | ● | 75 | Dominican Republic | 54.17 | 54.17 | 0.45 | ○ |
| 6 | Ireland | 73.33 | 73.33 | 0.96 | ● | 75 | Zambia | 54.17 | 54.17 | 0.45 | ○ |
| 7 | Albania | 72.50 | 72.50 | 0.94 | ● | 79 | Madagascar | 53.33 | 53.33 | 0.43 | ○ |
| 7 | Canada | 72.50 | 72.50 | 0.94 | ● | 79 | Namibia | 53.33 | 53.33 | 0.43 | ○ |
| 7 | India | 72.50 | 72.50 | 0.94 | ● | 79 | Zimbabwe | 53.33 | 53.33 | 0.43 | ○ |
| 10 | Colombia | 71.67 | 71.67 | 0.94 | ● | 82 | Cambodia | 52.50 | 52.50 | 0.42 | ○ |
| 11 | Israel | 70.83 | 70.83 | 0.93 | ● | 83 | Angola | 51.67 | 51.67 | 0.39 | ● |
| 12 | Norway | 70.00 | 70.00 | 0.92 | ● | 83 | Belarus | 51.67 | 51.67 | 0.39 | ○ |
| 13 | Turkey | 69.17 | 69.17 | 0.91 | ● | 83 | Burundi | 51.67 | 51.67 | 0.39 | ● |
| 14 | Bulgaria | 68.33 | 68.33 | 0.89 | ● | 83 | Mozambique | 51.67 | 51.67 | 0.39 | ○ |
| 14 | Cyprus | 68.33 | 68.33 | 0.89 | ● | 83 | Netherlands | 51.67 | 51.67 | 0.39 | ○ |
| 14 | Slovenia | 68.33 | 68.33 | 0.89 | ● | 88 | Russian Federation | 50.83 | 50.83 | 0.36 | ○ |
| 17 | Denmark | 67.50 | 67.50 | 0.86 | ● | 88 | Slovakia | 50.83 | 50.83 | 0.36 | ○ |
| 17 | France | 67.50 | 67.50 | 0.86 | ● | 88 | Uzbekistan | 50.83 | 50.83 | 0.36 | ○ |
| 17 | Mongolia | 67.50 | 67.50 | 0.86 | ● | 91 | Bahrain | 50.00 | 50.00 | 0.35 | ○ |
| 17 | South Africa | 67.50 | 67.50 | 0.86 | ● | 91 | Bhutan | 50.00 | 50.00 | 0.35 | ○ |
| 21 | Italy | 66.67 | 66.67 | 0.84 | ● | 93 | Botswana | 49.17 | 49.17 | 0.33 | ○ |
| 21 | Korea, Rep. | 66.67 | 66.67 | 0.84 | ● | 93 | Lebanon | 49.17 | 49.17 | 0.33 | ○ |
| 21 | Pakistan | 66.67 | 66.67 | 0.84 | ● | 93 | Lesotho | 49.17 | 49.17 | 0.33 | ○ |
| 21 | TFYR of Macedonia | 66.67 | 66.67 | 0.84 | ● | 96 | Ukraine | 48.33 | 48.33 | 0.32 | ○ |
| 25 | Kazakhstan | 65.83 | 65.83 | 0.81 | ● | 97 | Fiji | 47.50 | 47.50 | 0.29 | ○ |
| 25 | Thailand | 65.83 | 65.83 | 0.81 | ● | 97 | Hungary | 47.50 | 47.50 | 0.29 | ○ |
| 25 | United States of America | 65.83 | 65.83 | 0.81 | ● | 97 | Swaziland | 47.50 | 47.50 | 0.29 | ○ |
| 28 | Iceland | 65.00 | 65.00 | 0.80 | ● | 97 | Uganda | 47.50 | 47.50 | 0.29 | ○ |
| 28 | Mauritius | 65.00 | 65.00 | 0.80 | ● | 97 | Uruguay | 47.50 | 47.50 | 0.29 | ○ |
| 30 | Spain | 64.17 | 64.17 | 0.79 | ● | 102 | Cameroon | 46.67 | 46.67 | 0.25 | ○ |
| 31 | Austria | 63.33 | 63.33 | 0.77 | ● | 102 | Ecuador | 46.67 | 46.67 | 0.25 | ○ |
| 31 | Serbia | 63.33 | 63.33 | 0.77 | ● | 102 | Luxembourg | 46.67 | 46.67 | 0.25 | ○ |
| 31 | Sweden | 63.33 | 63.33 | 0.77 | ● | 102 | Rwanda | 46.67 | 46.67 | 0.25 | ○ |
| 34 | Brazil | 62.50 | 62.50 | 0.74 | ● | 102 | Viet Nam | 46.67 | 46.67 | 0.25 | ○ |
| 34 | Japan | 62.50 | 62.50 | 0.74 | ● | 107 | Burkina Faso | 45.83 | 45.83 | 0.20 | ○ |
| 34 | Kyrgyzstan | 62.50 | 62.50 | 0.74 | ● | 107 | Kenya | 45.83 | 45.83 | 0.20 | ○ |
| 34 | Poland | 62.50 | 62.50 | 0.74 | ● | 107 | Morocco | 45.83 | 45.83 | 0.20 | ○ |
| 38 | Belgium | 61.67 | 61.67 | 0.72 | ● | 107 | Oman | 45.83 | 45.83 | 0.20 | ○ |
| 38 | Peru | 61.67 | 61.67 | 0.72 | ● | 107 | Qatar | 45.83 | 45.83 | 0.20 | ○ |
| 38 | Romania | 61.67 | 61.67 | 0.72 | ● | 107 | Senegal | 45.83 | 45.83 | 0.20 | ○ |
| 41 | Bangladesh | 60.83 | 60.83 | 0.68 | ● | 107 | Togo | 45.83 | 45.83 | 0.20 | ○ |
| 41 | Georgia | 60.83 | 60.83 | 0.68 | ● | 114 | Algeria | 45.00 | 45.00 | 0.18 | ○ |
| 41 | Indonesia | 60.83 | 60.83 | 0.68 | ● | 114 | China | 45.00 | 45.00 | 0.18 | ○ |
| 41 | Kuwait | 60.83 | 60.83 | 0.68 | ● | 114 | Malawi | 45.00 | 45.00 | 0.18 | ○ |
| 41 | Montenegro | 60.83 | 60.83 | 0.68 | ● | 117 | Egypt | 44.17 | 44.17 | 0.16 | ○ |
| 41 | United Arab Emirates | 60.83 | 60.83 | 0.68 | ● | 117 | Guyana | 44.17 | 44.17 | 0.16 | ○ |
| 47 | Armenia | 60.00 | 60.00 | 0.66 | ● | 119 | Tanzania, United Rep. | 43.33 | 43.33 | 0.16 | ○ |
| 47 | Latvia | 60.00 | 60.00 | 0.66 | ● | 120 | Côte d'Ivoire | 42.50 | 42.50 | 0.14 | ○ |
| 49 | Azerbaijan | 59.17 | 59.17 | 0.63 | ● | 120 | Mali | 42.50 | 42.50 | 0.14 | ○ |
| 49 | Germany | 59.17 | 59.17 | 0.63 | ● | 120 | Niger | 42.50 | 42.50 | 0.14 | ○ |
| 49 | Malta | 59.17 | 59.17 | 0.63 | ● | 123 | El Salvador | 41.67 | 41.67 | 0.10 | ○ |
| 49 | Portugal | 59.17 | 59.17 | 0.63 | ● | 123 | Ethiopia | 41.67 | 41.67 | 0.10 | ○ |
| 49 | Sri Lanka | 59.17 | 59.17 | 0.63 | ● | 123 | Iran, Islamic Rep. | 41.67 | 41.67 | 0.10 | ○ |
| 54 | Chile | 58.33 | 58.33 | 0.59 | ● | 123 | Jordan | 41.67 | 41.67 | 0.10 | ○ |
| 54 | Estonia | 58.33 | 58.33 | 0.59 | ● | 123 | Philippines | 41.67 | 41.67 | 0.10 | ○ |
| 54 | Ghana | 58.33 | 58.33 | 0.59 | ● | 128 | Bolivia, Plurinational St. | 40.83 | 40.83 | 0.09 | ○ |
| 54 | Moldova, Rep. | 58.33 | 58.33 | 0.59 | ● | 129 | Gambia | 39.17 | 39.17 | 0.07 | ○ |
| 54 | Seychelles | 58.33 | 58.33 | 0.59 | ● | 129 | Guinea | 39.17 | 39.17 | 0.07 | ○ |
| 54 | Tajikistan | 58.33 | 58.33 | 0.59 | ● | 129 | Yemen | 39.17 | 39.17 | 0.07 | ○ |
| 60 | Argentina | 57.50 | 57.50 | 0.54 | ● | 132 | Paraguay | 38.33 | 38.33 | 0.06 | ○ |
| 60 | Croatia | 57.50 | 57.50 | 0.54 | ● | 133 | Cabo Verde | 35.00 | 35.00 | 0.06 | ○ |
| 60 | Greece | 57.50 | 57.50 | 0.54 | ● | 134 | Nicaragua | 33.33 | 33.33 | 0.05 | ○ |
| 60 | Mexico | 57.50 | 57.50 | 0.54 | ● | 135 | Guatemala | 31.67 | 31.67 | 0.03 | ○ |
| 60 | Nigeria | 57.50 | 57.50 | 0.54 | ● | 135 | Honduras | 31.67 | 31.67 | 0.03 | ○ |
| 60 | Saudi Arabia | 57.50 | 57.50 | 0.54 | ● | 135 | Sudan | 31.67 | 31.67 | 0.03 | ○ |
| 60 | Trinidad and Tobago | 57.50 | 57.50 | 0.54 | ● | 138 | Barbados | 30.83 | 30.83 | 0.02 | ○ |
| 67 | Australia | 56.67 | 56.67 | 0.51 | ● | 139 | Myanmar | 29.17 | 29.17 | 0.01 | ○ |
| 67 | Jamaica | 56.67 | 56.67 | 0.51 | ● | 139 | Venezuela, Bolivarian Rep. | 29.17 | 29.17 | 0.01 | ○ |
| 67 | Nepal | 56.67 | 56.67 | 0.51 | ● | 141 | Costa Rica | 28.33 | 28.33 | 0.00 | ○ |
| 70 | Finland | 55.83 | 55.83 | 0.50 | ○ | | | | | | |
| 70 | Panama | 55.83 | 55.83 | 0.50 | ○ | | | | | | |
| 72 | Lithuania | 55.00 | 55.00 | 0.48 | ○ | | | | | | |

SOURCE: World Bank. *Doing Business 2015: Going Beyond Efficiency*
NOTE: ● indicates a strength; ○ a weakness

4.2.2 Market capitalization

Market capitalization of listed companies (% of GDP) | 2012

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|--------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Hong Kong (China) | 421.93 | 100.00 | 0.99 | ● | 73 | United Arab Emirates | 18.25 | 11.07 | 0.33 | ○ |
| 1 | Switzerland | 161.99 | 100.00 | 0.99 | ● | 74 | Czech Republic | 17.97 | 10.90 | 0.32 | ○ |
| 3 | South Africa | 160.15 | 98.86 | 0.98 | ● | 75 | Greece | 17.87 | 10.84 | 0.31 | |
| 4 | Malaysia | 156.04 | 96.32 | 0.97 | ● | 76 | Malawi | 17.77 | 10.78 | 0.30 | |
| 5 | Singapore | 144.34 | 89.08 | 0.96 | | 77 | Hungary | 16.62 | 10.07 | 0.29 | ○ |
| 6 | Luxembourg | 124.95 | 77.09 | 0.95 | | 78 | Bolivia, Plurinational St. | 16.44 | 9.95 | 0.28 | |
| 7 | Chile | 117.68 | 72.58 | 0.94 | ● | 79 | Slovenia | 14.00 | 8.44 | 0.27 | ○ |
| 8 | United States of America | 115.50 | 71.24 | 0.93 | | 80 | Bangladesh | 13.11 | 7.89 | 0.26 | |
| 9 | United Kingdom | 115.47 | 71.22 | 0.93 | | 81 | Bulgaria | 12.68 | 7.63 | 0.25 | ○ |
| 10 | Canada | 110.69 | 68.26 | 0.92 | | 82 | Mongolia | 12.53 | 7.53 | 0.24 | |
| 11 | Barbados | 106.39 | 65.60 | 0.91 | ● | 83 | Nigeria | 12.18 | 7.32 | 0.23 | |
| 12 | Philippines | 105.56 | 65.09 | 0.90 | ● | 84 | Zambia | 12.04 | 7.23 | 0.22 | |
| 13 | Thailand | 104.65 | 64.53 | 0.89 | | 85 | Fiji | 11.75 | 7.05 | 0.21 | |
| 14 | Sweden | 103.06 | 63.54 | 0.88 | | 86 | Ukraine | 11.73 | 7.04 | 0.21 | ○ |
| 15 | Korea, Rep. | 96.54 | 59.51 | 0.87 | | 87 | Kazakhstan | 11.54 | 6.93 | 0.20 | |
| 16 | Zimbabwe | 94.74 | 58.39 | 0.86 | ● | 88 | Estonia | 10.29 | 6.15 | 0.19 | ○ |
| 17 | Montenegro | 94.58 | 58.30 | 0.85 | ● | 89 | Namibia | 10.01 | 5.98 | 0.18 | |
| 18 | Jordan | 87.05 | 53.64 | 0.84 | ● | 90 | Romania | 9.40 | 5.60 | 0.17 | ○ |
| 19 | Australia | 83.84 | 51.65 | 0.83 | | 91 | Lithuania | 9.36 | 5.57 | 0.16 | ○ |
| 20 | Netherlands | 79.09 | 48.71 | 0.82 | | 92 | Cyprus | 8.77 | 5.21 | 0.15 | ○ |
| 21 | Spain | 73.40 | 45.19 | 0.81 | | 93 | Ghana | 8.30 | 4.92 | 0.14 | |
| 22 | Colombia | 70.78 | 43.57 | 0.80 | | 94 | Ecuador | 6.75 | 3.96 | 0.13 | |
| 23 | Denmark | 69.77 | 42.95 | 0.79 | | 95 | Swaziland (2007) | 6.65 | 3.90 | 0.12 | |
| 24 | India | 67.97 | 41.83 | 0.79 | ● | 96 | Venezuela, Bolivarian Rep. | 6.64 | 3.89 | 0.11 | |
| 25 | France | 67.86 | 41.77 | 0.78 | | 97 | Tanzania, United Rep. | 6.38 | 3.73 | 0.10 | |
| 26 | Qatar | 66.41 | 40.87 | 0.77 | | 98 | Georgia | 5.95 | 3.47 | 0.09 | ○ |
| 27 | Trinidad and Tobago | 64.71 | 39.82 | 0.76 | ● | 99 | TFYR of Macedonia | 5.84 | 3.39 | 0.08 | ○ |
| 28 | Finland | 62.04 | 38.17 | 0.75 | | 100 | Argentina | 5.68 | 3.30 | 0.07 | ○ |
| 29 | Mauritius | 61.99 | 38.13 | 0.74 | | 101 | Slovakia | 4.97 | 2.86 | 0.07 | ○ |
| 30 | Japan | 61.82 | 38.03 | 0.73 | | 102 | Costa Rica | 4.44 | 2.53 | 0.06 | ○ |
| 31 | Belgium | 60.15 | 37.00 | 0.72 | | 103 | Uzbekistan (2006) | 4.20 | 2.38 | 0.05 | ○ |
| 32 | Israel | 57.71 | 35.49 | 0.71 | | 104 | Latvia | 3.93 | 2.21 | 0.04 | ○ |
| 33 | Kuwait | 55.79 | 34.30 | 0.70 | ● | 105 | Paraguay | 3.91 | 2.20 | 0.03 | ○ |
| 34 | Morocco | 54.88 | 33.74 | 0.69 | ● | 106 | Kyrgyzstan | 2.50 | 1.33 | 0.02 | ○ |
| 35 | Brazil | 54.69 | 33.62 | 0.68 | | 107 | Armenia | 1.33 | 0.60 | 0.01 | ○ |
| 36 | Bahrain | 52.23 | 32.10 | 0.67 | | 108 | Uruguay | 0.35 | 0.00 | 0.00 | ○ |
| 37 | Saudi Arabia | 50.87 | 31.26 | 0.66 | | n/a | Albania | n/a | n/a | n/a | |
| 38 | Norway | 50.59 | 31.08 | 0.65 | | n/a | Algeria | n/a | n/a | n/a | |
| 39 | Peru | 50.28 | 30.89 | 0.64 | | n/a | Angola | n/a | n/a | n/a | |
| 40 | Ireland | 49.11 | 30.17 | 0.64 | | n/a | Azerbaijan | n/a | n/a | n/a | |
| 41 | New Zealand | 46.54 | 28.58 | 0.63 | | n/a | Belarus | n/a | n/a | n/a | |
| 42 | Indonesia | 45.26 | 27.78 | 0.62 | | n/a | Bhutan | n/a | n/a | n/a | |
| 43 | El Salvador | 45.11 | 27.69 | 0.61 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 44 | China | 44.93 | 27.58 | 0.60 | | n/a | Burkina Faso | n/a | n/a | n/a | |
| 45 | Mexico | 44.25 | 27.16 | 0.59 | | n/a | Burundi | n/a | n/a | n/a | |
| 46 | Russian Federation | 43.35 | 26.60 | 0.58 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 47 | Jamaica | 43.19 | 26.51 | 0.57 | | n/a | Cambodia | n/a | n/a | n/a | |
| 48 | Germany | 42.07 | 25.81 | 0.56 | | n/a | Cameroon | n/a | n/a | n/a | |
| 49 | Malta | 40.97 | 25.13 | 0.55 | | n/a | Dominican Republic | n/a | n/a | n/a | |
| 50 | Turkey | 39.14 | 24.00 | 0.54 | | n/a | Ethiopia | n/a | n/a | n/a | |
| 51 | Croatia | 38.17 | 23.40 | 0.53 | | n/a | Gambia | n/a | n/a | n/a | |
| 52 | Uganda | 36.40 | 22.30 | 0.52 | | n/a | Guatemala | n/a | n/a | n/a | |
| 53 | Poland | 35.82 | 21.94 | 0.51 | | n/a | Guinea | n/a | n/a | n/a | |
| 54 | Panama | 33.05 | 20.23 | 0.50 | | n/a | Honduras | n/a | n/a | n/a | |
| 55 | Botswana | 31.56 | 19.31 | 0.50 | | n/a | Lesotho | n/a | n/a | n/a | |
| 56 | Portugal | 30.06 | 18.38 | 0.49 | | n/a | Madagascar | n/a | n/a | n/a | |
| 57 | Kenya | 29.38 | 17.96 | 0.48 | | n/a | Mali | n/a | n/a | n/a | |
| 58 | Côte d'Ivoire | 28.89 | 17.66 | 0.47 | ● | n/a | Moldova, Rep. | n/a | n/a | n/a | |
| 59 | Sri Lanka | 28.70 | 17.54 | 0.46 | | n/a | Mozambique | n/a | n/a | n/a | |
| 60 | Iran, Islamic Rep. | 28.02 | 17.12 | 0.45 | | n/a | Myanmar | n/a | n/a | n/a | |
| 61 | Austria | 26.02 | 15.88 | 0.44 | ○ | n/a | Nicaragua | n/a | n/a | n/a | |
| 62 | Oman | 25.95 | 15.83 | 0.43 | | n/a | Niger | n/a | n/a | n/a | |
| 63 | Lebanon | 23.83 | 14.53 | 0.42 | | n/a | Rwanda | n/a | n/a | n/a | |
| 64 | Italy | 22.97 | 13.99 | 0.41 | | n/a | Senegal | n/a | n/a | n/a | |
| 65 | Egypt | 22.07 | 13.44 | 0.40 | | n/a | Seychelles | n/a | n/a | n/a | |
| 66 | Nepal | 21.66 | 13.18 | 0.39 | | n/a | Sudan | n/a | n/a | n/a | |
| 67 | Guyana | 21.43 | 13.04 | 0.38 | | n/a | Tajikistan | n/a | n/a | n/a | |
| 68 | Viet Nam | 21.14 | 12.86 | 0.37 | | n/a | Togo | n/a | n/a | n/a | |
| 69 | Iceland | 19.92 | 12.10 | 0.36 | ○ | n/a | Yemen | n/a | n/a | n/a | |
| 70 | Tunisia | 19.64 | 11.94 | 0.36 | | | | | | | |
| 71 | Pakistan | 19.47 | 11.83 | 0.35 | | | | | | | |
| 72 | Serbia | 18.27 | 11.08 | 0.34 | | | | | | | |

SOURCE: Standard and Poor's, Global Stock Markets Factbook and supplemental S&P data; extracted from World Bank *World Development Indicators* database

NOTE: ● indicates a strength; ○ a weakness

4.2.3 Total value of stocks traded

Stocks traded, total value (% of GDP) | 2012

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|--------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Hong Kong (China) | 468.12 | 100.00 | 0.98 | ● | 73 | Serbia | 0.71 | 0.57 | 0.33 | |
| 1 | Korea, Rep. | 123.80 | 100.00 | 0.98 | ● | 74 | Bulgaria | 0.69 | 0.55 | 0.32 | |
| 1 | United States of America | 132.25 | 100.00 | 0.98 | ● | 75 | Ukraine | 0.68 | 0.55 | 0.31 | |
| 4 | Switzerland | 96.23 | 77.73 | 0.97 | | 76 | Côte d'Ivoire | 0.60 | 0.48 | 0.31 | |
| 5 | United Kingdom | 95.17 | 76.87 | 0.96 | | 77 | Kazakhstan | 0.55 | 0.44 | 0.30 | |
| 6 | South Africa | 81.55 | 65.87 | 0.95 | ● | 78 | Trinidad and Tobago | 0.50 | 0.40 | 0.29 | |
| 7 | Spain | 79.44 | 64.17 | 0.94 | ● | 79 | Malta | 0.49 | 0.39 | 0.28 | ○ |
| 8 | China | 70.80 | 57.19 | 0.94 | | 80 | Barbados | 0.43 | 0.35 | 0.27 | |
| 9 | Saudi Arabia | 70.09 | 56.61 | 0.93 | ● | 81 | Lithuania | 0.40 | 0.32 | 0.26 | ○ |
| 10 | Sweden | 69.17 | 55.87 | 0.92 | | 82 | Mongolia | 0.40 | 0.32 | 0.25 | |
| 11 | Australia | 68.54 | 55.36 | 0.91 | | 83 | Malawi | 0.38 | 0.31 | 0.24 | |
| 12 | Canada | 66.32 | 53.57 | 0.90 | | 84 | TFYR of Macedonia | 0.32 | 0.26 | 0.23 | ○ |
| 13 | Thailand | 62.70 | 50.65 | 0.89 | ● | 85 | Panama | 0.30 | 0.24 | 0.22 | |
| 14 | Japan | 60.55 | 48.91 | 0.88 | | 86 | Nepal | 0.26 | 0.21 | 0.21 | |
| 15 | Singapore | 54.53 | 44.04 | 0.87 | | 87 | Argentina | 0.24 | 0.19 | 0.20 | |
| 16 | Netherlands | 53.61 | 43.30 | 0.86 | | 88 | Moldova, Rep. (2009) | 0.24 | 0.19 | 0.19 | ○ |
| 17 | Finland | 49.26 | 39.79 | 0.85 | | 89 | El Salvador | 0.22 | 0.18 | 0.19 | |
| 18 | Turkey | 44.18 | 35.68 | 0.84 | ● | 90 | Paraguay | 0.21 | 0.17 | 0.18 | |
| 19 | France | 41.93 | 33.87 | 0.83 | | 91 | Luxembourg | 0.21 | 0.16 | 0.17 | ○ |
| 20 | Malaysia | 40.78 | 32.94 | 0.82 | | 92 | Uzbekistan (2011) | 0.18 | 0.15 | 0.16 | |
| 21 | Brazil | 37.11 | 29.97 | 0.81 | ● | 93 | Slovakia | 0.18 | 0.14 | 0.15 | ○ |
| 22 | Italy | 36.32 | 29.33 | 0.81 | | 94 | Fiji | 0.17 | 0.14 | 0.14 | ○ |
| 23 | Russian Federation | 36.30 | 29.32 | 0.80 | | 95 | Namibia | 0.16 | 0.13 | 0.13 | ○ |
| 24 | Germany | 34.69 | 28.02 | 0.79 | | 96 | Ecuador | 0.16 | 0.12 | 0.12 | ○ |
| 25 | India | 33.49 | 27.05 | 0.78 | ● | 97 | Ghana | 0.13 | 0.10 | 0.11 | |
| 26 | Denmark | 32.74 | 26.45 | 0.77 | | 98 | Latvia | 0.11 | 0.09 | 0.10 | ○ |
| 27 | Norway | 26.57 | 21.46 | 0.76 | | 99 | Tanzania, United Rep. | 0.09 | 0.07 | 0.09 | |
| 28 | Israel | 26.18 | 21.15 | 0.75 | | 100 | Kyrgyzstan | 0.08 | 0.07 | 0.08 | |
| 29 | Belgium | 20.70 | 16.72 | 0.74 | | 101 | Costa Rica | 0.07 | 0.06 | 0.07 | ○ |
| 30 | Chile | 17.55 | 14.18 | 0.73 | | 102 | Bolivia, Plurinational St. | 0.07 | 0.06 | 0.06 | ○ |
| 31 | New Zealand | 14.58 | 11.78 | 0.72 | | 103 | Uganda | 0.06 | 0.04 | 0.06 | ○ |
| 32 | Philippines | 13.86 | 11.20 | 0.71 | ● | 104 | Guyana (2008) | 0.04 | 0.03 | 0.05 | ○ |
| 33 | Poland | 13.55 | 10.95 | 0.70 | | 105 | Georgia | 0.01 | 0.01 | 0.04 | ○ |
| 34 | Kuwait | 13.21 | 10.67 | 0.69 | ● | 106 | Armenia | 0.01 | 0.01 | 0.03 | ○ |
| 35 | Zimbabwe | 12.91 | 10.42 | 0.69 | ● | 107 | Venezuela, Bolivarian Rep. | 0.01 | 0.01 | 0.02 | ○ |
| 36 | Portugal | 12.21 | 9.86 | 0.68 | | 108 | Uruguay | 0.00 | 0.00 | 0.01 | ○ |
| 37 | Austria | 11.58 | 9.36 | 0.67 | | 109 | Swaziland (2006) | 0.00 | 0.00 | 0.00 | ○ |
| 38 | Indonesia | 10.46 | 8.45 | 0.66 | | n/a | Albania | n/a | n/a | n/a | |
| 39 | Mexico | 9.96 | 8.04 | 0.65 | | n/a | Algeria | n/a | n/a | n/a | |
| 40 | Bangladesh | 9.41 | 7.60 | 0.64 | ● | n/a | Angola | n/a | n/a | n/a | |
| 41 | Jordan | 8.99 | 7.26 | 0.63 | | n/a | Azerbaijan | n/a | n/a | n/a | |
| 42 | Hungary | 8.58 | 6.93 | 0.62 | | n/a | Belarus | n/a | n/a | n/a | |
| 43 | Qatar | 8.05 | 6.50 | 0.61 | | n/a | Bhutan | n/a | n/a | n/a | |
| 44 | Egypt | 7.67 | 6.19 | 0.60 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 45 | Colombia | 7.02 | 5.67 | 0.59 | | n/a | Burkina Faso | n/a | n/a | n/a | |
| 46 | Greece | 5.95 | 4.80 | 0.58 | | n/a | Burundi | n/a | n/a | n/a | |
| 47 | Ireland | 5.46 | 4.41 | 0.57 | ○ | n/a | Cabo Verde | n/a | n/a | n/a | |
| 48 | Pakistan | 5.33 | 4.31 | 0.56 | ● | n/a | Cambodia | n/a | n/a | n/a | |
| 49 | Czech Republic | 4.94 | 3.99 | 0.56 | | n/a | Cameroon | n/a | n/a | n/a | |
| 50 | Iceland | 4.83 | 3.90 | 0.55 | | n/a | Dominican Republic | n/a | n/a | n/a | |
| 51 | United Arab Emirates | 4.74 | 3.83 | 0.54 | | n/a | Ethiopia | n/a | n/a | n/a | |
| 52 | Iran, Islamic Rep. | 4.39 | 3.54 | 0.53 | | n/a | Gambia | n/a | n/a | n/a | |
| 53 | Morocco | 3.65 | 2.95 | 0.52 | | n/a | Guatemala | n/a | n/a | n/a | |
| 54 | Oman | 3.42 | 2.76 | 0.51 | | n/a | Guinea | n/a | n/a | n/a | |
| 55 | Sri Lanka | 2.82 | 2.28 | 0.50 | | n/a | Honduras | n/a | n/a | n/a | |
| 56 | Tunisia | 2.77 | 2.23 | 0.49 | | n/a | Lesotho | n/a | n/a | n/a | |
| 57 | Mauritius | 2.59 | 2.09 | 0.48 | | n/a | Madagascar | n/a | n/a | n/a | |
| 58 | Peru | 2.59 | 2.09 | 0.47 | | n/a | Mali | n/a | n/a | n/a | |
| 59 | Viet Nam | 2.17 | 1.75 | 0.46 | | n/a | Mozambique | n/a | n/a | n/a | |
| 60 | Kenya | 2.00 | 1.62 | 0.45 | | n/a | Myanmar | n/a | n/a | n/a | |
| 61 | Jamaica | 1.39 | 1.12 | 0.44 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 62 | Cyprus | 1.28 | 1.03 | 0.44 | | n/a | Niger | n/a | n/a | n/a | |
| 63 | Romania | 1.26 | 1.01 | 0.43 | | n/a | Rwanda | n/a | n/a | n/a | |
| 64 | Montenegro | 1.06 | 0.85 | 0.42 | | n/a | Senegal | n/a | n/a | n/a | |
| 65 | Bahrain | 1.00 | 0.81 | 0.41 | | n/a | Seychelles | n/a | n/a | n/a | |
| 66 | Lebanon | 0.94 | 0.76 | 0.40 | | n/a | Sudan | n/a | n/a | n/a | |
| 67 | Nigeria | 0.91 | 0.73 | 0.39 | | n/a | Tajikistan | n/a | n/a | n/a | |
| 68 | Croatia | 0.87 | 0.70 | 0.38 | ○ | n/a | Togo | n/a | n/a | n/a | |
| 69 | Slovenia | 0.86 | 0.70 | 0.37 | ○ | n/a | Yemen | n/a | n/a | n/a | |
| 70 | Estonia | 0.79 | 0.64 | 0.36 | ○ | | | | | | |
| 71 | Zambia | 0.78 | 0.63 | 0.35 | | | | | | | |
| 72 | Botswana | 0.78 | 0.63 | 0.34 | | | | | | | |

SOURCE: Standard and Poor's, Global Stock Markets Factbook and supplemental S&P data; extracted from World Bank *World Development Indicators* database
NOTE: ● indicates a strength; ○ a weakness

4.2.4 Venture capital deals

Venture capital per investment location: Number of deals (per trillion PPP\$ GDP) | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | Rank | Country/Economy | Value | Score (0–100) | Percent rank | | |
|------|--------------------------|-------|---------------|--------------|------|-----------------|----------------------------|---------------|--------------|------|---|
| 1 | Finland | 1.21 | 100.00 | 0.99 | ● | 73 | Pakistan | 0.00 | 0.00 | 0.00 | ○ |
| 1 | Mauritius | 0.81 | 100.00 | 0.99 | ● | n/a | Albania | n/a | n/a | n/a | |
| 3 | Israel | 0.78 | 96.16 | 0.97 | ● | n/a | Algeria | n/a | n/a | n/a | |
| 4 | Canada | 0.74 | 90.43 | 0.96 | ● | n/a | Angola | n/a | n/a | n/a | |
| 5 | Luxembourg | 0.68 | 83.67 | 0.94 | | n/a | Azerbaijan | n/a | n/a | n/a | |
| 6 | United States of America | 0.66 | 80.74 | 0.93 | | n/a | Bahrain | n/a | n/a | n/a | |
| 7 | Switzerland | 0.57 | 70.42 | 0.92 | | n/a | Bangladesh | n/a | n/a | n/a | |
| 8 | Denmark | 0.47 | 58.08 | 0.90 | | n/a | Barbados | n/a | n/a | n/a | |
| 9 | Ireland | 0.41 | 49.80 | 0.89 | | n/a | Belarus | n/a | n/a | n/a | |
| 10 | Hong Kong (China) | 0.37 | 46.00 | 0.88 | | n/a | Bhutan | n/a | n/a | n/a | |
| 11 | Singapore | 0.36 | 43.64 | 0.86 | | n/a | Bolivia, Plurinational St. | n/a | n/a | n/a | |
| 12 | United Kingdom | 0.35 | 42.94 | 0.85 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 13 | Sweden | 0.30 | 36.39 | 0.83 | | n/a | Botswana | n/a | n/a | n/a | |
| 14 | Estonia | 0.25 | 30.96 | 0.82 | | n/a | Burkina Faso | n/a | n/a | n/a | |
| 15 | France | 0.24 | 29.86 | 0.81 | | n/a | Burundi | n/a | n/a | n/a | |
| 16 | Germany | 0.16 | 20.10 | 0.79 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 17 | Norway | 0.16 | 19.83 | 0.78 | | n/a | Cambodia | n/a | n/a | n/a | |
| 18 | Lithuania | 0.15 | 18.41 | 0.76 | | n/a | Cameroon | n/a | n/a | n/a | |
| 19 | Portugal | 0.15 | 17.86 | 0.75 | | n/a | Costa Rica | n/a | n/a | n/a | |
| 20 | Iceland | 0.14 | 17.19 | 0.74 | | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 21 | Netherlands | 0.13 | 15.58 | 0.72 | | n/a | Croatia | n/a | n/a | n/a | |
| 22 | New Zealand | 0.11 | 13.81 | 0.71 | | n/a | Dominican Republic | n/a | n/a | n/a | |
| 23 | Kenya | 0.11 | 13.81 | 0.69 | | n/a | Ecuador | n/a | n/a | n/a | |
| 24 | Jordan | 0.11 | 13.78 | 0.68 | | n/a | Egypt | n/a | n/a | n/a | |
| 25 | Spain | 0.11 | 13.54 | 0.67 | | n/a | El Salvador | n/a | n/a | n/a | |
| 26 | Austria | 0.10 | 12.31 | 0.65 | | n/a | Fiji | n/a | n/a | n/a | |
| 27 | Lebanon | 0.10 | 12.00 | 0.64 | | n/a | Gambia | n/a | n/a | n/a | |
| 28 | Belgium | 0.09 | 10.60 | 0.63 | | n/a | Guatemala | n/a | n/a | n/a | |
| 29 | Australia | 0.09 | 10.42 | 0.61 | | n/a | Guinea | n/a | n/a | n/a | |
| 30 | Armenia | 0.08 | 10.00 | 0.60 | | n/a | Guyana | n/a | n/a | n/a | |
| 31 | Cyprus | 0.07 | 8.84 | 0.58 | | n/a | Honduras | n/a | n/a | n/a | |
| 32 | Uruguay | 0.07 | 8.66 | 0.57 | | n/a | Iran, Islamic Rep. | n/a | n/a | n/a | |
| 33 | Japan | 0.07 | 8.49 | 0.56 | | n/a | Jamaica | n/a | n/a | n/a | |
| 34 | China | 0.07 | 8.42 | 0.54 | | n/a | Kazakhstan | n/a | n/a | n/a | |
| 35 | India | 0.06 | 7.65 | 0.53 | | n/a | Kyrgyzstan | n/a | n/a | n/a | |
| 36 | Latvia | 0.06 | 7.52 | 0.51 | | n/a | Lesotho | n/a | n/a | n/a | |
| 37 | Georgia | 0.06 | 7.06 | 0.50 | | n/a | Madagascar | n/a | n/a | n/a | |
| 38 | Korea, Rep. | 0.05 | 6.57 | 0.49 | | n/a | Malawi | n/a | n/a | n/a | |
| 39 | Uganda | 0.05 | 6.26 | 0.47 | | n/a | Mali | n/a | n/a | n/a | |
| 40 | Czech Republic | 0.05 | 5.73 | 0.46 | | n/a | Malta | n/a | n/a | n/a | |
| 41 | Zimbabwe | 0.04 | 4.40 | 0.44 | | n/a | Moldova, Rep. | n/a | n/a | n/a | |
| 42 | Hungary | 0.04 | 4.36 | 0.43 | | n/a | Mongolia | n/a | n/a | n/a | |
| 43 | Italy | 0.04 | 4.32 | 0.42 | | n/a | Montenegro | n/a | n/a | n/a | |
| 44 | Russian Federation | 0.03 | 4.04 | 0.40 | | n/a | Morocco | n/a | n/a | n/a | |
| 45 | Nicaragua | 0.03 | 4.04 | 0.39 | | n/a | Mozambique | n/a | n/a | n/a | |
| 46 | Malaysia | 0.03 | 3.49 | 0.38 | | n/a | Myanmar | n/a | n/a | n/a | |
| 47 | Ghana | 0.03 | 3.27 | 0.36 | | n/a | Namibia | n/a | n/a | n/a | |
| 48 | United Arab Emirates | 0.03 | 2.94 | 0.35 | ○ | n/a | Nepal | n/a | n/a | n/a | |
| 49 | Greece | 0.02 | 2.89 | 0.33 | | n/a | Niger | n/a | n/a | n/a | |
| 50 | Philippines | 0.02 | 2.53 | 0.32 | | n/a | Paraguay | n/a | n/a | n/a | |
| 51 | Ukraine | 0.02 | 2.52 | 0.31 | | n/a | Peru | n/a | n/a | n/a | |
| 52 | Brazil | 0.02 | 2.39 | 0.29 | | n/a | Qatar | n/a | n/a | n/a | |
| 53 | Poland | 0.02 | 2.31 | 0.28 | ○ | n/a | Rwanda | n/a | n/a | n/a | |
| 54 | South Africa | 0.02 | 2.31 | 0.26 | ○ | n/a | Senegal | n/a | n/a | n/a | |
| 55 | Slovenia | 0.02 | 1.87 | 0.25 | ○ | n/a | Serbia | n/a | n/a | n/a | |
| 56 | Tanzania, United Rep. | 0.02 | 1.80 | 0.24 | | n/a | Seychelles | n/a | n/a | n/a | |
| 57 | Panama | 0.01 | 1.47 | 0.22 | | n/a | Slovakia | n/a | n/a | n/a | |
| 58 | Argentina | 0.01 | 1.42 | 0.21 | | n/a | Sri Lanka | n/a | n/a | n/a | |
| 59 | Thailand | 0.01 | 1.36 | 0.19 | ○ | n/a | Sudan | n/a | n/a | n/a | |
| 60 | Viet Nam | 0.01 | 1.31 | 0.18 | ○ | n/a | Swaziland | n/a | n/a | n/a | |
| 61 | Colombia | 0.01 | 1.01 | 0.17 | ○ | n/a | Tajikistan | n/a | n/a | n/a | |
| 62 | Mexico | 0.01 | 1.01 | 0.15 | ○ | n/a | TFYR of Macedonia | n/a | n/a | n/a | |
| 63 | Bulgaria | 0.01 | 0.82 | 0.14 | ○ | n/a | Togo | n/a | n/a | n/a | |
| 64 | Ethiopia | 0.01 | 0.71 | 0.13 | | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 65 | Indonesia | 0.01 | 0.69 | 0.11 | | n/a | Tunisia | n/a | n/a | n/a | |
| 66 | Oman | 0.01 | 0.62 | 0.10 | ○ | n/a | Uzbekistan | n/a | n/a | n/a | |
| 67 | Romania | 0.01 | 0.49 | 0.08 | ○ | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 68 | Chile | 0.00 | 0.46 | 0.07 | ○ | n/a | Yemen | n/a | n/a | n/a | |
| 69 | Turkey | 0.00 | 0.43 | 0.06 | ○ | n/a | Zambia | n/a | n/a | n/a | |
| 70 | Nigeria | 0.00 | 0.33 | 0.04 | | | | | | | |
| 71 | Kuwait | 0.00 | 0.29 | 0.03 | ○ | | | | | | |
| 72 | Saudi Arabia | 0.00 | 0.17 | 0.01 | ○ | | | | | | |

SOURCE: Thomson Reuters, Thomson One Banker Private Equity database; International Monetary Fund World Economic Outlook Database, 2015 (PPP\$ GDP)

NOTE: ● indicates a strength; ○ a weakness

4.3.1

Applied tariff rate, weighted mean

Tariff rate, applied, weighted mean, all products (%) | 2012

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Singapore (2009) | 0.07 | 100.00 | 1.00 | ● | 73 | Saudi Arabia | 4.30 | 85.03 | 0.48 | |
| 2 | Norway | 0.30 | 99.19 | 0.99 | ● | 74 | Kuwait | 4.37 | 84.78 | 0.47 | |
| 3 | Georgia | 0.68 | 97.84 | 0.99 | ● | 75 | Colombia | 4.41 | 84.64 | 0.46 | |
| 4 | Israel | 0.73 | 97.66 | 0.98 | ● | 76 | Azerbaijan | 4.48 | 84.39 | 0.46 | |
| 5 | Canada | 0.83 | 97.31 | 0.96 | ● | 77 | Rwanda | 4.64 | 83.82 | 0.45 | |
| 5 | Mauritius | 0.83 | 97.31 | 0.96 | ● | 78 | Mozambique (2010) | 4.75 | 83.43 | 0.44 | |
| 7 | Switzerland (2009) | 0.99 | 96.74 | 0.96 | | 79 | Philippines (2010) | 4.77 | 83.36 | 0.43 | |
| 8 | Iceland | 1.01 | 96.67 | 0.95 | | 80 | Lebanon (2007) | 4.81 | 83.22 | 0.43 | |
| 9 | Austria | 1.02 | 96.64 | 0.75 | | 81 | Thailand (2009) | 4.92 | 82.83 | 0.42 | |
| 9 | Belgium | 1.02 | 96.64 | 0.75 | | 82 | Russian Federation | 4.99 | 82.58 | 0.41 | |
| 9 | Bulgaria | 1.02 | 96.64 | 0.75 | | 83 | Mongolia (2011) | 5.13 | 82.09 | 0.40 | |
| 9 | Cyprus | 1.02 | 96.64 | 0.75 | | 83 | Uzbekistan | 5.13 | 82.09 | 0.40 | |
| 9 | Czech Republic | 1.02 | 96.64 | 0.75 | | 85 | Jordan (2009) | 5.18 | 81.91 | 0.39 | |
| 9 | Denmark | 1.02 | 96.64 | 0.75 | | 86 | Tajikistan | 5.23 | 81.73 | 0.38 | |
| 9 | Estonia | 1.02 | 96.64 | 0.75 | | 87 | Argentina | 5.56 | 80.57 | 0.38 | |
| 9 | Finland | 1.02 | 96.64 | 0.75 | | 88 | Viet Nam (2010) | 5.66 | 80.21 | 0.37 | |
| 9 | France | 1.02 | 96.64 | 0.75 | | 89 | Bahrain | 5.69 | 80.11 | 0.36 | |
| 9 | Germany | 1.02 | 96.64 | 0.75 | | 90 | Serbia (2005) | 6.03 | 78.90 | 0.36 | |
| 9 | Greece | 1.02 | 96.64 | 0.75 | | 91 | Dominican Republic (2010) | 6.09 | 78.69 | 0.35 | |
| 9 | Hungary | 1.02 | 96.64 | 0.75 | | 92 | Yemen | 6.23 | 78.19 | 0.34 | ● |
| 9 | Ireland | 1.02 | 96.64 | 0.75 | | 93 | Botswana | 6.39 | 77.63 | 0.33 | |
| 9 | Italy | 1.02 | 96.64 | 0.75 | | 94 | Burundi | 6.41 | 77.56 | 0.32 | |
| 9 | Latvia | 1.02 | 96.64 | 0.75 | | 94 | Malawi | 6.41 | 77.56 | 0.32 | |
| 9 | Lithuania | 1.02 | 96.64 | 0.75 | | 96 | Honduras (2009) | 6.46 | 77.38 | 0.31 | |
| 9 | Luxembourg | 1.02 | 96.64 | 0.75 | | 97 | Guyana | 6.50 | 77.24 | 0.30 | |
| 9 | Malta | 1.02 | 96.64 | 0.75 | | 98 | Uganda | 6.68 | 76.60 | 0.30 | |
| 9 | Netherlands | 1.02 | 96.64 | 0.75 | | 99 | Sri Lanka | 6.74 | 76.39 | 0.29 | |
| 9 | Poland | 1.02 | 96.64 | 0.75 | | 100 | Côte d'Ivoire | 6.79 | 76.21 | 0.28 | |
| 9 | Portugal | 1.02 | 96.64 | 0.75 | | 101 | Namibia | 6.92 | 75.75 | 0.28 | |
| 9 | Romania | 1.02 | 96.64 | 0.75 | ● | 102 | Swaziland | 6.98 | 75.54 | 0.27 | |
| 9 | Slovakia | 1.02 | 96.64 | 0.75 | | 103 | Angola (2009) | 7.44 | 73.91 | 0.26 | ● |
| 9 | Slovenia | 1.02 | 96.64 | 0.75 | | 104 | Jamaica (2011) | 7.45 | 73.88 | 0.25 | |
| 9 | Spain | 1.02 | 96.64 | 0.75 | | 105 | Panama (2009) | 7.61 | 73.31 | 0.25 | |
| 9 | Sweden | 1.02 | 96.64 | 0.75 | | 106 | Brazil | 7.73 | 72.88 | 0.24 | |
| 9 | United Kingdom | 1.02 | 96.64 | 0.75 | | 107 | Senegal | 8.02 | 71.86 | 0.23 | |
| 36 | Albania | 1.09 | 96.39 | 0.75 | ● | 108 | Egypt (2009) | 8.05 | 71.75 | 0.22 | |
| 37 | Japan | 1.22 | 95.93 | 0.74 | | 109 | India (2009) | 8.18 | 71.29 | 0.22 | |
| 38 | Croatia | 1.37 | 95.40 | 0.73 | | 110 | Burkina Faso | 8.35 | 70.69 | 0.21 | |
| 39 | Bosnia and Herzegovina | 1.41 | 95.26 | 0.72 | ● | 111 | Mali | 8.40 | 70.51 | 0.20 | |
| 40 | Peru (2011) | 1.51 | 94.90 | 0.72 | | 112 | Ghana (2009) | 8.58 | 69.88 | 0.20 | |
| 41 | United States of America | 1.54 | 94.80 | 0.71 | | 113 | Algeria (2009) | 8.61 | 69.77 | 0.19 | |
| 42 | New Zealand (2010) | 1.62 | 94.51 | 0.70 | | 114 | Venezuela, Bolivarian Rep. | 8.62 | 69.73 | 0.18 | |
| 43 | Australia (2011) | 1.81 | 93.84 | 0.70 | | 115 | Korea, Rep. (2010) | 8.71 | 69.42 | 0.17 | ○ |
| 44 | TFYR of Macedonia | 1.86 | 93.66 | 0.69 | | 116 | Madagascar | 9.14 | 67.89 | 0.17 | |
| 45 | Belarus | 1.95 | 93.35 | 0.68 | | 117 | Pakistan (2009) | 9.53 | 66.51 | 0.16 | |
| 46 | Ukraine | 2.06 | 92.96 | 0.67 | | 118 | Niger | 9.68 | 65.98 | 0.15 | |
| 47 | Mexico (2010) | 2.19 | 92.50 | 0.67 | | 119 | Fiji (2011) | 9.89 | 65.24 | 0.14 | ○ |
| 48 | Armenia | 2.29 | 92.14 | 0.66 | | 120 | Cambodia (2008) | 9.91 | 65.17 | 0.14 | |
| 49 | Nicaragua (2010) | 2.30 | 92.11 | 0.65 | ● | 121 | Trinidad and Tobago (2008) | 10.03 | 64.74 | 0.13 | |
| 50 | El Salvador | 2.42 | 91.68 | 0.64 | | 122 | Cabo Verde (2011) | 10.20 | 64.14 | 0.12 | |
| 50 | Kyrgyzstan | 2.42 | 91.68 | 0.64 | | 123 | Ethiopia | 10.33 | 63.68 | 0.12 | |
| 52 | Indonesia (2011) | 2.59 | 91.08 | 0.63 | | 124 | Kenya | 10.49 | 63.12 | 0.11 | |
| 53 | Moldova, Rep. | 2.62 | 90.97 | 0.62 | | 125 | Nigeria (2010) | 10.55 | 62.90 | 0.10 | |
| 54 | Montenegro | 2.63 | 90.94 | 0.62 | | 126 | Togo | 11.08 | 61.03 | 0.09 | |
| 55 | Guatemala | 2.74 | 90.55 | 0.60 | | 127 | Tanzania, United Rep. | 11.54 | 59.40 | 0.09 | |
| 55 | Turkey (2011) | 2.74 | 90.55 | 0.60 | | 128 | Nepal | 11.57 | 59.29 | 0.08 | ○ |
| 57 | Kazakhstan | 2.96 | 89.77 | 0.59 | | 129 | Guinea | 11.91 | 58.09 | 0.07 | |
| 58 | Costa Rica (2010) | 3.09 | 89.31 | 0.59 | | 130 | Gambia | 12.49 | 56.04 | 0.07 | ○ |
| 59 | Myanmar (2008) | 3.18 | 88.99 | 0.58 | ● | 131 | Cameroon | 12.65 | 55.47 | 0.06 | ○ |
| 60 | Morocco | 3.40 | 88.21 | 0.57 | | 132 | Lesotho | 12.70 | 55.29 | 0.05 | ○ |
| 61 | Bolivia, Plurinational St. | 3.66 | 87.29 | 0.57 | ● | 133 | Bangladesh (2008) | 13.00 | 54.23 | 0.04 | ○ |
| 62 | United Arab Emirates | 3.77 | 86.90 | 0.56 | | 134 | Sudan (2011) | 14.73 | 48.11 | 0.04 | ○ |
| 63 | Malaysia (2009) | 3.95 | 86.27 | 0.55 | | 135 | Barbados (2007) | 14.77 | 47.96 | 0.03 | ○ |
| 64 | Chile (2010) | 4.02 | 86.02 | 0.54 | | 136 | Tunisia (2008) | 15.95 | 43.79 | 0.02 | ○ |
| 65 | Oman | 4.08 | 85.81 | 0.54 | | 137 | Bhutan (2007) | 17.75 | 37.42 | 0.01 | ○ |
| 66 | China (2011) | 4.10 | 85.73 | 0.53 | | 138 | Iran, Islamic Rep. (2011) | 21.77 | 23.19 | 0.01 | ○ |
| 67 | Qatar | 4.12 | 85.66 | 0.51 | | 139 | Seychelles (2007) | 28.32 | 0.00 | 0.00 | ○ |
| 67 | Zambia | 4.12 | 85.66 | 0.51 | | n/a | Hong Kong (China) | n/a | n/a | n/a | |
| 69 | Uruguay | 4.13 | 85.63 | 0.51 | | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | South Africa | 4.24 | 85.24 | 0.50 | | | | | | | |
| 71 | Ecuador | 4.26 | 85.17 | 0.49 | | | | | | | |
| 72 | Paraguay | 4.29 | 85.06 | 0.49 | | | | | | | |

SOURCE: World Bank, based on UNCTAD TRAINS, WTO, IDB, CTS, and UN COMTRADE databases; extracted from World Bank *World Development Indicators* database

NOTE: ● indicates a strength; ○ a weakness

4.3.2 Intensity of local competition

Average answer to the survey question: In your country, how intense is competition in the local markets? [1 = not intense at all; 7 = extremely intense] | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Japan | 6.37 | 89.52 | 1.00 | ● | 73 | Malawi | 4.95 | 65.77 | 0.45 | |
| 2 | Malta | 6.09 | 84.76 | 0.99 | ● | 74 | Zimbabwe | 4.94 | 65.62 | 0.45 | |
| 3 | Hong Kong (China) | 6.06 | 84.30 | 0.98 | ● | 75 | Rwanda | 4.93 | 65.56 | 0.44 | |
| 4 | United Kingdom | 6.05 | 84.22 | 0.98 | ● | 76 | Bangladesh | 4.92 | 65.37 | 0.43 | |
| 5 | Belgium | 6.05 | 84.09 | 0.97 | ● | 77 | Iceland | 4.90 | 64.92 | 0.42 | |
| 6 | Australia | 5.99 | 83.24 | 0.96 | ● | 78 | Senegal | 4.89 | 64.75 | 0.42 | |
| 7 | United Arab Emirates | 5.96 | 82.60 | 0.95 | ● | 79 | Mongolia | 4.88 | 64.73 | 0.41 | |
| 8 | United States of America | 5.94 | 82.28 | 0.95 | | 80 | Croatia | 4.88 | 64.71 | 0.40 | |
| 9 | Turkey | 5.93 | 82.16 | 0.94 | ● | 81 | Pakistan | 4.87 | 64.53 | 0.39 | |
| 10 | Germany | 5.91 | 81.84 | 0.93 | | 82 | Armenia | 4.87 | 64.48 | 0.39 | |
| 11 | Korea, Rep. | 5.89 | 81.52 | 0.92 | | 83 | Cambodia | 4.86 | 64.30 | 0.38 | |
| 12 | Netherlands | 5.87 | 81.10 | 0.92 | | 84 | Gambia | 4.85 | 64.23 | 0.37 | |
| 13 | Austria | 5.82 | 80.29 | 0.91 | ● | 85 | Honduras | 4.81 | 63.45 | 0.36 | |
| 14 | Sri Lanka | 5.76 | 79.41 | 0.90 | ● | 86 | El Salvador | 4.80 | 63.39 | 0.36 | |
| 15 | Czech Republic | 5.73 | 78.88 | 0.89 | | 87 | Madagascar | 4.80 | 63.26 | 0.35 | |
| 16 | Qatar | 5.73 | 78.75 | 0.89 | | 88 | India | 4.79 | 63.09 | 0.34 | |
| 17 | Switzerland | 5.71 | 78.48 | 0.88 | | 89 | Tunisia | 4.78 | 62.94 | 0.33 | |
| 18 | Singapore | 5.67 | 77.75 | 0.87 | | 90 | Lesotho | 4.77 | 62.86 | 0.33 | |
| 19 | Kenya | 5.66 | 77.64 | 0.86 | ● | 91 | Nepal | 4.77 | 62.77 | 0.32 | |
| 20 | Lithuania | 5.62 | 77.07 | 0.86 | ● | 92 | Botswana | 4.75 | 62.44 | 0.31 | |
| 21 | Latvia | 5.61 | 76.84 | 0.85 | | 93 | Mozambique | 4.72 | 61.93 | 0.30 | |
| 22 | Mauritius | 5.60 | 76.73 | 0.84 | | 94 | Mali | 4.70 | 61.73 | 0.30 | |
| 23 | Zambia | 5.59 | 76.57 | 0.83 | ● | 95 | Moldova, Rep. | 4.68 | 61.35 | 0.29 | |
| 24 | New Zealand | 5.59 | 76.54 | 0.83 | | 96 | Myanmar | 4.68 | 61.34 | 0.28 | ● |
| 25 | Chile | 5.59 | 76.51 | 0.82 | | 97 | Ukraine | 4.68 | 61.33 | 0.27 | |
| 26 | Barbados | 5.58 | 76.41 | 0.81 | | 98 | Guyana | 4.67 | 61.12 | 0.27 | |
| 27 | Estonia | 5.55 | 75.83 | 0.80 | | 99 | Uruguay | 4.66 | 61.05 | 0.26 | |
| 28 | Lebanon | 5.52 | 75.27 | 0.80 | ● | 100 | Namibia | 4.64 | 60.67 | 0.25 | |
| 29 | France | 5.51 | 75.11 | 0.79 | | 101 | Georgia | 4.64 | 60.67 | 0.24 | |
| 30 | Slovakia | 5.50 | 75.03 | 0.78 | | 102 | Bhutan | 4.61 | 60.23 | 0.23 | |
| 31 | Canada | 5.50 | 74.99 | 0.77 | | 103 | Kyrgyzstan | 4.61 | 60.12 | 0.23 | |
| 32 | Malaysia | 5.50 | 74.95 | 0.77 | | 104 | Finland | 4.60 | 60.04 | 0.22 | ○ |
| 33 | Spain | 5.48 | 74.60 | 0.76 | | 105 | Cameroon | 4.58 | 59.70 | 0.21 | |
| 34 | South Africa | 5.46 | 74.36 | 0.75 | | 106 | Burkina Faso | 4.57 | 59.42 | 0.20 | |
| 35 | Cyprus | 5.43 | 73.76 | 0.74 | | 107 | Kazakhstan | 4.56 | 59.27 | 0.20 | |
| 36 | Thailand | 5.42 | 73.67 | 0.73 | | 108 | Côte d'Ivoire | 4.55 | 59.21 | 0.19 | |
| 37 | Jamaica | 5.41 | 73.49 | 0.73 | ● | 109 | Ethiopia | 4.53 | 58.77 | 0.18 | |
| 38 | Saudi Arabia | 5.41 | 73.48 | 0.72 | | 110 | Kuwait | 4.51 | 58.48 | 0.17 | |
| 39 | Sweden | 5.41 | 73.47 | 0.71 | | 111 | Swaziland | 4.51 | 58.44 | 0.17 | |
| 40 | Guatemala | 5.40 | 73.40 | 0.70 | ● | 112 | Cabo Verde | 4.46 | 57.61 | 0.16 | |
| 41 | TFYR of Macedonia | 5.39 | 73.21 | 0.70 | | 113 | Ghana | 4.45 | 57.44 | 0.15 | |
| 42 | China | 5.36 | 72.64 | 0.69 | | 114 | Iran, Islamic Rep. | 4.40 | 56.59 | 0.14 | |
| 43 | Denmark | 5.36 | 72.63 | 0.68 | | 115 | Romania | 4.36 | 55.96 | 0.14 | ○ |
| 44 | Bahrain | 5.35 | 72.58 | 0.67 | | 116 | Azerbaijan | 4.35 | 55.81 | 0.13 | ○ |
| 45 | Hungary | 5.35 | 72.48 | 0.67 | | 117 | Tajikistan | 4.32 | 55.33 | 0.12 | |
| 46 | Morocco | 5.34 | 72.37 | 0.66 | | 118 | Tanzania, United Rep. | 4.32 | 55.30 | 0.11 | |
| 47 | Norway | 5.34 | 72.28 | 0.65 | | 119 | Yemen | 4.27 | 54.46 | 0.11 | |
| 48 | Nigeria | 5.28 | 71.32 | 0.64 | ● | 120 | Israel | 4.24 | 54.04 | 0.10 | ○ |
| 49 | Poland | 5.27 | 71.20 | 0.64 | | 121 | Seychelles | 4.23 | 53.85 | 0.09 | ○ |
| 50 | Brazil | 5.27 | 71.19 | 0.63 | | 122 | Serbia | 4.20 | 53.33 | 0.08 | ○ |
| 51 | Indonesia | 5.26 | 71.04 | 0.62 | | 123 | Guinea | 4.20 | 53.28 | 0.08 | |
| 52 | Luxembourg | 5.25 | 70.77 | 0.61 | | 124 | Nicaragua | 4.18 | 52.92 | 0.07 | ○ |
| 53 | Uganda | 5.24 | 70.68 | 0.61 | ● | 125 | Argentina | 4.07 | 51.22 | 0.06 | ○ |
| 54 | Colombia | 5.22 | 70.35 | 0.60 | | 126 | Egypt | 4.05 | 50.81 | 0.05 | ○ |
| 55 | Jordan | 5.20 | 69.92 | 0.59 | | 127 | Burundi | 3.91 | 48.56 | 0.05 | |
| 56 | Italy | 5.19 | 69.84 | 0.58 | | 128 | Montenegro | 3.88 | 48.00 | 0.04 | ○ |
| 57 | Costa Rica | 5.18 | 69.73 | 0.58 | | 129 | Algeria | 3.80 | 46.74 | 0.03 | ○ |
| 58 | Ireland | 5.17 | 69.56 | 0.57 | ○ | 130 | Bolivia, Plurinational St. | 3.76 | 46.00 | 0.02 | ○ |
| 59 | Philippines | 5.15 | 69.25 | 0.56 | | 131 | Albania | 3.49 | 41.51 | 0.02 | ○ |
| 60 | Trinidad and Tobago | 5.15 | 69.24 | 0.55 | | 132 | Venezuela, Bolivarian Rep. | 2.87 | 31.15 | 0.01 | ○ |
| 61 | Portugal | 5.14 | 69.08 | 0.55 | | 133 | Angola | 2.60 | 26.69 | 0.00 | ○ |
| 62 | Mexico | 5.13 | 68.91 | 0.54 | | n/a | Belarus | n/a | n/a | n/a | |
| 63 | Viet Nam | 5.12 | 68.73 | 0.53 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 64 | Slovenia | 5.12 | 68.59 | 0.52 | | n/a | Ecuador | n/a | n/a | n/a | |
| 65 | Panama | 5.10 | 68.37 | 0.52 | | n/a | Fiji | n/a | n/a | n/a | |
| 66 | Paraguay | 5.08 | 67.94 | 0.51 | | n/a | Niger | n/a | n/a | n/a | |
| 67 | Peru | 5.07 | 67.80 | 0.50 | | n/a | Sudan | n/a | n/a | n/a | |
| 68 | Greece | 5.05 | 67.55 | 0.49 | | n/a | Togo | n/a | n/a | n/a | |
| 69 | Dominican Republic | 5.00 | 66.65 | 0.48 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 70 | Oman | 5.00 | 66.62 | 0.48 | | | | | | | |
| 71 | Russian Federation | 4.97 | 66.23 | 0.47 | | | | | | | |
| 72 | Bulgaria | 4.96 | 66.06 | 0.46 | | | | | | | |

SOURCE: World Economic Forum, *Executive Opinion Survey 2014–2015*

NOTE: ● indicates a strength; ○ a weakness

5.1.1

Employment in knowledge-intensive services

Employment in knowledge-intensive services (% of workforce) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-----------------------------|-------|---------------|--------------|---|------|-----------------------------------|-------|---------------|--------------|---|
| 1 | Luxembourg | 59.07 | 100.00 | 1.00 | ● | 73 | Bangladesh (2011) | 20.01 | 33.03 | 0.37 | |
| 2 | Singapore | 52.67 | 89.04 | 0.99 | ● | 74 | Pakistan (2008) | 19.48 | 32.12 | 0.37 | |
| 3 | Switzerland | 50.98 | 86.13 | 0.98 | ● | 75 | Venezuela, Bolivarian Rep. | 19.17 | 31.60 | 0.36 | |
| 4 | Sweden (2014) | 49.39 | 83.40 | 0.97 | ● | 76 | Turkey | 19.17 | 31.58 | 0.35 | |
| 5 | Iceland | 49.27 | 83.21 | 0.97 | ● | 77 | Mexico | 19.14 | 31.54 | 0.34 | |
| 6 | United Kingdom | 47.72 | 80.54 | 0.96 | | 78 | Paraguay | 18.90 | 31.13 | 0.33 | |
| 7 | Norway | 46.85 | 79.05 | 0.95 | | 79 | Kuwait (2005) | 18.70 | 30.78 | 0.32 | |
| 8 | Israel | 46.49 | 78.43 | 0.94 | | 80 | Qatar | 18.25 | 30.01 | 0.31 | |
| 9 | Netherlands | 46.44 | 78.36 | 0.93 | | 81 | Botswana (2010) | 17.92 | 29.45 | 0.30 | |
| 10 | Denmark | 45.50 | 76.74 | 0.92 | | 82 | Algeria | 17.57 | 28.84 | 0.30 | |
| 11 | Finland | 44.69 | 75.35 | 0.91 | | 83 | Kyrgyzstan | 17.33 | 28.43 | 0.29 | |
| 12 | Belgium | 44.39 | 74.84 | 0.90 | | 84 | Dominican Republic | 17.18 | 28.18 | 0.28 | |
| 13 | France | 44.36 | 74.78 | 0.90 | ● | 85 | Yemen (2005) | 16.97 | 27.82 | 0.27 | ● |
| 14 | Canada | 44.17 | 74.45 | 0.89 | | 86 | Colombia (2010) | 16.82 | 27.55 | 0.26 | |
| 15 | Australia | 43.76 | 73.75 | 0.88 | | 87 | Fiji (2010) | 16.67 | 27.31 | 0.25 | |
| 16 | Russian Federation | 43.60 | 73.48 | 0.87 | ● | 88 | Bhutan | 16.47 | 26.97 | 0.24 | |
| 17 | New Zealand (2008) | 42.92 | 72.32 | 0.86 | | 89 | Albania (2009) | 16.08 | 26.30 | 0.23 | |
| 18 | Germany | 42.87 | 72.23 | 0.85 | | 90 | Iran, Islamic Rep. (2010) | 15.99 | 26.14 | 0.23 | |
| 19 | Lithuania | 42.81 | 72.13 | 0.84 | ● | 91 | Sri Lanka | 15.67 | 25.60 | 0.22 | |
| 20 | Slovenia | 42.18 | 71.04 | 0.83 | | 92 | Bolivia, Plurinational St. (2009) | 15.25 | 24.88 | 0.21 | |
| 21 | Estonia | 41.84 | 70.47 | 0.83 | | 93 | Peru | 14.96 | 24.37 | 0.20 | |
| 22 | Malta | 40.59 | 68.32 | 0.82 | | 94 | Nicaragua (2006) | 14.82 | 24.14 | 0.19 | |
| 23 | Ireland | 40.46 | 68.09 | 0.81 | | 95 | Namibia | 14.55 | 23.68 | 0.18 | |
| 24 | Austria | 39.80 | 66.96 | 0.80 | | 96 | Ecuador | 14.35 | 23.33 | 0.17 | |
| 25 | Latvia | 39.24 | 66.00 | 0.79 | | 97 | Thailand | 13.93 | 22.61 | 0.17 | ○ |
| 26 | United States of America | 38.01 | 63.90 | 0.78 | | 98 | Honduras (2005) | 12.83 | 20.73 | 0.16 | |
| 27 | Czech Republic | 37.80 | 63.54 | 0.77 | | 99 | El Salvador | 12.13 | 19.52 | 0.15 | |
| 28 | Hong Kong (China) | 37.31 | 62.69 | 0.77 | | 100 | Guatemala | 10.85 | 17.32 | 0.14 | |
| 29 | Montenegro (2012) | 37.21 | 62.53 | 0.76 | | 101 | Viet Nam | 9.99 | 15.86 | 0.13 | ○ |
| 30 | Egypt | 36.25 | 60.88 | 0.75 | ● | 102 | Indonesia | 8.90 | 13.98 | 0.12 | |
| 31 | United Arab Emirates (2008) | 36.09 | 60.60 | 0.74 | | 103 | Ghana (2010) | 8.61 | 13.48 | 0.11 | |
| 32 | Poland | 35.93 | 60.34 | 0.73 | | 104 | China (2005) | 7.37 | 11.36 | 0.10 | ○ |
| 33 | Belarus (2009) | 35.89 | 60.26 | 0.72 | | 105 | Zambia (2010) | 7.28 | 11.21 | 0.10 | |
| 34 | Hungary | 35.59 | 59.75 | 0.71 | | 106 | Morocco (2008) | 6.79 | 10.36 | 0.09 | ○ |
| 35 | Croatia | 35.39 | 59.41 | 0.70 | | 107 | Lesotho | 6.76 | 10.32 | 0.08 | |
| 36 | Italy | 35.14 | 58.98 | 0.70 | | 108 | Zimbabwe (2011) | 6.61 | 10.06 | 0.07 | |
| 37 | Cyprus | 35.14 | 58.97 | 0.69 | | 109 | Nepal (2008) | 4.28 | 6.06 | 0.06 | ○ |
| 38 | Portugal (2014) | 34.83 | 58.44 | 0.68 | | 110 | Cambodia (2010) | 4.12 | 5.78 | 0.05 | ○ |
| 39 | Ukraine | 33.74 | 56.57 | 0.67 | | 111 | Uganda | 4.09 | 5.73 | 0.04 | ○ |
| 40 | Spain (2014) | 33.09 | 55.46 | 0.66 | | 112 | Ethiopia | 3.77 | 5.19 | 0.03 | ○ |
| 41 | Kazakhstan | 32.33 | 54.16 | 0.65 | | 113 | Rwanda (2012) | 3.76 | 5.16 | 0.03 | ○ |
| 42 | Greece | 32.27 | 54.05 | 0.64 | | 114 | Madagascar (2012) | 3.54 | 4.79 | 0.02 | ○ |
| 43 | Lebanon (2007) | 31.85 | 53.34 | 0.63 | | 115 | Tanzania, United Rep. (2006) | 2.57 | 3.12 | 0.01 | ○ |
| 44 | Slovakia | 31.76 | 53.19 | 0.63 | | 116 | Guinea (2010) | 0.75 | 0.00 | 0.00 | ○ |
| 45 | Bulgaria | 30.97 | 51.82 | 0.62 | | n/a | Angola | n/a | n/a | n/a | |
| 46 | Barbados | 30.90 | 51.71 | 0.61 | | n/a | Bahrain | n/a | n/a | n/a | |
| 47 | Moldova, Rep. | 29.96 | 50.08 | 0.60 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 48 | Jordan (2004) | 28.18 | 47.05 | 0.59 | | n/a | Burkina Faso | n/a | n/a | n/a | |
| 49 | Serbia | 28.12 | 46.94 | 0.58 | | n/a | Burundi | n/a | n/a | n/a | |
| 50 | TFYR of Macedonia | 27.89 | 46.54 | 0.57 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 51 | Trinidad and Tobago | 26.99 | 45.01 | 0.57 | | n/a | Cameroon | n/a | n/a | n/a | |
| 52 | Armenia (2011) | 26.89 | 44.83 | 0.56 | | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 53 | Saudi Arabia | 26.56 | 44.26 | 0.55 | | n/a | Gambia | n/a | n/a | n/a | |
| 54 | Seychelles (2011) | 26.36 | 43.92 | 0.54 | | n/a | Guyana | n/a | n/a | n/a | |
| 55 | South Africa | 25.52 | 42.48 | 0.53 | | n/a | India | n/a | n/a | n/a | |
| 56 | Costa Rica | 25.01 | 41.61 | 0.52 | | n/a | Kenya | n/a | n/a | n/a | |
| 57 | Malaysia | 24.74 | 41.14 | 0.51 | | n/a | Malawi | n/a | n/a | n/a | |
| 58 | Argentina (2012) | 24.59 | 40.89 | 0.50 | | n/a | Mali | n/a | n/a | n/a | |
| 59 | Panama (2012) | 24.39 | 40.54 | 0.50 | | n/a | Mozambique | n/a | n/a | n/a | |
| 60 | Chile | 24.34 | 40.46 | 0.49 | | n/a | Myanmar | n/a | n/a | n/a | |
| 61 | Mongolia (2012) | 24.33 | 40.44 | 0.48 | | n/a | Niger | n/a | n/a | n/a | |
| 62 | Japan | 24.32 | 40.43 | 0.47 | | n/a | Nigeria | n/a | n/a | n/a | |
| 63 | Philippines | 23.74 | 39.42 | 0.46 | | n/a | Oman | n/a | n/a | n/a | |
| 64 | Azerbaijan | 23.40 | 38.84 | 0.45 | | n/a | Senegal | n/a | n/a | n/a | |
| 65 | Uruguay (2011) | 23.12 | 38.37 | 0.44 | | n/a | Sudan | n/a | n/a | n/a | |
| 66 | Georgia (2007) | 22.25 | 36.87 | 0.43 | | n/a | Swaziland | n/a | n/a | n/a | |
| 67 | Korea, Rep. (2012) | 21.29 | 35.23 | 0.43 | | n/a | Tajikistan | n/a | n/a | n/a | |
| 68 | Romania | 21.17 | 35.02 | 0.42 | | n/a | Togo | n/a | n/a | n/a | |
| 69 | Brazil | 21.04 | 34.80 | 0.41 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 70 | Tunisia (2012) | 20.94 | 34.62 | 0.40 | | | | | | | |
| 71 | Mauritius (2012) | 20.37 | 33.66 | 0.39 | | | | | | | |
| 72 | Jamaica (2008) | 20.11 | 33.21 | 0.38 | | | | | | | |

SOURCE: International Labour Organization, ILOSTAT Database of Labour Statistics Beta version (2004–14)

NOTE: ● indicates a strength; ○ a weakness

5.1.2 Firms offering formal training

Firms offering formal training (% of firms) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-----------------------------------|-------|---------------|--------------|---|------|--------------------------|-------|---------------|--------------|---|
| 1 | China (2012) | 79.20 | 100.00 | 1.00 | ● | 73 | Nigeria (2007) | 25.70 | 29.42 | 0.33 | |
| 2 | Thailand (2006) | 75.30 | 94.85 | 0.99 | ● | 74 | Gambia (2006) | 25.60 | 29.29 | 0.31 | |
| 3 | Ireland (2005) | 73.20 | 92.08 | 0.98 | ● | 74 | Mauritius (2009) | 25.60 | 29.29 | 0.31 | |
| 4 | Ecuador (2010) | 65.90 | 82.45 | 0.97 | ● | 76 | Cameroon (2009) | 25.50 | 29.16 | 0.31 | |
| 5 | Colombia (2010) | 65.20 | 81.53 | 0.96 | ● | 77 | Latvia | 25.20 | 28.76 | 0.30 | ○ |
| 6 | Argentina (2010) | 63.60 | 79.42 | 0.95 | ● | 78 | Burkina Faso (2009) | 24.80 | 28.23 | 0.29 | |
| 7 | Kyrgyzstan | 63.50 | 79.29 | 0.94 | ● | 79 | Morocco (2007) | 24.70 | 28.10 | 0.28 | |
| 8 | Guyana (2010) | 63.00 | 78.63 | 0.94 | ● | 80 | Albania | 23.80 | 26.91 | 0.27 | |
| 9 | Mongolia | 62.30 | 77.70 | 0.93 | ● | 81 | Montenegro | 23.70 | 26.78 | 0.26 | ○ |
| 10 | El Salvador (2010) | 61.00 | 75.99 | 0.91 | ● | 82 | Angola (2010) | 23.50 | 26.52 | 0.25 | ● |
| 10 | Fiji (2009) | 61.00 | 75.99 | 0.91 | ● | 83 | Bhutan (2009) | 23.30 | 26.25 | 0.24 | |
| 12 | Peru (2010) | 60.10 | 74.80 | 0.90 | ● | 84 | Ukraine | 22.50 | 25.20 | 0.23 | |
| 13 | Chile (2010) | 57.50 | 71.37 | 0.89 | ● | 85 | Burundi (2006) | 22.10 | 24.67 | 0.21 | |
| 14 | Bolivia, Plurinational St. (2010) | 57.10 | 70.84 | 0.88 | ● | 85 | Mozambique (2007) | 22.10 | 24.67 | 0.21 | |
| 15 | Dominican Republic (2010) | 57.00 | 70.71 | 0.87 | ● | 87 | Bangladesh | 21.90 | 24.41 | 0.20 | |
| 16 | Venezuela, Bolivarian Rep. (2010) | 56.00 | 69.39 | 0.86 | ● | 88 | Egypt (2008) | 21.70 | 24.14 | 0.19 | |
| 17 | Rwanda (2011) | 55.40 | 68.60 | 0.85 | ● | 89 | Guinea (2006) | 21.10 | 23.35 | 0.19 | |
| 18 | Czech Republic | 55.20 | 68.34 | 0.84 | ● | 90 | Azerbaijan | 20.30 | 22.30 | 0.18 | |
| 19 | Paraguay (2010) | 54.90 | 67.94 | 0.83 | ● | 91 | Greece (2005) | 20.00 | 21.90 | 0.17 | ○ |
| 20 | Costa Rica (2010) | 54.70 | 67.68 | 0.82 | ● | 92 | Côte d'Ivoire (2009) | 19.10 | 20.71 | 0.16 | |
| 21 | Bosnia and Herzegovina | 52.10 | 64.25 | 0.81 | ● | 93 | Israel | 18.60 | 20.05 | 0.15 | ○ |
| 22 | Botswana (2010) | 51.90 | 63.98 | 0.80 | ● | 94 | Sri Lanka (2011) | 18.40 | 19.79 | 0.14 | ○ |
| 22 | Guatemala (2010) | 51.90 | 63.98 | 0.80 | ● | 95 | Algeria (2007) | 17.30 | 18.34 | 0.13 | |
| 24 | Spain (2005) | 51.30 | 63.19 | 0.79 | ● | 96 | Cabo Verde (2009) | 16.60 | 17.41 | 0.12 | |
| 25 | Belarus | 51.10 | 62.93 | 0.78 | ● | 97 | Senegal (2007) | 16.30 | 17.02 | 0.11 | |
| 26 | Swaziland (2006) | 51.00 | 62.80 | 0.77 | ● | 98 | India (2006) | 15.90 | 16.49 | 0.10 | ○ |
| 27 | Mexico (2010) | 50.80 | 62.53 | 0.76 | ● | 99 | Hungary | 15.70 | 16.23 | 0.09 | ○ |
| 28 | Malaysia (2007) | 50.10 | 61.61 | 0.75 | ● | 100 | Myanmar (2014) | 15.10 | 15.44 | 0.08 | |
| 29 | Croatia | 48.90 | 60.03 | 0.74 | ● | 101 | Armenia | 14.20 | 14.25 | 0.07 | ○ |
| 30 | Uruguay (2010) | 48.60 | 59.63 | 0.73 | ● | 102 | Yemen (2010) | 12.90 | 12.53 | 0.06 | |
| 31 | Cambodia (2007) | 48.40 | 59.37 | 0.71 | ● | 103 | Madagascar | 12.70 | 12.27 | 0.06 | |
| 31 | Malawi (2009) | 48.40 | 59.37 | 0.71 | ● | 104 | Panama (2010) | 11.00 | 10.03 | 0.05 | ○ |
| 33 | Nicaragua (2010) | 47.20 | 57.78 | 0.70 | ● | 105 | Uzbekistan | 10.90 | 9.89 | 0.04 | ○ |
| 34 | Russian Federation (2012) | 46.10 | 56.33 | 0.69 | ● | 106 | Georgia | 10.50 | 9.37 | 0.03 | ○ |
| 35 | TFYR of Macedonia | 46.00 | 56.20 | 0.69 | ● | 107 | Pakistan (2007) | 6.70 | 4.35 | 0.02 | ○ |
| 36 | Slovakia | 44.90 | 54.75 | 0.68 | ● | 108 | Indonesia (2009) | 4.70 | 1.72 | 0.01 | ○ |
| 37 | Namibia (2006) | 44.50 | 54.22 | 0.67 | ● | 109 | Jordan | 3.40 | 0.00 | 0.00 | ○ |
| 38 | Viet Nam (2009) | 43.50 | 52.90 | 0.66 | ● | n/a | Australia | n/a | n/a | n/a | |
| 39 | Bulgaria | 42.80 | 51.98 | 0.65 | ● | n/a | Austria | n/a | n/a | n/a | |
| 40 | Lesotho (2009) | 42.50 | 51.58 | 0.64 | ● | n/a | Bahrain | n/a | n/a | n/a | |
| 41 | Brazil (2009) | 42.20 | 51.19 | 0.63 | ● | n/a | Belgium | n/a | n/a | n/a | |
| 42 | Lithuania | 42.00 | 50.92 | 0.62 | ● | n/a | Canada | n/a | n/a | n/a | |
| 43 | Slovenia | 41.40 | 50.13 | 0.61 | ● | n/a | Cyprus | n/a | n/a | n/a | |
| 44 | Romania | 40.80 | 49.34 | 0.60 | ● | n/a | Denmark | n/a | n/a | n/a | |
| 45 | Kenya | 40.60 | 49.08 | 0.59 | ● | n/a | Finland | n/a | n/a | n/a | |
| 46 | Ghana | 40.10 | 48.42 | 0.58 | ● | n/a | France | n/a | n/a | n/a | |
| 47 | Korea, Rep. (2005) | 39.50 | 47.63 | 0.57 | ● | n/a | Hong Kong (China) | n/a | n/a | n/a | |
| 48 | South Africa (2007) | 36.80 | 44.06 | 0.56 | ● | n/a | Iceland | n/a | n/a | n/a | |
| 49 | Honduras (2010) | 35.80 | 42.74 | 0.56 | ● | n/a | Iran, Islamic Rep. | n/a | n/a | n/a | |
| 50 | Barbados (2010) | 35.50 | 42.35 | 0.55 | ● | n/a | Italy | n/a | n/a | n/a | |
| 51 | Germany (2005) | 35.40 | 42.22 | 0.54 | ● | n/a | Japan | n/a | n/a | n/a | |
| 52 | Estonia | 35.00 | 41.69 | 0.53 | ● | n/a | Kuwait | n/a | n/a | n/a | |
| 53 | Poland | 34.60 | 41.16 | 0.52 | ● | n/a | Luxembourg | n/a | n/a | n/a | |
| 54 | Uganda | 34.30 | 40.77 | 0.51 | ● | n/a | Malta | n/a | n/a | n/a | |
| 55 | Tajikistan | 33.60 | 39.84 | 0.50 | ● | n/a | Netherlands | n/a | n/a | n/a | |
| 56 | Moldova, Rep. | 32.80 | 38.79 | 0.49 | ● | n/a | New Zealand | n/a | n/a | n/a | |
| 57 | Mali (2010) | 32.10 | 37.86 | 0.47 | ● | n/a | Norway | n/a | n/a | n/a | |
| 57 | Niger (2009) | 32.10 | 37.86 | 0.47 | ● | n/a | Oman | n/a | n/a | n/a | |
| 59 | Nepal | 31.90 | 37.60 | 0.45 | ● | n/a | Qatar | n/a | n/a | n/a | |
| 59 | Portugal (2005) | 31.90 | 37.60 | 0.45 | ○ | n/a | Saudi Arabia | n/a | n/a | n/a | |
| 61 | Zimbabwe (2011) | 31.20 | 36.68 | 0.44 | ● | n/a | Seychelles | n/a | n/a | n/a | |
| 62 | Philippines (2009) | 31.10 | 36.54 | 0.44 | ● | n/a | Singapore | n/a | n/a | n/a | |
| 63 | Togo (2009) | 31.00 | 36.41 | 0.43 | ● | n/a | Sudan | n/a | n/a | n/a | |
| 64 | Tanzania, United Rep. | 30.70 | 36.02 | 0.42 | ● | n/a | Sweden | n/a | n/a | n/a | |
| 65 | Serbia | 30.60 | 35.88 | 0.41 | ● | n/a | Switzerland | n/a | n/a | n/a | |
| 66 | Ethiopia (2011) | 30.00 | 35.09 | 0.40 | ● | n/a | Tunisia | n/a | n/a | n/a | |
| 67 | Kazakhstan | 28.40 | 32.98 | 0.38 | ● | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 67 | Turkey | 28.40 | 32.98 | 0.38 | ● | n/a | United Kingdom | n/a | n/a | n/a | |
| 69 | Zambia | 28.20 | 32.72 | 0.37 | ● | n/a | United States of America | n/a | n/a | n/a | |
| 70 | Trinidad and Tobago (2010) | 28.00 | 32.45 | 0.36 | ● | | | | | | |
| 71 | Lebanon | 26.60 | 30.61 | 0.35 | ● | | | | | | |
| 72 | Jamaica (2010) | 25.90 | 29.68 | 0.34 | ● | | | | | | |

SOURCE: International Finance Corporation and World Bank, *Enterprise Surveys* (2004–13)

NOTE: ● indicates a strength; ○ a weakness

5.1.3

GERD performed by business enterprise

GERD: Performed by business enterprise (% of GDP) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|---------------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Israel | 3.48 | 100.00 | 1.00 | ● | 73 | Uruguay (2012) | 0.04 | 1.24 | 0.18 | ○ |
| 2 | Korea, Rep. | 3.26 | 93.77 | 0.99 | ● | 74 | Kyrgyzstan (2011) | 0.04 | 1.05 | 0.17 | |
| 3 | Japan | 2.65 | 76.32 | 0.98 | ● | 75 | TFYR of Macedonia (2011) | 0.03 | 1.00 | 0.16 | ○ |
| 4 | Finland | 2.38 | 68.43 | 0.97 | | 76 | Oman (2011) | 0.03 | 0.91 | 0.15 | ○ |
| 5 | Sweden | 2.36 | 67.89 | 0.95 | | 77 | Azerbaijan | 0.02 | 0.63 | 0.14 | |
| 6 | Switzerland (2012) | 2.17 | 62.30 | 0.94 | | 78 | Namibia (2010) | 0.02 | 0.53 | 0.13 | ○ |
| 7 | Germany | 2.04 | 58.79 | 0.93 | | 79 | Indonesia (2009) | 0.02 | 0.45 | 0.11 | |
| 8 | Denmark | 2.03 | 58.44 | 0.92 | | 80 | Mongolia | 0.01 | 0.40 | 0.10 | ○ |
| 9 | Slovenia | 2.03 | 58.35 | 0.91 | | 81 | Mali (2007) | 0.01 | 0.21 | 0.09 | |
| 10 | Austria | 1.99 | 57.35 | 0.90 | | 82 | Ethiopia | 0.01 | 0.21 | 0.08 | |
| 11 | United States of America (2012) | 1.95 | 56.08 | 0.89 | | 83 | Zambia (2008) | 0.01 | 0.20 | 0.07 | ○ |
| 12 | Belgium | 1.63 | 46.82 | 0.88 | | 84 | Panama (2011) | 0.00 | 0.10 | 0.06 | ○ |
| 13 | China | 1.60 | 45.89 | 0.86 | | 85 | Senegal (2010) | 0.00 | 0.05 | 0.05 | ○ |
| 14 | France | 1.48 | 42.64 | 0.85 | | 86 | Trinidad and Tobago (2009) | 0.00 | 0.03 | 0.03 | ○ |
| 15 | Iceland (2011) | 1.38 | 39.82 | 0.84 | | 87 | Ghana (2010) | 0.00 | 0.01 | 0.02 | ○ |
| 16 | Australia (2011) | 1.30 | 37.46 | 0.83 | | 88 | Paraguay (2011) | 0.00 | 0.01 | 0.01 | ○ |
| 17 | Singapore (2012) | 1.23 | 35.42 | 0.82 | | 89 | Guatemala (2012) | 0.00 | 0.00 | 0.00 | ○ |
| 18 | Netherlands | 1.22 | 34.99 | 0.81 | | n/a | Albania | n/a | n/a | n/a | |
| 19 | Ireland (2012) | 1.20 | 34.42 | 0.80 | | n/a | Algeria | n/a | n/a | n/a | |
| 20 | United Kingdom | 1.11 | 32.03 | 0.78 | | n/a | Angola | n/a | n/a | n/a | |
| 21 | Czech Republic | 1.08 | 31.20 | 0.77 | | n/a | Armenia | n/a | n/a | n/a | |
| 22 | Hungary | 1.00 | 28.85 | 0.76 | | n/a | Bahrain | n/a | n/a | n/a | |
| 23 | Norway | 0.89 | 25.49 | 0.75 | | n/a | Bangladesh | n/a | n/a | n/a | |
| 24 | Estonia | 0.84 | 24.25 | 0.74 | | n/a | Barbados | n/a | n/a | n/a | |
| 25 | Canada | 0.83 | 23.75 | 0.73 | | n/a | Bhutan | n/a | n/a | n/a | |
| 26 | Malaysia (2012) | 0.73 | 20.90 | 0.72 | | n/a | Bolivia, Plurinational St. | n/a | n/a | n/a | |
| 27 | Luxembourg | 0.71 | 20.31 | 0.70 | | n/a | Brazil | n/a | n/a | n/a | |
| 28 | Italy | 0.70 | 20.11 | 0.69 | | n/a | Burkina Faso | n/a | n/a | n/a | |
| 29 | Russian Federation | 0.68 | 19.58 | 0.68 | | n/a | Burundi | n/a | n/a | n/a | |
| 30 | Spain | 0.68 | 19.53 | 0.67 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 31 | Portugal | 0.67 | 19.17 | 0.66 | | n/a | Cambodia | n/a | n/a | n/a | |
| 32 | New Zealand (2011) | 0.58 | 16.54 | 0.65 | | n/a | Cameroon | n/a | n/a | n/a | |
| 33 | Malta | 0.48 | 13.74 | 0.64 | | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 34 | Turkey | 0.45 | 12.95 | 0.63 | | n/a | Dominican Republic | n/a | n/a | n/a | |
| 35 | Belarus | 0.45 | 12.90 | 0.61 | | n/a | Egypt | n/a | n/a | n/a | |
| 36 | Ukraine | 0.42 | 12.19 | 0.60 | | n/a | El Salvador | n/a | n/a | n/a | |
| 37 | Croatia | 0.41 | 11.80 | 0.59 | | n/a | Fiji | n/a | n/a | n/a | |
| 38 | Bulgaria | 0.41 | 11.71 | 0.58 | | n/a | Gambia | n/a | n/a | n/a | |
| 39 | Slovakia | 0.39 | 11.27 | 0.57 | | n/a | Georgia | n/a | n/a | n/a | |
| 40 | Poland | 0.38 | 11.06 | 0.56 | | n/a | Guinea | n/a | n/a | n/a | |
| 41 | South Africa (2012) | 0.34 | 9.68 | 0.55 | | n/a | Guyana | n/a | n/a | n/a | |
| 42 | Hong Kong (China) (2012) | 0.33 | 9.38 | 0.53 | | n/a | Honduras | n/a | n/a | n/a | |
| 43 | India (2011) | 0.29 | 8.22 | 0.52 | | n/a | Jamaica | n/a | n/a | n/a | |
| 44 | Greece | 0.27 | 7.85 | 0.51 | | n/a | Jordan | n/a | n/a | n/a | |
| 45 | Lithuania | 0.24 | 7.02 | 0.50 | | n/a | Kuwait | n/a | n/a | n/a | |
| 46 | Serbia (2012) | 0.24 | 6.97 | 0.49 | | n/a | Lebanon | n/a | n/a | n/a | |
| 47 | Morocco (2010) | 0.22 | 6.32 | 0.48 | | n/a | Lesotho | n/a | n/a | n/a | |
| 48 | Ecuador (2011) | 0.20 | 5.87 | 0.47 | | n/a | Madagascar | n/a | n/a | n/a | |
| 49 | Thailand (2011) | 0.20 | 5.64 | 0.45 | | n/a | Malawi | n/a | n/a | n/a | |
| 50 | Uganda (2010) | 0.19 | 5.58 | 0.44 | | n/a | Mauritius | n/a | n/a | n/a | |
| 51 | Mexico | 0.19 | 5.44 | 0.43 | | n/a | Mozambique | n/a | n/a | n/a | |
| 52 | Latvia | 0.17 | 4.86 | 0.42 | | n/a | Myanmar | n/a | n/a | n/a | |
| 53 | Bosnia and Herzegovina (2012) | 0.16 | 4.58 | 0.41 | | n/a | Nepal | n/a | n/a | n/a | |
| 54 | United Arab Emirates (2011) | 0.14 | 4.02 | 0.40 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 55 | Argentina (2012) | 0.13 | 3.60 | 0.39 | | n/a | Niger | n/a | n/a | n/a | |
| 56 | Chile (2012) | 0.13 | 3.59 | 0.38 | ○ | n/a | Nigeria | n/a | n/a | n/a | |
| 57 | Qatar (2012) | 0.12 | 3.50 | 0.36 | | n/a | Pakistan | n/a | n/a | n/a | |
| 58 | Romania | 0.12 | 3.44 | 0.35 | | n/a | Rwanda | n/a | n/a | n/a | |
| 59 | Sudan (2005) | 0.10 | 2.89 | 0.34 | ● | n/a | Saudi Arabia | n/a | n/a | n/a | |
| 60 | Montenegro (2011) | 0.09 | 2.62 | 0.33 | | n/a | Seychelles | n/a | n/a | n/a | |
| 61 | Kenya (2010) | 0.08 | 2.41 | 0.32 | | n/a | Swaziland | n/a | n/a | n/a | |
| 62 | Botswana (2005) | 0.08 | 2.38 | 0.31 | | n/a | Tajikistan | n/a | n/a | n/a | |
| 63 | Cyprus | 0.08 | 2.32 | 0.30 | | n/a | Tanzania, United Rep. | n/a | n/a | n/a | |
| 64 | Iran, Islamic Rep. (2008) | 0.08 | 2.28 | 0.28 | | n/a | Togo | n/a | n/a | n/a | |
| 65 | Costa Rica (2011) | 0.08 | 2.16 | 0.27 | | n/a | Tunisia | n/a | n/a | n/a | |
| 66 | Moldova, Rep. | 0.07 | 2.03 | 0.26 | ○ | n/a | Uzbekistan | n/a | n/a | n/a | |
| 67 | Sri Lanka (2010) | 0.07 | 1.97 | 0.25 | | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 68 | Philippines (2007) | 0.06 | 1.79 | 0.24 | | n/a | Yemen | n/a | n/a | n/a | |
| 69 | Kazakhstan | 0.05 | 1.53 | 0.23 | | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Colombia | 0.05 | 1.51 | 0.22 | | | | | | | |
| 71 | Viet Nam (2011) | 0.05 | 1.42 | 0.20 | | | | | | | |
| 72 | Peru (2004) | 0.05 | 1.33 | 0.19 | ○ | | | | | | |

SOURCE: UNESCO Institute for Statistics, *UIS online database*

NOTE: ● indicates a strength; ○ a weakness

5.1.4 GERD financed by business enterprise

GERD: Financed by business enterprise (% of total GERD) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|---------------------------------|-------|---------------|--------------|---|------|-----------------------------------|-------|---------------|--------------|---|
| 1 | Korea, Rep. | 75.68 | 100.00 | 1.00 | ● | 73 | Bolivia, Plurinational St. (2009) | 5.20 | 6.78 | 0.20 | |
| 2 | Japan | 75.48 | 99.73 | 0.99 | ● | 74 | Azerbaijan | 4.59 | 5.97 | 0.19 | |
| 3 | China | 74.60 | 98.57 | 0.98 | ● | 75 | Oman (2011) | 4.56 | 5.93 | 0.18 | ○ |
| 4 | Germany (2012) | 66.07 | 87.29 | 0.97 | ● | 76 | Kenya (2010) | 4.34 | 5.64 | 0.17 | |
| 5 | Slovenia | 63.85 | 84.35 | 0.96 | ● | 77 | Senegal (2010) | 4.10 | 5.31 | 0.16 | |
| 6 | Philippines (2007) | 61.96 | 81.85 | 0.94 | ● | 78 | Lesotho (2009) | 3.38 | 4.36 | 0.14 | |
| 7 | Australia (2008) | 61.91 | 81.78 | 0.93 | | 79 | Albania (2008) | 3.26 | 4.21 | 0.13 | |
| 8 | Sweden | 60.95 | 80.52 | 0.92 | | 80 | Zambia (2008) | 3.23 | 4.16 | 0.12 | |
| 9 | Finland | 60.84 | 80.37 | 0.91 | | 81 | El Salvador (2012) | 2.75 | 3.54 | 0.11 | ○ |
| 10 | Switzerland (2012) | 60.78 | 80.29 | 0.90 | | 82 | Tajikistan (2011) | 1.65 | 2.08 | 0.10 | |
| 11 | Malaysia (2012) | 60.20 | 79.52 | 0.89 | | 83 | Kuwait | 1.42 | 1.77 | 0.09 | ○ |
| 12 | Belgium (2011) | 60.15 | 79.46 | 0.88 | | 84 | Bosnia and Herzegovina (2012) | 1.15 | 1.42 | 0.08 | ○ |
| 13 | Denmark | 59.78 | 78.97 | 0.87 | | 85 | Paraguay (2012) | 0.85 | 1.02 | 0.07 | ○ |
| 14 | United States of America (2012) | 59.13 | 78.11 | 0.86 | | 86 | Ethiopia | 0.75 | 0.89 | 0.06 | ○ |
| 15 | France (2012) | 55.38 | 73.15 | 0.84 | | 87 | Ecuador (2011) | 0.42 | 0.44 | 0.04 | ○ |
| 16 | Singapore (2012) | 53.37 | 70.49 | 0.83 | | 88 | Mauritius (2012) | 0.27 | 0.26 | 0.03 | ○ |
| 17 | Thailand (2011) | 51.74 | 68.34 | 0.82 | | 89 | Nigeria (2007) | 0.16 | 0.11 | 0.02 | ○ |
| 18 | Ireland (2012) | 50.34 | 66.48 | 0.81 | | 90 | Ghana (2010) | 0.10 | 0.03 | 0.01 | ○ |
| 19 | Iceland (2011) | 49.85 | 65.83 | 0.80 | | 91 | Tanzania, United Rep. (2010) | 0.08 | 0.00 | 0.00 | ○ |
| 20 | Hong Kong (China) (2012) | 49.73 | 65.67 | 0.79 | | n/a | Algeria | n/a | n/a | n/a | |
| 21 | Turkey | 48.87 | 64.54 | 0.78 | ● | n/a | Angola | n/a | n/a | n/a | |
| 22 | Netherlands | 47.10 | 62.20 | 0.77 | | n/a | Armenia | n/a | n/a | n/a | |
| 23 | Hungary | 46.80 | 61.80 | 0.76 | | n/a | Bahrain | n/a | n/a | n/a | |
| 24 | United Kingdom | 46.55 | 61.46 | 0.74 | | n/a | Bangladesh | n/a | n/a | n/a | |
| 25 | Canada | 46.45 | 61.33 | 0.73 | | n/a | Barbados | n/a | n/a | n/a | |
| 26 | Portugal (2012) | 46.04 | 60.79 | 0.72 | | n/a | Bhutan | n/a | n/a | n/a | |
| 27 | Spain (2012) | 45.64 | 60.27 | 0.71 | | n/a | Botswana | n/a | n/a | n/a | |
| 28 | Austria (2014) | 44.49 | 58.74 | 0.70 | | n/a | Burundi | n/a | n/a | n/a | |
| 29 | Malta | 44.33 | 58.53 | 0.69 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 30 | Italy (2012) | 44.29 | 58.48 | 0.68 | | n/a | Cambodia | n/a | n/a | n/a | |
| 31 | Norway (2011) | 44.20 | 58.36 | 0.67 | | n/a | Cameroon | n/a | n/a | n/a | |
| 32 | Belarus | 43.79 | 57.82 | 0.66 | | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 33 | Brazil (2012) | 43.07 | 56.87 | 0.64 | | n/a | Dominican Republic | n/a | n/a | n/a | |
| 34 | Croatia | 42.79 | 56.49 | 0.63 | | n/a | Egypt | n/a | n/a | n/a | |
| 35 | Estonia | 41.28 | 54.50 | 0.62 | | n/a | Fiji | n/a | n/a | n/a | |
| 36 | Sri Lanka (2010) | 40.93 | 54.03 | 0.61 | | n/a | Gambia | n/a | n/a | n/a | |
| 37 | Slovakia | 40.19 | 53.06 | 0.60 | | n/a | Georgia | n/a | n/a | n/a | |
| 38 | New Zealand (2011) | 39.96 | 52.75 | 0.59 | | n/a | Guatemala | n/a | n/a | n/a | |
| 39 | Kyrgyzstan (2011) | 38.58 | 50.93 | 0.58 | | n/a | Guinea | n/a | n/a | n/a | |
| 40 | South Africa (2012) | 38.34 | 50.61 | 0.57 | | n/a | Guyana, United Rep. | n/a | n/a | n/a | |
| 41 | Czech Republic | 37.60 | 49.62 | 0.56 | | n/a | Honduras | n/a | n/a | n/a | |
| 42 | Poland | 37.33 | 49.27 | 0.54 | | n/a | India | n/a | n/a | n/a | |
| 43 | Israel (2012) | 35.60 | 46.98 | 0.53 | | n/a | Indonesia | n/a | n/a | n/a | |
| 44 | Chile (2012) | 34.95 | 46.12 | 0.52 | | n/a | Jamaica | n/a | n/a | n/a | |
| 45 | Greece | 32.06 | 42.30 | 0.51 | | n/a | Jordan | n/a | n/a | n/a | |
| 46 | Mexico | 31.65 | 41.76 | 0.50 | | n/a | Lebanon | n/a | n/a | n/a | |
| 47 | Romania | 31.02 | 40.92 | 0.49 | | n/a | Madagascar | n/a | n/a | n/a | |
| 48 | Iran, Islamic Rep. (2008) | 30.92 | 40.79 | 0.48 | | n/a | Malawi | n/a | n/a | n/a | |
| 49 | Morocco (2010) | 29.94 | 39.49 | 0.47 | | n/a | Moldova, Rep. | n/a | n/a | n/a | |
| 50 | Colombia | 29.02 | 38.27 | 0.46 | | n/a | Mozambique | n/a | n/a | n/a | |
| 51 | Ukraine | 28.99 | 38.25 | 0.44 | | n/a | Myanmar | n/a | n/a | n/a | |
| 52 | Kazakhstan | 28.92 | 38.15 | 0.43 | | n/a | Nepal | n/a | n/a | n/a | |
| 53 | Viet Nam (2011) | 28.40 | 37.47 | 0.42 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 54 | Russian Federation | 28.16 | 37.14 | 0.41 | | n/a | Niger | n/a | n/a | n/a | |
| 55 | Lithuania | 27.42 | 36.17 | 0.40 | | n/a | Pakistan | n/a | n/a | n/a | |
| 56 | Qatar (2012) | 24.18 | 31.89 | 0.39 | | n/a | Peru | n/a | n/a | n/a | |
| 57 | Montenegro (2011) | 22.28 | 29.36 | 0.38 | | n/a | Rwanda | n/a | n/a | n/a | |
| 58 | Latvia | 21.84 | 28.78 | 0.37 | ○ | n/a | Saudi Arabia | n/a | n/a | n/a | |
| 59 | Argentina (2012) | 21.34 | 28.12 | 0.36 | | n/a | Seychelles | n/a | n/a | n/a | |
| 60 | Luxembourg | 20.46 | 26.96 | 0.34 | | n/a | Sudan | n/a | n/a | n/a | |
| 61 | Namibia (2010) | 19.83 | 26.12 | 0.33 | | n/a | Swaziland | n/a | n/a | n/a | |
| 62 | Bulgaria | 19.44 | 25.61 | 0.32 | ○ | n/a | TFYR of Macedonia | n/a | n/a | n/a | |
| 63 | Panama (2011) | 18.86 | 24.84 | 0.31 | | n/a | Togo | n/a | n/a | n/a | |
| 64 | Costa Rica (2011) | 18.85 | 24.82 | 0.30 | | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 65 | Tunisia (2012) | 18.70 | 24.63 | 0.29 | | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 66 | Uruguay (2012) | 15.03 | 19.78 | 0.28 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 67 | Uganda (2010) | 13.67 | 17.98 | 0.27 | | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 68 | Burkina Faso (2009) | 11.93 | 15.68 | 0.26 | | n/a | Yemen | n/a | n/a | n/a | |
| 69 | Cyprus (2012) | 10.86 | 14.26 | 0.24 | ○ | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Mali (2007) | 10.10 | 13.26 | 0.23 | | | | | | | |
| 71 | Mongolia | 8.31 | 10.88 | 0.22 | | | | | | | |
| 72 | Serbia (2012) | 5.78 | 7.53 | 0.21 | ○ | | | | | | |

SOURCE: UNESCO Institute for Statistics, *UIS online database*

NOTE: ● indicates a strength; ○ a weakness

5.1.5

Females employed with advanced degrees

Females employed with advanced degrees, 25+ years old (% total employed) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-----------------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Belarus (2009) | 33.84 | 100.00 | 1.00 | ● | 73 | Viet Nam | 6.22 | 18.26 | 0.16 | ○ |
| 2 | Russian Federation | 32.93 | 97.29 | 0.99 | ● | 74 | Ethiopia (2012) | 6.02 | 17.69 | 0.15 | |
| 3 | Israel | 28.38 | 83.83 | 0.98 | ● | 75 | Egypt | 5.51 | 16.19 | 0.14 | |
| 4 | Ukraine | 28.10 | 83.01 | 0.97 | ● | 76 | Qatar | 4.50 | 13.19 | 0.13 | |
| 5 | Armenia | 27.45 | 81.08 | 0.95 | ● | 77 | Algeria (2010) | 4.41 | 12.93 | 0.12 | |
| 6 | Lithuania (2014) | 26.13 | 77.19 | 0.94 | ● | 78 | Saudi Arabia (2009) | 4.39 | 12.85 | 0.10 | ○ |
| 7 | Estonia | 25.45 | 75.17 | 0.93 | ● | 79 | Indonesia | 3.94 | 11.53 | 0.09 | |
| 8 | Finland | 25.29 | 74.69 | 0.92 | | 80 | Guatemala | 3.52 | 10.30 | 0.08 | |
| 9 | Ireland | 24.75 | 73.09 | 0.91 | | 81 | Uganda | 2.71 | 7.90 | 0.07 | ○ |
| 10 | Sweden (2014) | 23.27 | 68.73 | 0.90 | | 82 | Madagascar (2012) | 2.31 | 6.72 | 0.06 | |
| 11 | Norway | 23.20 | 68.51 | 0.88 | | 83 | Bhutan | 1.12 | 3.18 | 0.05 | ○ |
| 12 | Belgium (2014) | 23.18 | 68.45 | 0.87 | | 84 | Senegal (2011) | 0.74 | 2.05 | 0.03 | ○ |
| 13 | Latvia | 23.00 | 67.91 | 0.86 | ● | 85 | Tanzania, United Rep. | 0.67 | 1.86 | 0.02 | ○ |
| 14 | Singapore | 22.73 | 67.13 | 0.85 | | 86 | Mozambique (2012) | 0.51 | 1.39 | 0.01 | ○ |
| 15 | Australia | 22.64 | 66.85 | 0.84 | | 87 | El Salvador | 0.04 | 0.00 | 0.00 | ○ |
| 16 | Cyprus | 22.59 | 66.71 | 0.83 | | n/a | Angola | n/a | n/a | n/a | |
| 17 | United Kingdom (2014) | 21.73 | 64.17 | 0.81 | | n/a | Bahrain | n/a | n/a | n/a | |
| 18 | Spain (2014) | 21.48 | 63.42 | 0.80 | | n/a | Bangladesh | n/a | n/a | n/a | |
| 19 | Iceland | 21.34 | 63.01 | 0.79 | | n/a | Barbados | n/a | n/a | n/a | |
| 20 | New Zealand | 20.83 | 61.49 | 0.78 | | n/a | Bolivia, Plurinational St. | n/a | n/a | n/a | |
| 21 | Denmark (2014) | 20.60 | 60.83 | 0.77 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 22 | Luxembourg | 20.32 | 59.99 | 0.76 | | n/a | Burkina Faso | n/a | n/a | n/a | |
| 23 | France | 19.63 | 57.94 | 0.74 | | n/a | Burundi | n/a | n/a | n/a | |
| 24 | Japan | 19.29 | 56.94 | 0.73 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 25 | Slovenia | 18.78 | 55.44 | 0.72 | | n/a | Cambodia | n/a | n/a | n/a | |
| 26 | Bulgaria | 18.50 | 54.61 | 0.71 | | n/a | Cameroon | n/a | n/a | n/a | |
| 27 | Poland | 18.16 | 53.60 | 0.70 | | n/a | China | n/a | n/a | n/a | |
| 28 | Netherlands | 17.76 | 52.41 | 0.69 | | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 29 | Kazakhstan | 17.55 | 51.80 | 0.67 | | n/a | Fiji | n/a | n/a | n/a | |
| 30 | Switzerland (2014) | 17.00 | 50.16 | 0.66 | | n/a | Gambia | n/a | n/a | n/a | |
| 31 | Argentina (2012) | 16.95 | 50.01 | 0.65 | | n/a | Ghana | n/a | n/a | n/a | |
| 32 | Venezuela, Bolivarian Rep. (2012) | 16.69 | 49.24 | 0.64 | ● | n/a | Guinea | n/a | n/a | n/a | |
| 33 | Panama (2012) | 16.59 | 48.94 | 0.63 | | n/a | Guyana | n/a | n/a | n/a | |
| 34 | Greece | 15.79 | 46.59 | 0.62 | | n/a | Honduras | n/a | n/a | n/a | |
| 35 | Canada (2014) | 15.65 | 46.16 | 0.60 | | n/a | India | n/a | n/a | n/a | |
| 36 | Mongolia (2012) | 15.44 | 45.55 | 0.59 | | n/a | Iran, Islamic Rep. | n/a | n/a | n/a | |
| 37 | Portugal (2014) | 14.90 | 43.95 | 0.58 | | n/a | Jamaica | n/a | n/a | n/a | |
| 38 | Hungary | 14.82 | 43.71 | 0.57 | | n/a | Jordan | n/a | n/a | n/a | |
| 39 | Chile | 14.54 | 42.88 | 0.56 | | n/a | Kenya | n/a | n/a | n/a | |
| 40 | Georgia | 14.50 | 42.78 | 0.55 | | n/a | Korea, Rep. | n/a | n/a | n/a | |
| 41 | Philippines (2011) | 14.09 | 41.56 | 0.53 | | n/a | Kuwait | n/a | n/a | n/a | |
| 42 | Moldova, Rep. | 13.95 | 41.13 | 0.52 | | n/a | Lebanon | n/a | n/a | n/a | |
| 43 | Germany | 13.91 | 41.03 | 0.51 | ○ | n/a | Lesotho | n/a | n/a | n/a | |
| 44 | Peru | 13.89 | 40.98 | 0.50 | | n/a | Malawi | n/a | n/a | n/a | |
| 45 | Croatia | 13.76 | 40.58 | 0.49 | | n/a | Mali | n/a | n/a | n/a | |
| 46 | Uruguay | 13.58 | 40.04 | 0.48 | | n/a | Montenegro | n/a | n/a | n/a | |
| 47 | Colombia | 13.16 | 38.81 | 0.47 | | n/a | Morocco | n/a | n/a | n/a | |
| 48 | Costa Rica | 13.16 | 38.80 | 0.45 | | n/a | Myanmar | n/a | n/a | n/a | |
| 49 | Azerbaijan | 12.87 | 37.94 | 0.44 | | n/a | Namibia | n/a | n/a | n/a | |
| 50 | Dominican Republic | 12.52 | 36.93 | 0.43 | | n/a | Nepal | n/a | n/a | n/a | |
| 51 | Paraguay | 12.43 | 36.66 | 0.42 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 52 | Serbia | 12.22 | 36.02 | 0.41 | | n/a | Niger | n/a | n/a | n/a | |
| 53 | Malta | 12.21 | 35.99 | 0.40 | ○ | n/a | Nigeria | n/a | n/a | n/a | |
| 54 | Hong Kong (China) | 12.17 | 35.88 | 0.38 | ○ | n/a | Oman | n/a | n/a | n/a | |
| 55 | Slovakia | 11.86 | 34.95 | 0.37 | | n/a | Pakistan | n/a | n/a | n/a | |
| 56 | TFYR of Macedonia | 11.44 | 33.73 | 0.36 | | n/a | Rwanda | n/a | n/a | n/a | |
| 57 | Kyrgyzstan | 10.81 | 31.85 | 0.35 | | n/a | Seychelles | n/a | n/a | n/a | |
| 58 | Italy | 10.62 | 31.30 | 0.34 | ○ | n/a | Sudan | n/a | n/a | n/a | |
| 59 | Czech Republic | 10.58 | 31.16 | 0.33 | ○ | n/a | Swaziland | n/a | n/a | n/a | |
| 60 | Malaysia | 10.47 | 30.85 | 0.31 | ○ | n/a | Tajikistan | n/a | n/a | n/a | |
| 61 | Ecuador | 10.41 | 30.67 | 0.30 | | n/a | Togo | n/a | n/a | n/a | |
| 62 | Austria | 10.31 | 30.37 | 0.29 | ○ | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 63 | South Africa | 10.27 | 30.25 | 0.28 | ○ | n/a | Tunisia | n/a | n/a | n/a | |
| 64 | Romania | 9.82 | 28.93 | 0.27 | ○ | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 65 | Botswana (2010) | 9.16 | 26.97 | 0.26 | | n/a | United States of America | n/a | n/a | n/a | |
| 66 | Albania | 9.03 | 26.59 | 0.24 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 67 | Brazil (2012) | 8.32 | 24.49 | 0.23 | ○ | n/a | Yemen | n/a | n/a | n/a | |
| 68 | Mexico | 8.16 | 24.01 | 0.22 | ○ | n/a | Zambia | n/a | n/a | n/a | |
| 69 | Sri Lanka (2012) | 7.58 | 22.29 | 0.21 | | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Thailand | 7.55 | 22.20 | 0.20 | ○ | | | | | | |
| 71 | Turkey (2014) | 7.37 | 21.69 | 0.19 | | | | | | | |
| 72 | Mauritius (2010) | 7.35 | 21.63 | 0.17 | ○ | | | | | | |

SOURCE: International Labour Organization (ILO), ILOSTAT Annual Indicators (2009–2014) and Statistics Canada, Table 282-0004.

NOTE: ● indicates a strength; ○ a weakness

5.2.1

University/industry research collaboration

Average answer to the survey question: In your country, to what extent do businesses and universities collaborate on research and development (R&D)? [1 = do not collaborate at all; 7 = collaborate extensively] | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Finland | 5.97 | 82.80 | 1.00 | ● | 73 | Zambia | 3.48 | 41.36 | 0.45 | |
| 2 | United States of America | 5.85 | 80.83 | 0.99 | ● | 74 | Ghana | 3.46 | 40.96 | 0.45 | |
| 3 | Switzerland | 5.79 | 79.83 | 0.98 | ● | 75 | Ethiopia | 3.46 | 40.96 | 0.44 | |
| 4 | United Kingdom | 5.67 | 77.76 | 0.98 | ● | 76 | Namibia | 3.46 | 40.95 | 0.43 | |
| 5 | Singapore | 5.58 | 76.29 | 0.97 | | 77 | Seychelles | 3.40 | 40.03 | 0.42 | |
| 6 | Belgium | 5.58 | 76.29 | 0.96 | ● | 78 | Croatia | 3.39 | 39.86 | 0.42 | |
| 7 | Israel | 5.50 | 75.08 | 0.95 | | 79 | Cameroon | 3.37 | 39.56 | 0.41 | |
| 8 | Qatar | 5.44 | 73.96 | 0.95 | ● | 80 | Tanzania, United Rep. | 3.37 | 39.47 | 0.40 | |
| 9 | Netherlands | 5.38 | 72.99 | 0.94 | | 81 | Slovakia | 3.36 | 39.31 | 0.39 | |
| 10 | Germany | 5.34 | 72.25 | 0.93 | | 82 | Swaziland | 3.35 | 39.08 | 0.39 | |
| 11 | Sweden | 5.33 | 72.12 | 0.92 | | 83 | Côte d'Ivoire | 3.34 | 38.99 | 0.38 | |
| 12 | Malaysia | 5.33 | 72.10 | 0.92 | ● | 84 | Gambia | 3.33 | 38.90 | 0.37 | |
| 13 | Ireland | 5.24 | 70.71 | 0.91 | | 85 | Kazakhstan | 3.29 | 38.24 | 0.36 | |
| 14 | Norway | 5.02 | 66.98 | 0.90 | | 86 | Mozambique | 3.28 | 38.04 | 0.36 | |
| 15 | Japan | 5.00 | 66.74 | 0.89 | | 87 | Bahrain | 3.27 | 37.90 | 0.35 | |
| 16 | New Zealand | 4.91 | 65.10 | 0.89 | | 88 | Tajikistan | 3.27 | 37.89 | 0.34 | |
| 17 | Luxembourg | 4.90 | 65.05 | 0.88 | | 89 | Viet Nam | 3.27 | 37.84 | 0.33 | |
| 18 | Canada | 4.90 | 65.01 | 0.87 | | 90 | Madagascar | 3.26 | 37.62 | 0.33 | |
| 19 | Denmark | 4.90 | 64.96 | 0.86 | | 91 | Dominican Republic | 3.25 | 37.57 | 0.32 | |
| 20 | Australia | 4.84 | 64.06 | 0.86 | | 92 | Serbia | 3.24 | 37.35 | 0.31 | |
| 21 | United Arab Emirates | 4.72 | 62.07 | 0.85 | | 93 | Morocco | 3.23 | 37.21 | 0.30 | |
| 22 | Portugal | 4.68 | 61.38 | 0.84 | | 94 | Cabo Verde | 3.22 | 36.95 | 0.30 | |
| 23 | Austria | 4.68 | 61.30 | 0.83 | | 95 | Pakistan | 3.21 | 36.87 | 0.29 | |
| 24 | Iceland | 4.62 | 60.32 | 0.83 | | 96 | Lesotho | 3.20 | 36.67 | 0.28 | |
| 25 | Korea, Rep. | 4.62 | 60.27 | 0.82 | | 97 | Mali | 3.20 | 36.66 | 0.27 | |
| 26 | Lithuania | 4.61 | 60.11 | 0.81 | | 98 | Mauritius | 3.19 | 36.49 | 0.27 | |
| 27 | Hong Kong (China) | 4.59 | 59.78 | 0.80 | | 99 | Iran, Islamic Rep. | 3.18 | 36.35 | 0.26 | |
| 28 | France | 4.58 | 59.72 | 0.80 | | 100 | Burkina Faso | 3.17 | 36.14 | 0.25 | |
| 29 | Indonesia | 4.55 | 59.12 | 0.79 | ● | 101 | Azerbaijan | 3.16 | 35.95 | 0.24 | |
| 30 | South Africa | 4.49 | 58.11 | 0.78 | | 102 | Botswana | 3.14 | 35.74 | 0.23 | |
| 31 | China | 4.40 | 56.69 | 0.77 | | 103 | Trinidad and Tobago | 3.14 | 35.59 | 0.23 | |
| 32 | Costa Rica | 4.36 | 55.96 | 0.77 | | 104 | Venezuela, Bolivarian Rep. | 3.13 | 35.45 | 0.22 | |
| 33 | Estonia | 4.36 | 55.92 | 0.76 | | 105 | Kuwait | 3.10 | 35.06 | 0.21 | |
| 34 | Hungary | 4.27 | 54.56 | 0.75 | | 106 | Peru | 3.10 | 34.97 | 0.20 | |
| 35 | Kenya | 4.22 | 53.62 | 0.74 | ● | 107 | Sri Lanka | 3.08 | 34.61 | 0.20 | |
| 36 | Saudi Arabia | 4.20 | 53.33 | 0.73 | | 108 | Greece | 3.06 | 34.35 | 0.19 | ○ |
| 37 | Chile | 4.20 | 53.32 | 0.73 | | 109 | Armenia | 3.05 | 34.20 | 0.18 | ○ |
| 38 | Cyprus | 4.19 | 53.18 | 0.72 | | 110 | Bulgaria | 3.00 | 33.33 | 0.17 | ○ |
| 39 | Panama | 4.04 | 50.63 | 0.71 | | 111 | Mongolia | 2.99 | 33.10 | 0.17 | ○ |
| 40 | Czech Republic | 4.00 | 50.00 | 0.70 | | 112 | Cambodia | 2.98 | 32.95 | 0.16 | |
| 41 | Barbados | 4.00 | 49.95 | 0.70 | | 113 | Nicaragua | 2.95 | 32.55 | 0.15 | |
| 42 | Mexico | 3.97 | 49.52 | 0.69 | | 114 | Tunisia | 2.92 | 32.01 | 0.14 | ○ |
| 43 | Slovenia | 3.96 | 49.26 | 0.68 | | 115 | Lebanon | 2.88 | 31.39 | 0.14 | ○ |
| 44 | Thailand | 3.95 | 49.23 | 0.67 | | 116 | Malawi | 2.84 | 30.66 | 0.13 | |
| 45 | Montenegro | 3.95 | 49.13 | 0.67 | | 117 | Zimbabwe | 2.82 | 30.41 | 0.12 | |
| 46 | Honduras | 3.94 | 49.05 | 0.66 | ● | 118 | Burundi | 2.78 | 29.75 | 0.11 | |
| 47 | Colombia | 3.93 | 48.77 | 0.65 | | 119 | Nigeria | 2.75 | 29.20 | 0.11 | |
| 48 | India | 3.87 | 47.85 | 0.64 | | 120 | Moldova, Rep. | 2.74 | 28.99 | 0.10 | ○ |
| 49 | Malta | 3.86 | 47.59 | 0.64 | | 121 | Paraguay | 2.70 | 28.29 | 0.09 | |
| 50 | Jordan | 3.82 | 47.07 | 0.63 | | 122 | Bhutan | 2.68 | 28.08 | 0.08 | |
| 51 | El Salvador | 3.81 | 46.84 | 0.62 | | 123 | Nepal | 2.64 | 27.34 | 0.08 | ○ |
| 52 | Brazil | 3.80 | 46.65 | 0.61 | | 124 | Georgia | 2.64 | 27.28 | 0.07 | ○ |
| 53 | Philippines | 3.79 | 46.57 | 0.61 | | 125 | Kyrgyzstan | 2.57 | 26.19 | 0.06 | ○ |
| 54 | Jamaica | 3.79 | 46.56 | 0.60 | | 126 | Bangladesh | 2.56 | 25.96 | 0.05 | |
| 55 | Spain | 3.77 | 46.19 | 0.59 | | 127 | Egypt | 2.43 | 23.78 | 0.05 | ○ |
| 56 | Guyana | 3.76 | 45.95 | 0.58 | ● | 128 | Albania | 2.34 | 22.32 | 0.04 | ○ |
| 57 | Italy | 3.73 | 45.47 | 0.58 | | 129 | Algeria | 2.26 | 21.07 | 0.03 | ○ |
| 58 | TFYR of Macedonia | 3.71 | 45.18 | 0.57 | | 130 | Myanmar | 2.25 | 20.82 | 0.02 | |
| 59 | Turkey | 3.69 | 44.78 | 0.56 | | 131 | Guinea | 2.18 | 19.72 | 0.02 | ○ |
| 60 | Uganda | 3.68 | 44.69 | 0.55 | | 132 | Angola | 2.01 | 16.88 | 0.01 | ○ |
| 61 | Latvia | 3.67 | 44.55 | 0.55 | | 133 | Yemen | 1.95 | 15.89 | 0.00 | ○ |
| 62 | Rwanda | 3.65 | 44.20 | 0.54 | | n/a | Belarus | n/a | n/a | n/a | |
| 63 | Senegal | 3.64 | 43.96 | 0.53 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 64 | Argentina | 3.64 | 43.92 | 0.52 | | n/a | Ecuador | n/a | n/a | n/a | |
| 65 | Russian Federation | 3.63 | 43.87 | 0.52 | | n/a | Fiji | n/a | n/a | n/a | |
| 66 | Guatemala | 3.62 | 43.63 | 0.51 | | n/a | Niger | n/a | n/a | n/a | |
| 67 | Oman | 3.62 | 43.58 | 0.50 | | n/a | Sudan | n/a | n/a | n/a | |
| 68 | Uruguay | 3.59 | 43.21 | 0.49 | | n/a | Togo | n/a | n/a | n/a | |
| 69 | Romania | 3.59 | 43.16 | 0.48 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 70 | Bolivia, Plurinational St. | 3.54 | 42.28 | 0.48 | | | | | | | |
| 71 | Poland | 3.50 | 41.73 | 0.47 | | | | | | | |
| 72 | Ukraine | 3.50 | 41.71 | 0.46 | | | | | | | |

SOURCE: World Economic Forum, *Executive Opinion Survey 2014–2015*

NOTE: ● indicates a strength; ○ a weakness

5.2.2 State of cluster development

Average answer to the survey question on the role of clusters in the economy: In your country, how widespread are well-developed and deep clusters (geographic concentrations of firms, suppliers, producers of related products and services, and specialized institutions in a particular field)? [1 = non-existent; 7 = widespread in many fields] | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Italy | 5.60 | 76.64 | 1.00 | ● | 73 | Estonia | 3.73 | 45.56 | 0.45 | ○ |
| 2 | Germany | 5.49 | 74.86 | 0.99 | ● | 74 | Ghana | 3.73 | 45.48 | 0.45 | |
| 3 | United Arab Emirates | 5.49 | 74.83 | 0.98 | ● | 75 | Colombia | 3.71 | 45.15 | 0.44 | |
| 4 | United States of America | 5.42 | 73.65 | 0.98 | | 76 | Malawi | 3.69 | 44.83 | 0.43 | |
| 5 | Switzerland | 5.35 | 72.53 | 0.97 | | 77 | Dominican Republic | 3.68 | 44.69 | 0.42 | |
| 6 | Netherlands | 5.35 | 72.42 | 0.96 | ● | 78 | Kuwait | 3.67 | 44.54 | 0.42 | |
| 7 | Japan | 5.28 | 71.39 | 0.95 | | 79 | Jamaica | 3.67 | 44.45 | 0.41 | |
| 8 | Malaysia | 5.28 | 71.29 | 0.95 | ● | 80 | Bhutan | 3.58 | 42.94 | 0.40 | |
| 9 | United Kingdom | 5.23 | 70.56 | 0.94 | | 81 | Trinidad and Tobago | 3.56 | 42.60 | 0.39 | |
| 10 | Qatar | 5.21 | 70.21 | 0.93 | ● | 82 | Mozambique | 3.55 | 42.47 | 0.39 | |
| 11 | Singapore | 5.13 | 68.81 | 0.92 | | 83 | Uganda | 3.53 | 42.08 | 0.38 | |
| 12 | Finland | 5.06 | 67.73 | 0.92 | | 84 | Cameroon | 3.52 | 41.94 | 0.37 | |
| 13 | Norway | 5.06 | 67.66 | 0.91 | | 85 | Tunisia | 3.51 | 41.78 | 0.36 | |
| 14 | Hong Kong (China) | 5.00 | 66.67 | 0.90 | | 86 | Lithuania | 3.50 | 41.67 | 0.36 | |
| 15 | Austria | 4.95 | 65.82 | 0.89 | | 87 | Latvia | 3.50 | 41.67 | 0.35 | ○ |
| 16 | Luxembourg | 4.85 | 64.18 | 0.89 | | 88 | Hungary | 3.49 | 41.54 | 0.34 | |
| 17 | Ireland | 4.80 | 63.33 | 0.88 | | 89 | Poland | 3.48 | 41.40 | 0.33 | |
| 18 | Canada | 4.77 | 62.89 | 0.87 | | 90 | Uruguay | 3.47 | 41.12 | 0.33 | |
| 19 | Sweden | 4.74 | 62.32 | 0.86 | | 91 | Bolivia, Plurinational St. | 3.46 | 40.97 | 0.32 | |
| 20 | Belgium | 4.70 | 61.61 | 0.86 | | 92 | TFYR of Macedonia | 3.46 | 40.96 | 0.31 | |
| 21 | Saudi Arabia | 4.66 | 61.00 | 0.85 | ● | 93 | Slovenia | 3.43 | 40.43 | 0.30 | ○ |
| 22 | Brazil | 4.63 | 60.44 | 0.84 | ● | 94 | Iran, Islamic Rep. | 3.42 | 40.37 | 0.30 | |
| 23 | China | 4.56 | 59.30 | 0.83 | | 95 | Tanzania, United Rep. | 3.42 | 40.28 | 0.29 | |
| 24 | Indonesia | 4.53 | 58.81 | 0.83 | ● | 96 | Azerbaijan | 3.40 | 40.08 | 0.28 | |
| 25 | India | 4.50 | 58.38 | 0.82 | ● | 97 | Swaziland | 3.37 | 39.52 | 0.27 | |
| 26 | Israel | 4.50 | 58.31 | 0.81 | | 98 | Cabo Verde | 3.36 | 39.38 | 0.27 | |
| 27 | Jordan | 4.49 | 58.14 | 0.80 | ● | 99 | Nepal | 3.35 | 39.10 | 0.26 | |
| 28 | El Salvador | 4.48 | 58.05 | 0.80 | ● | 100 | Senegal | 3.33 | 38.85 | 0.25 | |
| 29 | Korea, Rep. | 4.35 | 55.78 | 0.79 | | 101 | Botswana | 3.32 | 38.71 | 0.24 | |
| 30 | France | 4.34 | 55.65 | 0.78 | | 102 | Algeria | 3.32 | 38.64 | 0.23 | |
| 31 | Bahrain | 4.34 | 55.60 | 0.77 | | 103 | Tajikistan | 3.32 | 38.59 | 0.23 | |
| 32 | Denmark | 4.31 | 55.15 | 0.77 | | 104 | Lebanon | 3.28 | 37.93 | 0.22 | |
| 33 | Mauritius | 4.29 | 54.80 | 0.76 | | 105 | Peru | 3.26 | 37.75 | 0.21 | |
| 34 | Turkey | 4.28 | 54.73 | 0.75 | | 106 | Côte d'Ivoire | 3.26 | 37.59 | 0.20 | |
| 35 | Egypt | 4.27 | 54.53 | 0.74 | ● | 107 | Nicaragua | 3.25 | 37.45 | 0.20 | |
| 36 | Costa Rica | 4.24 | 53.93 | 0.73 | | 108 | Yemen | 3.23 | 37.13 | 0.19 | |
| 37 | Thailand | 4.20 | 53.28 | 0.73 | | 109 | Georgia | 3.23 | 37.09 | 0.18 | ○ |
| 38 | Kenya | 4.20 | 53.26 | 0.72 | | 110 | Armenia | 3.22 | 36.95 | 0.17 | ○ |
| 39 | Portugal | 4.19 | 53.20 | 0.71 | | 111 | Serbia | 3.19 | 36.45 | 0.17 | ○ |
| 40 | Australia | 4.18 | 53.05 | 0.70 | | 112 | Kazakhstan | 3.17 | 36.22 | 0.16 | |
| 41 | South Africa | 4.16 | 52.71 | 0.70 | | 113 | Croatia | 3.16 | 36.06 | 0.15 | ○ |
| 42 | Mexico | 4.15 | 52.45 | 0.69 | | 114 | Russian Federation | 3.13 | 35.56 | 0.14 | ○ |
| 43 | Zambia | 4.11 | 51.86 | 0.68 | ● | 115 | Argentina | 3.12 | 35.34 | 0.14 | |
| 44 | Czech Republic | 4.06 | 51.04 | 0.67 | | 116 | Paraguay | 3.06 | 34.35 | 0.13 | |
| 45 | Honduras | 4.06 | 50.92 | 0.67 | ● | 117 | Montenegro | 3.03 | 33.85 | 0.12 | ○ |
| 46 | Malta | 4.04 | 50.72 | 0.66 | | 118 | Guinea | 3.02 | 33.75 | 0.11 | |
| 47 | Cyprus | 4.04 | 50.72 | 0.65 | | 119 | Greece | 3.01 | 33.44 | 0.11 | ○ |
| 48 | Philippines | 4.03 | 50.53 | 0.64 | | 120 | Albania | 3.00 | 33.40 | 0.10 | ○ |
| 49 | Panama | 4.02 | 50.29 | 0.64 | | 121 | Ethiopia | 3.00 | 33.30 | 0.09 | |
| 50 | New Zealand | 4.01 | 50.09 | 0.63 | | 122 | Ukraine | 3.00 | 33.27 | 0.08 | ○ |
| 51 | Oman | 3.99 | 49.77 | 0.62 | | 123 | Bulgaria | 2.96 | 32.60 | 0.08 | ○ |
| 52 | Spain | 3.98 | 49.71 | 0.61 | | 124 | Kyrgyzstan | 2.95 | 32.57 | 0.07 | ○ |
| 53 | Mali | 3.95 | 49.16 | 0.61 | ● | 125 | Zimbabwe | 2.95 | 32.43 | 0.06 | |
| 54 | Guatemala | 3.94 | 49.06 | 0.60 | | 126 | Burkina Faso | 2.90 | 31.62 | 0.05 | ○ |
| 55 | Pakistan | 3.94 | 49.00 | 0.59 | ● | 127 | Madagascar | 2.87 | 31.09 | 0.05 | ○ |
| 56 | Rwanda | 3.93 | 48.88 | 0.58 | | 128 | Mongolia | 2.85 | 30.79 | 0.04 | ○ |
| 57 | Iceland | 3.92 | 48.69 | 0.58 | | 129 | Burundi | 2.73 | 28.88 | 0.03 | |
| 58 | Chile | 3.90 | 48.38 | 0.57 | | 130 | Myanmar | 2.69 | 28.16 | 0.02 | |
| 59 | Guyana | 3.90 | 48.33 | 0.56 | ● | 131 | Angola | 2.58 | 26.34 | 0.02 | ○ |
| 60 | Seychelles | 3.89 | 48.11 | 0.55 | | 132 | Venezuela, Bolivarian Rep. | 2.40 | 23.32 | 0.01 | ○ |
| 61 | Cambodia | 3.86 | 47.74 | 0.55 | ● | 133 | Moldova, Rep. | 2.39 | 23.24 | 0.00 | ○ |
| 62 | Lesotho | 3.85 | 47.53 | 0.54 | ● | n/a | Belarus | n/a | n/a | n/a | |
| 63 | Bangladesh | 3.85 | 47.47 | 0.53 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 64 | Sri Lanka | 3.84 | 47.25 | 0.52 | | n/a | Ecuador | n/a | n/a | n/a | |
| 65 | Namibia | 3.81 | 46.81 | 0.52 | | n/a | Fiji | n/a | n/a | n/a | |
| 66 | Slovakia | 3.80 | 46.73 | 0.51 | | n/a | Niger | n/a | n/a | n/a | |
| 67 | Romania | 3.78 | 46.40 | 0.50 | | n/a | Sudan | n/a | n/a | n/a | |
| 68 | Morocco | 3.78 | 46.27 | 0.49 | | n/a | Togo | n/a | n/a | n/a | |
| 69 | Nigeria | 3.77 | 46.20 | 0.48 | ● | n/a | Uzbekistan | n/a | n/a | n/a | |
| 70 | Gambia | 3.77 | 46.12 | 0.48 | ● | | | | | | |
| 71 | Barbados | 3.77 | 46.10 | 0.47 | | | | | | | |
| 72 | Viet Nam | 3.76 | 45.97 | 0.46 | | | | | | | |

SOURCE: World Economic Forum, *Executive Opinion Survey 2014–2015*

NOTE: ● indicates a strength; ○ a weakness

5.2.3 GERD financed by abroad

GERD: Financed by abroad (% of total GERD) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|---------------------------------|-------|---------------|--------------|---|------|-----------------------------------|-------|---------------|--------------|---|
| 1 | Mozambique (2010) | 78.14 | 100.00 | 1.00 | ● | 73 | Lesotho (2011) | 3.45 | 4.15 | 0.26 | |
| 2 | Burkina Faso (2009) | 59.61 | 76.22 | 0.99 | ● | 74 | Russian Federation | 3.03 | 3.62 | 0.25 | ○ |
| 3 | Uganda (2010) | 57.30 | 73.26 | 0.98 | ● | 75 | Armenia | 2.79 | 3.32 | 0.24 | |
| 4 | Latvia | 51.58 | 65.92 | 0.97 | ● | 76 | Sri Lanka (2010) | 2.72 | 3.23 | 0.23 | |
| 5 | Guatemala (2012) | 49.01 | 62.62 | 0.96 | ● | 77 | Thailand (2011) | 2.50 | 2.94 | 0.22 | ○ |
| 6 | Israel (2012) | 48.77 | 62.32 | 0.95 | | 78 | Qatar (2012) | 2.42 | 2.84 | 0.21 | |
| 7 | Bosnia and Herzegovina (2012) | 48.67 | 62.19 | 0.94 | ● | 79 | Colombia | 2.38 | 2.79 | 0.20 | ○ |
| 8 | Bulgaria | 48.31 | 61.73 | 0.93 | ● | 80 | Ethiopia | 2.15 | 2.49 | 0.19 | |
| 9 | Kenya (2010) | 47.14 | 60.22 | 0.92 | ● | 81 | Bolivia, Plurinational St. (2009) | 1.86 | 2.12 | 0.18 | |
| 10 | Tanzania, United Rep. (2010) | 42.00 | 53.63 | 0.91 | ● | 82 | Morocco (2010) | 1.71 | 1.93 | 0.16 | ○ |
| 11 | Senegal (2010) | 40.53 | 51.74 | 0.90 | ● | 83 | Zambia (2008) | 1.62 | 1.81 | 0.15 | |
| 12 | Burundi (2008) | 39.92 | 50.95 | 0.89 | ● | 84 | Australia (2008) | 1.61 | 1.80 | 0.14 | ○ |
| 13 | Lithuania | 37.13 | 47.37 | 0.88 | ● | 85 | Namibia (2010) | 1.53 | 1.70 | 0.13 | ○ |
| 14 | Ghana (2010) | 31.22 | 39.79 | 0.87 | ● | 86 | Pakistan | 1.31 | 1.41 | 0.12 | |
| 15 | Bahrain | 30.44 | 38.80 | 0.86 | ● | 87 | Kuwait (2009) | 1.18 | 1.24 | 0.11 | ○ |
| 16 | Czech Republic | 27.15 | 34.57 | 0.85 | | 88 | Nigeria (2007) | 1.04 | 1.06 | 0.10 | |
| 17 | Ukraine | 21.61 | 27.46 | 0.84 | ● | 89 | China | 0.89 | 0.88 | 0.09 | ○ |
| 18 | Ireland (2012) | 21.36 | 27.13 | 0.82 | | 90 | Kyrgyzstan (2011) | 0.87 | 0.85 | 0.08 | |
| 19 | Panama (2011) | 20.73 | 26.34 | 0.81 | ● | 91 | Turkey | 0.83 | 0.80 | 0.07 | ○ |
| 20 | United Kingdom | 20.65 | 26.22 | 0.80 | | 92 | Kazakhstan | 0.76 | 0.70 | 0.06 | ○ |
| 21 | Luxembourg (2011) | 20.41 | 25.92 | 0.79 | | 93 | Mexico | 0.66 | 0.58 | 0.05 | ○ |
| 22 | Malta | 20.22 | 25.68 | 0.78 | | 94 | Argentina (2012) | 0.58 | 0.48 | 0.04 | ○ |
| 23 | Slovakia | 17.97 | 22.78 | 0.77 | | 95 | Japan | 0.52 | 0.40 | 0.03 | ○ |
| 24 | Chile (2012) | 17.54 | 22.23 | 0.76 | | 96 | Korea, Rep. | 0.30 | 0.12 | 0.02 | ○ |
| 25 | Cyprus (2012) | 17.48 | 22.17 | 0.75 | | 97 | Azerbaijan | 0.25 | 0.05 | 0.01 | ○ |
| 26 | Hungary | 16.57 | 20.99 | 0.74 | | 98 | Tajikistan | 0.21 | 0.00 | 0.00 | ○ |
| 27 | Austria (2014) | 16.38 | 20.75 | 0.73 | | n/a | Algeria | n/a | n/a | n/a | |
| 28 | Gambia (2011) | 15.90 | 20.13 | 0.72 | ● | n/a | Angola | n/a | n/a | n/a | |
| 29 | Romania | 15.50 | 19.63 | 0.71 | | n/a | Bangladesh | n/a | n/a | n/a | |
| 30 | Croatia | 15.50 | 19.62 | 0.70 | | n/a | Barbados | n/a | n/a | n/a | |
| 31 | Montenegro (2011) | 15.29 | 19.35 | 0.69 | | n/a | Bhutan | n/a | n/a | n/a | |
| 32 | Netherlands | 14.27 | 18.05 | 0.68 | | n/a | Botswana | n/a | n/a | n/a | |
| 33 | Greece | 13.32 | 16.82 | 0.67 | | n/a | Brazil | n/a | n/a | n/a | |
| 34 | Poland | 13.12 | 16.56 | 0.66 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 35 | South Africa (2012) | 13.06 | 16.49 | 0.65 | | n/a | Cambodia | n/a | n/a | n/a | |
| 36 | Belgium (2011) | 12.96 | 16.36 | 0.64 | | n/a | Cameroon | n/a | n/a | n/a | |
| 37 | Switzerland (2012) | 12.07 | 15.23 | 0.63 | | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 38 | Togo (2012) | 12.06 | 15.20 | 0.62 | ● | n/a | Dominican Republic | n/a | n/a | n/a | |
| 39 | Moldova, Rep. | 11.80 | 14.87 | 0.61 | | n/a | Egypt | n/a | n/a | n/a | |
| 40 | Finland | 11.54 | 14.54 | 0.60 | | n/a | Fiji | n/a | n/a | n/a | |
| 41 | Madagascar (2009) | 10.58 | 13.31 | 0.59 | ● | n/a | Georgia | n/a | n/a | n/a | |
| 42 | Estonia | 10.35 | 13.01 | 0.58 | | n/a | Guinea | n/a | n/a | n/a | |
| 43 | Italy (2012) | 9.45 | 11.86 | 0.57 | | n/a | Guayana | n/a | n/a | n/a | |
| 44 | Serbia (2012) | 9.19 | 11.52 | 0.56 | | n/a | Honduras | n/a | n/a | n/a | |
| 45 | El Salvador (2012) | 9.15 | 11.48 | 0.55 | | n/a | India | n/a | n/a | n/a | |
| 46 | Slovenia | 8.91 | 11.17 | 0.54 | | n/a | Indonesia | n/a | n/a | n/a | |
| 47 | Mali (2010) | 8.81 | 11.03 | 0.53 | | n/a | Iran, Islamic Rep. | n/a | n/a | n/a | |
| 48 | Iceland (2011) | 8.22 | 10.28 | 0.52 | | n/a | Jamaica | n/a | n/a | n/a | |
| 49 | Belarus | 7.95 | 9.93 | 0.51 | | n/a | Jordan | n/a | n/a | n/a | |
| 50 | Norway (2011) | 7.79 | 9.72 | 0.49 | ○ | n/a | Lebanon | n/a | n/a | n/a | |
| 51 | Paraguay (2012) | 7.71 | 9.63 | 0.48 | | n/a | Malawi | n/a | n/a | n/a | |
| 52 | Uruguay (2012) | 7.65 | 9.54 | 0.47 | | n/a | Myanmar | n/a | n/a | n/a | |
| 53 | France (2012) | 7.62 | 9.50 | 0.46 | ○ | n/a | Nepal | n/a | n/a | n/a | |
| 54 | Albania (2008) | 7.37 | 9.18 | 0.45 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 55 | Denmark | 7.18 | 8.94 | 0.44 | ○ | n/a | Niger | n/a | n/a | n/a | |
| 56 | Sweden | 6.80 | 8.46 | 0.43 | ○ | n/a | Oman | n/a | n/a | n/a | |
| 57 | Spain (2012) | 6.65 | 8.26 | 0.42 | ○ | n/a | Peru | n/a | n/a | n/a | |
| 58 | Costa Rica (2011) | 6.54 | 8.13 | 0.41 | | n/a | Rwanda | n/a | n/a | n/a | |
| 59 | Mauritius (2012) | 6.43 | 7.99 | 0.40 | | n/a | Saudi Arabia | n/a | n/a | n/a | |
| 60 | New Zealand (2011) | 6.32 | 7.85 | 0.39 | ○ | n/a | Seychelles | n/a | n/a | n/a | |
| 61 | Canada | 5.95 | 7.37 | 0.38 | ○ | n/a | Sudan | n/a | n/a | n/a | |
| 62 | Singapore (2012) | 5.91 | 7.31 | 0.37 | ○ | n/a | Swaziland | n/a | n/a | n/a | |
| 63 | Portugal (2012) | 5.17 | 6.37 | 0.36 | ○ | n/a | TFYR of Macedonia | n/a | n/a | n/a | |
| 64 | Mongolia | 4.90 | 6.01 | 0.35 | | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 65 | Hong Kong (China) (2012) | 4.65 | 5.70 | 0.34 | ○ | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 66 | Malaysia (2012) | 4.59 | 5.63 | 0.33 | ○ | n/a | Uzbekistan | n/a | n/a | n/a | |
| 67 | Ecuador (2011) | 4.46 | 5.46 | 0.32 | | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 68 | Tunisia (2012) | 4.40 | 5.38 | 0.31 | | n/a | Yemen | n/a | n/a | n/a | |
| 69 | Germany (2012) | 4.32 | 5.28 | 0.30 | ○ | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Philippines (2007) | 4.12 | 5.02 | 0.29 | | | | | | | |
| 71 | Viet Nam (2011) | 3.99 | 4.86 | 0.28 | | | | | | | |
| 72 | United States of America (2012) | 3.80 | 4.61 | 0.27 | ○ | | | | | | |

SOURCE: UNESCO Institute for Statistics, UIS online database

NOTE: ● indicates a strength; ○ a weakness

5.2.4 Joint venture/strategic alliance deals

Joint ventures/strategic alliances: Number of deals, fractional counting (per trillion PPP\$ GDP) | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Bahrain | .015 | 100.00 | 0.99 | ● | 73 | Bangladesh | .000 | 5.07 | 0.19 | |
| 1 | United Arab Emirates | .007 | 100.00 | 0.99 | ● | 74 | Dominican Republic | .000 | 4.88 | 0.18 | |
| 3 | Luxembourg | .006 | 89.66 | 0.98 | ● | 75 | Brazil | .000 | 4.80 | 0.17 | ○ |
| 4 | Canada | .006 | 87.84 | 0.97 | ● | 76 | Poland | .000 | 4.13 | 0.16 | ○ |
| 5 | Singapore | .005 | 73.70 | 0.96 | | 77 | Ghana | .000 | 4.03 | 0.15 | |
| 6 | Ireland | .005 | 69.86 | 0.94 | | 78 | Azerbaijan | .000 | 3.95 | 0.13 | ○ |
| 7 | New Zealand | .005 | 69.15 | 0.93 | | 79 | Pakistan | .000 | 3.65 | 0.12 | |
| 8 | Mauritius | .004 | 65.59 | 0.92 | ● | 80 | Ukraine | .000 | 3.44 | 0.11 | ○ |
| 9 | Hong Kong (China) | .004 | 65.52 | 0.91 | | 81 | Turkey | .000 | 3.11 | 0.10 | ○ |
| 10 | Australia | .004 | 64.08 | 0.90 | | 82 | Mexico | .000 | 2.40 | 0.09 | ○ |
| 11 | Qatar | .004 | 62.90 | 0.89 | ● | 83 | Portugal | .000 | 2.02 | 0.08 | ○ |
| 12 | Switzerland | .004 | 58.24 | 0.88 | | 84 | Indonesia | .000 | 1.77 | 0.07 | ○ |
| 13 | Oman | .004 | 56.51 | 0.87 | ● | 85 | Argentina | .000 | 1.71 | 0.06 | ○ |
| 14 | Israel | .004 | 56.01 | 0.85 | | 86 | Peru | .000 | 1.35 | 0.04 | ○ |
| 15 | Cyprus | .004 | 55.77 | 0.84 | | 87 | Algeria | .000 | 1.13 | 0.03 | |
| 16 | United States of America | .004 | 53.88 | 0.83 | | 88 | Venezuela, Bolivarian Rep. | .000 | 0.70 | 0.02 | ○ |
| 17 | Greece | .003 | 52.85 | 0.82 | | 89 | Iran, Islamic Rep. | .000 | 0.42 | 0.01 | ○ |
| 18 | United Kingdom | .003 | 47.63 | 0.81 | | 90 | Nigeria | .000 | 0.00 | 0.00 | ○ |
| 19 | Georgia | .003 | 44.55 | 0.80 | ● | n/a | Albania | n/a | n/a | n/a | |
| 20 | Mongolia | .003 | 43.83 | 0.79 | | n/a | Angola | n/a | n/a | n/a | |
| 21 | Lebanon | .002 | 37.46 | 0.78 | ● | n/a | Armenia | n/a | n/a | n/a | |
| 22 | Zambia | .002 | 37.33 | 0.76 | ● | n/a | Barbados | n/a | n/a | n/a | |
| 23 | Malaysia | .002 | 36.64 | 0.75 | | n/a | Bhutan | n/a | n/a | n/a | |
| 24 | Jordan | .002 | 34.93 | 0.74 | ● | n/a | Bolivia, Plurinational St. | n/a | n/a | n/a | |
| 25 | Norway | .002 | 34.42 | 0.73 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 26 | Tajikistan | .002 | 33.96 | 0.72 | ● | n/a | Bulgaria | n/a | n/a | n/a | |
| 27 | Sweden | .002 | 33.82 | 0.71 | | n/a | Burkina Faso | n/a | n/a | n/a | |
| 28 | Namibia | .002 | 32.11 | 0.70 | ● | n/a | Burundi | n/a | n/a | n/a | |
| 29 | Kuwait | .002 | 31.99 | 0.69 | ● | n/a | Cabo Verde | n/a | n/a | n/a | |
| 30 | Saudi Arabia | .002 | 31.10 | 0.67 | | n/a | Cambodia | n/a | n/a | n/a | |
| 31 | Denmark | .002 | 30.30 | 0.66 | | n/a | Cameroon | n/a | n/a | n/a | |
| 32 | Zimbabwe | .002 | 27.81 | 0.65 | ● | n/a | Costa Rica | n/a | n/a | n/a | |
| 33 | Mali | .002 | 27.63 | 0.64 | ● | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 34 | Netherlands | .002 | 26.91 | 0.63 | ○ | n/a | Ecuador | n/a | n/a | n/a | |
| 35 | Croatia | .002 | 25.52 | 0.62 | | n/a | El Salvador | n/a | n/a | n/a | |
| 36 | Mozambique | .002 | 24.17 | 0.61 | ● | n/a | Ethiopia | n/a | n/a | n/a | |
| 37 | Botswana | .001 | 22.22 | 0.60 | | n/a | Fiji | n/a | n/a | n/a | |
| 38 | Japan | .001 | 22.16 | 0.58 | | n/a | Gambia | n/a | n/a | n/a | |
| 39 | Honduras | .001 | 19.08 | 0.57 | ● | n/a | Guatemala | n/a | n/a | n/a | |
| 40 | Belgium | .001 | 18.57 | 0.56 | | n/a | Guinea | n/a | n/a | n/a | |
| 41 | Korea, Rep. | .001 | 18.42 | 0.55 | | n/a | Guyana | n/a | n/a | n/a | |
| 42 | Egypt | .001 | 17.88 | 0.54 | | n/a | Iceland | n/a | n/a | n/a | |
| 43 | France | .001 | 17.37 | 0.53 | ○ | n/a | Jamaica | n/a | n/a | n/a | |
| 44 | Finland | .001 | 16.78 | 0.52 | | n/a | Kazakhstan | n/a | n/a | n/a | |
| 45 | Chile | .001 | 16.29 | 0.51 | | n/a | Kyrgyzstan | n/a | n/a | n/a | |
| 46 | Philippines | .001 | 15.67 | 0.49 | | n/a | Lesotho | n/a | n/a | n/a | |
| 47 | Thailand | .001 | 15.11 | 0.48 | | n/a | Madagascar | n/a | n/a | n/a | |
| 48 | Estonia | .001 | 13.76 | 0.47 | ○ | n/a | Malawi | n/a | n/a | n/a | |
| 49 | Germany | .001 | 13.55 | 0.46 | ○ | n/a | Malta | n/a | n/a | n/a | |
| 50 | Spain | .001 | 12.70 | 0.45 | ○ | n/a | Moldova, Rep. | n/a | n/a | n/a | |
| 51 | India | .001 | 12.18 | 0.44 | | n/a | Montenegro | n/a | n/a | n/a | |
| 52 | Nepal | .001 | 10.86 | 0.43 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 53 | South Africa | .001 | 10.62 | 0.42 | | n/a | Niger | n/a | n/a | n/a | |
| 54 | Latvia | .001 | 9.98 | 0.40 | ○ | n/a | Paraguay | n/a | n/a | n/a | |
| 55 | Panama | .001 | 9.40 | 0.39 | | n/a | Romania | n/a | n/a | n/a | |
| 56 | Russian Federation | .001 | 9.19 | 0.38 | | n/a | Rwanda | n/a | n/a | n/a | |
| 57 | China | .001 | 9.15 | 0.37 | | n/a | Senegal | n/a | n/a | n/a | |
| 58 | Colombia | .001 | 8.94 | 0.36 | | n/a | Seychelles | n/a | n/a | n/a | |
| 59 | Myanmar | .001 | 8.86 | 0.35 | ● | n/a | Slovakia | n/a | n/a | n/a | |
| 60 | Uzbekistan | .001 | 8.29 | 0.34 | | n/a | Slovenia | n/a | n/a | n/a | |
| 61 | Belarus | .001 | 8.27 | 0.33 | | n/a | Sudan | n/a | n/a | n/a | |
| 62 | Italy | .001 | 7.51 | 0.31 | ○ | n/a | Swaziland | n/a | n/a | n/a | |
| 63 | Serbia | .001 | 7.37 | 0.30 | ○ | n/a | TFYR of Macedonia | n/a | n/a | n/a | |
| 64 | Austria | .001 | 7.10 | 0.29 | ○ | n/a | Togo | n/a | n/a | n/a | |
| 65 | Czech Republic | .000 | 6.65 | 0.28 | ○ | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 66 | Sri Lanka | .000 | 6.39 | 0.27 | | n/a | Tunisia | n/a | n/a | n/a | |
| 67 | Viet Nam | .000 | 6.34 | 0.26 | | n/a | Uganda | n/a | n/a | n/a | |
| 68 | Lithuania | .000 | 5.75 | 0.25 | ○ | n/a | Uruguay | n/a | n/a | n/a | |
| 69 | Hungary | .000 | 5.55 | 0.24 | ○ | n/a | Yemen | n/a | n/a | n/a | |
| 70 | Morocco | .000 | 5.40 | 0.22 | | | | | | | |
| 71 | Tanzania, United Rep. | .000 | 5.36 | 0.21 | | | | | | | |
| 72 | Kenya | .000 | 5.11 | 0.20 | | | | | | | |

SOURCE: Thomson Reuters, Thomson One Banker Private Equity, SDC Platinum database; International Monetary Fund World Economic Outlook Database, 2015 (PPP\$ GDP)
NOTE: ● indicates a strength; ○ a weakness

5.2.5 Patent families filed in at least three offices

Number of patent families filed by residents in at least three offices (per billion PPP\$ GDP) | 2011

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-----------------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|-----|
| 1 | Barbados | 6.71 | 100.00 | 1.00 | ● | 73 | Cameroon (2006) | 0.02 | 4.85 | 0.36 | |
| 2 | Japan | 5.15 | 93.83 | 0.99 | ● | 74 | Oman (2005) | 0.02 | 4.81 | 0.35 | |
| 3 | Korea, Rep. | 4.39 | 90.12 | 0.98 | ● | 75 | Bahrain (2008) | 0.02 | 4.65 | 0.35 | |
| 4 | Switzerland | 3.35 | 83.81 | 0.97 | | 76 | Belarus (2010) | 0.02 | 4.38 | 0.34 | |
| 5 | Israel | 3.04 | 81.62 | 0.96 | ● | 77 | Philippines | 0.02 | 4.32 | 0.33 | |
| 6 | Finland | 2.48 | 76.92 | 0.96 | | 78 | Romania | 0.02 | 4.28 | 0.32 | |
| 7 | Germany | 2.37 | 75.93 | 0.95 | | 79 | Ecuador | 0.02 | 4.26 | 0.31 | |
| 8 | Seychelles (2010) | 2.23 | 74.55 | 0.94 | ● | 80 | Tunisia (2010) | 0.02 | 3.95 | 0.30 | |
| 9 | Sweden | 1.90 | 70.86 | 0.93 | | 81 | Turkey | 0.02 | 3.78 | 0.29 | |
| 10 | Luxembourg | 1.71 | 68.50 | 0.92 | | 82 | Uruguay | 0.02 | 3.63 | 0.28 | |
| 11 | United States of America | 1.50 | 65.55 | 0.91 | | 83 | Costa Rica | 0.02 | 3.61 | 0.27 | |
| 12 | Austria | 1.40 | 63.98 | 0.90 | ● | 84 | Kenya (2004) | 0.02 | 3.32 | 0.27 | |
| 13 | Netherlands | 1.29 | 62.19 | 0.89 | | 85 | Chile | 0.01 | 3.14 | 0.26 | ○ |
| 14 | France | 1.23 | 61.25 | 0.88 | | 86 | Dominican Republic (2006) | 0.01 | 2.66 | 0.25 | |
| 15 | Denmark | 1.10 | 58.81 | 0.88 | | 87 | Guatemala (2007) | 0.01 | 2.56 | 0.24 | |
| 16 | Canada | 1.04 | 57.51 | 0.87 | | 88 | Ukraine | 0.01 | 2.35 | 0.23 | |
| 17 | United Kingdom | 0.92 | 54.84 | 0.86 | | 89 | Uzbekistan (2008) | 0.01 | 2.28 | 0.22 | |
| 18 | Belgium | 0.83 | 52.70 | 0.85 | | 90 | Thailand | 0.01 | 2.10 | 0.21 | ○ |
| 19 | Singapore | 0.79 | 51.52 | 0.84 | | 91 | Azerbaijan (2009) | 0.01 | 1.73 | 0.20 | |
| 20 | Australia | 0.75 | 50.46 | 0.83 | | 92 | Myanmar (2008) | 0.01 | 1.50 | 0.19 | |
| 21 | Malta | 0.73 | 49.94 | 0.82 | | 93 | United Arab Emirates | 0.01 | 1.36 | 0.19 | ○ |
| 22 | Ireland | 0.64 | 47.23 | 0.81 | | 94 | Colombia | 0.01 | 1.28 | 0.18 | ○ |
| 23 | Norway | 0.54 | 43.83 | 0.81 | | 95 | Morocco (2009) | 0.01 | 1.18 | 0.17 | ○ |
| 24 | Italy | 0.47 | 41.02 | 0.80 | | 96 | Viet Nam | 0.00 | 1.10 | 0.16 | ○ |
| 25 | New Zealand | 0.46 | 40.50 | 0.79 | | 97 | Qatar (2010) | 0.00 | 1.03 | 0.15 | |
| 26 | Cyprus | 0.35 | 35.23 | 0.78 | | 98 | Kazakhstan (2006) | 0.00 | 0.95 | 0.14 | ○ |
| 27 | Iceland | 0.31 | 33.52 | 0.77 | | 99 | Kuwait | 0.00 | 0.93 | 0.13 | |
| 28 | Estonia | 0.29 | 31.94 | 0.76 | | 100 | Venezuela, Bolivarian Rep. | 0.00 | 0.92 | 0.12 | |
| 29 | China | 0.28 | 31.19 | 0.75 | | 101 | Peru (2010) | 0.00 | 0.81 | 0.12 | ○ |
| 30 | Hong Kong (China) | 0.27 | 30.55 | 0.74 | | 102 | Nigeria (2010) | 0.00 | 0.58 | 0.11 | |
| 31 | Burundi (2004) | 0.22 | 27.70 | 0.73 | ● | 103 | Algeria (2010) | 0.00 | 0.51 | 0.10 | |
| 32 | Czech Republic | 0.21 | 26.73 | 0.73 | | 104 | Pakistan (2006) | 0.00 | 0.40 | 0.09 | |
| 33 | Spain | 0.18 | 24.56 | 0.72 | | 105 | Indonesia (2010) | 0.00 | 0.35 | 0.08 | |
| 34 | Slovenia | 0.17 | 23.36 | 0.71 | | 106 | Egypt | 0.00 | 0.28 | 0.07 | ○ |
| 35 | Mauritius (2009) | 0.17 | 22.99 | 0.70 | | 107 | Iran, Islamic Rep. (2009) | 0.00 | 0.20 | 0.06 | ○ |
| 36 | Swaziland (2009) | 0.14 | 20.15 | 0.69 | ● | 108 | Bangladesh | 0.00 | 0.00 | 0.00 | ○ |
| 37 | Moldova, Rep. | 0.13 | 20.05 | 0.68 | | 108 | Botswana | 0.00 | 0.00 | 0.00 | ○ |
| 38 | Hungary | 0.13 | 19.84 | 0.67 | | 108 | Côte d'Ivoire | 0.00 | 0.00 | 0.00 | ○ |
| 39 | Montenegro (2010) | 0.12 | 18.57 | 0.66 | | 108 | Ghana | 0.00 | 0.00 | 0.00 | ○ |
| 40 | Mongolia (2008) | 0.12 | 18.30 | 0.65 | | 108 | Nicaragua | 0.00 | 0.00 | 0.00 | ○ |
| 41 | Portugal | 0.10 | 16.27 | 0.65 | | 108 | TFYR of Macedonia | 0.00 | 0.00 | 0.00 | ○ |
| 42 | Guinea (2009) | 0.08 | 14.04 | 0.64 | ● | 108 | Zimbabwe | 0.00 | 0.00 | 0.00 | ○ |
| 43 | Latvia (2009) | 0.08 | 13.41 | 0.63 | | n/a | Angola | n/a | n/a | n/a | n/a |
| 44 | Namibia (2005) | 0.08 | 13.19 | 0.62 | | n/a | Bhutan | n/a | n/a | n/a | n/a |
| 45 | Niger | 0.07 | 12.89 | 0.61 | ● | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | n/a |
| 46 | Georgia | 0.07 | 12.55 | 0.60 | | n/a | Burkina Faso | n/a | n/a | n/a | n/a |
| 47 | Panama | 0.07 | 12.45 | 0.59 | | n/a | Cabo Verde | n/a | n/a | n/a | n/a |
| 48 | Kyrgyzstan (2009) | 0.07 | 12.14 | 0.58 | | n/a | Cambodia | n/a | n/a | n/a | n/a |
| 49 | Poland | 0.07 | 12.04 | 0.58 | | n/a | Ethiopia | n/a | n/a | n/a | n/a |
| 50 | Albania (2004) | 0.06 | 10.53 | 0.57 | | n/a | Fiji | n/a | n/a | n/a | n/a |
| 51 | Armenia (2010) | 0.05 | 9.98 | 0.56 | | n/a | Gambia | n/a | n/a | n/a | n/a |
| 52 | India | 0.05 | 9.86 | 0.55 | | n/a | Guyana | n/a | n/a | n/a | n/a |
| 53 | Slovakia | 0.05 | 9.64 | 0.54 | | n/a | Honduras | n/a | n/a | n/a | n/a |
| 54 | Bulgaria | 0.05 | 9.60 | 0.53 | | n/a | Lesotho | n/a | n/a | n/a | n/a |
| 55 | Croatia | 0.05 | 8.84 | 0.52 | | n/a | Madagascar | n/a | n/a | n/a | n/a |
| 56 | Malaysia | 0.04 | 8.64 | 0.51 | | n/a | Malawi | n/a | n/a | n/a | n/a |
| 57 | Jamaica | 0.04 | 8.50 | 0.50 | | n/a | Mali | n/a | n/a | n/a | n/a |
| 58 | Lithuania | 0.04 | 8.49 | 0.50 | | n/a | Mozambique | n/a | n/a | n/a | n/a |
| 59 | Jordan | 0.04 | 8.39 | 0.49 | | n/a | Nepal | n/a | n/a | n/a | n/a |
| 60 | Sri Lanka | 0.04 | 7.12 | 0.48 | | n/a | Paraguay | n/a | n/a | n/a | n/a |
| 61 | Argentina | 0.03 | 6.97 | 0.47 | | n/a | Rwanda | n/a | n/a | n/a | n/a |
| 62 | Serbia | 0.03 | 6.66 | 0.46 | | n/a | Senegal | n/a | n/a | n/a | n/a |
| 63 | Brazil | 0.03 | 6.50 | 0.45 | | n/a | Sudan | n/a | n/a | n/a | n/a |
| 64 | Russian Federation | 0.03 | 6.00 | 0.44 | | n/a | Tajikistan | n/a | n/a | n/a | n/a |
| 65 | Lebanon (2010) | 0.03 | 5.90 | 0.43 | | n/a | Tanzania, United Rep. | n/a | n/a | n/a | n/a |
| 66 | Mexico | 0.03 | 5.69 | 0.42 | | n/a | Togo | n/a | n/a | n/a | n/a |
| 67 | Greece | 0.03 | 5.55 | 0.42 | | n/a | Uganda | n/a | n/a | n/a | n/a |
| 68 | Trinidad and Tobago (2009) | 0.03 | 5.42 | 0.41 | | n/a | Yemen | n/a | n/a | n/a | n/a |
| 69 | South Africa | 0.03 | 5.28 | 0.40 | | n/a | Zambia | n/a | n/a | n/a | n/a |
| 70 | Bolivia, Plurinational St. (2006) | 0.02 | 5.10 | 0.39 | | | | | | | |
| 71 | Saudi Arabia | 0.02 | 5.07 | 0.38 | | | | | | | |
| 72 | El Salvador (2009) | 0.02 | 4.91 | 0.37 | | | | | | | |

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; International Monetary Fund *World Economic Outlook Database*, 2015 (PPP\$ GDP)

NOTE: ● indicates a strength; ○ a weakness

5.3.1

Royalties and license fees payments

Royalty and license fees, payments (% of total trade) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-----------------------------------|-------|---------------|--------------|---|------|---------------------------|-------|---------------|--------------|---|
| 1 | Guyana | 3.39 | 100.00 | 0.97 | ● | 73 | Belarus | 0.32 | 9.35 | 0.42 | |
| 1 | Ireland | 22.21 | 100.00 | 0.97 | ● | 74 | Cyprus | 0.31 | 9.24 | 0.42 | |
| 1 | Netherlands | 4.18 | 100.00 | 0.97 | ● | 75 | Nigeria | 0.30 | 8.80 | 0.41 | |
| 1 | Singapore | 3.78 | 100.00 | 0.97 | ● | 76 | Panama | 0.29 | 8.49 | 0.40 | |
| 1 | Switzerland (2012) | 8.39 | 100.00 | 0.97 | ● | 77 | Paraguay | 0.27 | 8.04 | 0.39 | |
| 6 | Argentina | 2.60 | 76.53 | 0.96 | ● | 78 | Lesotho | 0.27 | 7.80 | 0.38 | |
| 7 | Swaziland (2012) | 2.00 | 58.89 | 0.95 | ● | 79 | Latvia | 0.25 | 7.43 | 0.38 | ○ |
| 8 | Japan | 1.99 | 58.69 | 0.94 | | 80 | Estonia | 0.25 | 7.38 | 0.37 | ○ |
| 9 | Canada | 1.93 | 56.89 | 0.94 | | 81 | Uruguay | 0.24 | 7.01 | 0.36 | |
| 10 | New Zealand | 1.87 | 54.97 | 0.93 | | 82 | Uganda | 0.23 | 6.87 | 0.35 | |
| 11 | South Africa | 1.70 | 50.12 | 0.92 | ● | 83 | Kenya (2012) | 0.23 | 6.72 | 0.34 | |
| 12 | Thailand | 1.64 | 48.42 | 0.91 | ● | 84 | Mongolia | 0.23 | 6.65 | 0.34 | |
| 13 | Finland | 1.62 | 47.84 | 0.90 | | 85 | Algeria (2012) | 0.20 | 5.88 | 0.33 | |
| 14 | United States of America | 1.58 | 46.61 | 0.90 | | 86 | Kazakhstan | 0.20 | 5.79 | 0.32 | |
| 15 | Russian Federation | 1.57 | 46.34 | 0.89 | ● | 87 | Mauritius | 0.19 | 5.60 | 0.31 | |
| 16 | Malta | 1.52 | 44.83 | 0.88 | | 88 | Montenegro | 0.19 | 5.49 | 0.30 | ○ |
| 17 | Korea, Rep. | 1.48 | 43.53 | 0.87 | | 89 | Morocco | 0.18 | 5.14 | 0.30 | |
| 18 | Iceland (2012) | 1.40 | 41.34 | 0.86 | | 90 | Iran, Islamic Rep. (2012) | 0.17 | 5.11 | 0.29 | |
| 19 | France | 1.27 | 37.47 | 0.86 | | 91 | Botswana (2012) | 0.16 | 4.76 | 0.28 | |
| 20 | Australia | 1.23 | 36.15 | 0.85 | | 92 | Slovakia | 0.16 | 4.75 | 0.27 | ○ |
| 21 | Brazil | 1.22 | 35.80 | 0.84 | ● | 93 | Kyrgyzstan (2012) | 0.16 | 4.73 | 0.26 | |
| 22 | Ukraine | 1.16 | 34.20 | 0.83 | ● | 94 | Georgia | 0.16 | 4.60 | 0.26 | |
| 23 | Poland | 1.11 | 32.82 | 0.82 | ● | 95 | Côte d'Ivoire (2010) | 0.15 | 4.45 | 0.25 | |
| 24 | Hungary | 1.11 | 32.77 | 0.82 | | 96 | Seychelles (2012) | 0.14 | 4.22 | 0.24 | |
| 25 | Romania | 1.07 | 31.48 | 0.81 | ● | 97 | Cambodia | 0.12 | 3.37 | 0.23 | |
| 26 | United Kingdom | 1.05 | 30.97 | 0.80 | | 98 | Lithuania | 0.11 | 3.30 | 0.22 | ○ |
| 27 | Chile | 1.04 | 30.63 | 0.79 | | 99 | Niger (2009) | 0.11 | 3.22 | 0.22 | |
| 28 | Serbia | 1.03 | 30.35 | 0.78 | | 100 | Togo (2010) | 0.11 | 3.13 | 0.21 | |
| 29 | Jamaica | 1.02 | 30.00 | 0.78 | ● | 101 | Azerbaijan (2012) | 0.10 | 3.04 | 0.20 | |
| 30 | Denmark | 1.00 | 29.47 | 0.77 | | 102 | Mozambique (2012) | 0.10 | 2.82 | 0.19 | |
| 31 | Croatia | 0.98 | 28.98 | 0.76 | | 103 | Cameroon (2012) | 0.10 | 2.80 | 0.18 | |
| 32 | Italy | 0.97 | 28.67 | 0.75 | | 104 | Senegal (2012) | 0.09 | 2.67 | 0.18 | |
| 33 | Sweden | 0.97 | 28.43 | 0.74 | | 105 | Fiji | 0.09 | 2.66 | 0.17 | |
| 34 | Barbados (2010) | 0.91 | 26.79 | 0.74 | | 106 | Bosnia and Herzegovina | 0.08 | 2.48 | 0.16 | ○ |
| 35 | China | 0.91 | 26.74 | 0.73 | | 107 | Lebanon (2012) | 0.07 | 1.96 | 0.15 | ○ |
| 36 | Luxembourg | 0.86 | 25.25 | 0.72 | | 108 | Mali (2010) | 0.07 | 1.92 | 0.14 | |
| 37 | Germany | 0.84 | 24.66 | 0.71 | | 109 | Namibia | 0.07 | 1.91 | 0.14 | ○ |
| 38 | Austria | 0.83 | 24.57 | 0.70 | | 110 | Tunisia (2012) | 0.05 | 1.55 | 0.13 | ○ |
| 39 | Colombia | 0.83 | 24.57 | 0.70 | | 111 | Rwanda (2012) | 0.05 | 1.50 | 0.12 | |
| 40 | Indonesia | 0.83 | 24.56 | 0.69 | ● | 112 | Yemen (2011) | 0.05 | 1.38 | 0.11 | |
| 41 | El Salvador | 0.83 | 24.38 | 0.68 | ● | 113 | Bangladesh (2012) | 0.03 | 0.98 | 0.10 | |
| 42 | India | 0.76 | 22.49 | 0.67 | | 114 | Ethiopia (2012) | 0.02 | 0.71 | 0.10 | |
| 43 | Slovenia | 0.73 | 21.63 | 0.66 | | 115 | Guinea (2012) | 0.02 | 0.70 | 0.09 | |
| 44 | Philippines | 0.73 | 21.59 | 0.66 | ● | 116 | Malawi (2012) | 0.02 | 0.68 | 0.08 | ○ |
| 45 | Belgium | 0.72 | 21.30 | 0.65 | | 117 | Tanzania, United Rep. | 0.01 | 0.36 | 0.07 | |
| 46 | Madagascar (2012) | 0.68 | 20.10 | 0.64 | ● | 118 | Nicaragua | 0.01 | 0.35 | 0.06 | ○ |
| 47 | Guatemala | 0.65 | 19.22 | 0.63 | ● | 119 | Cabo Verde | 0.01 | 0.32 | 0.06 | ○ |
| 48 | TFYR of Macedonia | 0.65 | 19.10 | 0.62 | | 120 | Burkina Faso (2012) | 0.01 | 0.23 | 0.05 | ○ |
| 49 | Czech Republic | 0.64 | 18.97 | 0.62 | | 121 | Zambia (2012) | 0.01 | 0.16 | 0.04 | ○ |
| 50 | Egypt (2012) | 0.59 | 17.48 | 0.61 | | 122 | Bhutan | 0.01 | 0.15 | 0.03 | ○ |
| 51 | Malaysia | 0.58 | 17.03 | 0.60 | | 123 | Angola (2012) | 0.00 | 0.12 | 0.02 | |
| 52 | Bulgaria | 0.55 | 16.15 | 0.59 | | 124 | Tajikistan (2012) | 0.00 | 0.08 | 0.02 | ○ |
| 53 | Israel (2012) | 0.54 | 15.93 | 0.58 | | 125 | Burundi (2012) | 0.00 | 0.08 | 0.01 | ○ |
| 54 | Portugal | 0.50 | 14.68 | 0.58 | | 126 | Sudan | 0.00 | 0.00 | 0.00 | ○ |
| 55 | Greece | 0.48 | 14.12 | 0.57 | | n/a | Armenia | n/a | n/a | n/a | |
| 56 | Moldova, Rep. | 0.47 | 13.69 | 0.56 | | n/a | Bahrain | n/a | n/a | n/a | |
| 57 | Peru (2012) | 0.46 | 13.61 | 0.55 | | n/a | Gambia | n/a | n/a | n/a | |
| 58 | Spain | 0.46 | 13.57 | 0.54 | ○ | n/a | Ghana | n/a | n/a | n/a | |
| 59 | Venezuela, Bolivarian Rep. (2012) | 0.45 | 13.31 | 0.54 | | n/a | Jordan | n/a | n/a | n/a | |
| 60 | Dominican Republic (2012) | 0.45 | 13.17 | 0.53 | | n/a | Kuwait | n/a | n/a | n/a | |
| 61 | Ecuador | 0.44 | 12.89 | 0.52 | | n/a | Myanmar | n/a | n/a | n/a | |
| 62 | Norway | 0.40 | 11.87 | 0.51 | ○ | n/a | Nepal | n/a | n/a | n/a | |
| 63 | Albania | 0.40 | 11.86 | 0.50 | | n/a | Oman | n/a | n/a | n/a | |
| 64 | Bolivia, Plurinational St. (2012) | 0.39 | 11.51 | 0.50 | | n/a | Qatar | n/a | n/a | n/a | |
| 65 | Mexico | 0.36 | 10.69 | 0.49 | | n/a | Saudi Arabia | n/a | n/a | n/a | |
| 66 | Hong Kong (China) (2012) | 0.36 | 10.55 | 0.48 | | n/a | Sri Lanka | n/a | n/a | n/a | |
| 67 | Honduras | 0.35 | 10.44 | 0.47 | | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 68 | Trinidad and Tobago (2011) | 0.34 | 9.89 | 0.46 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 69 | Zimbabwe (2012) | 0.33 | 9.85 | 0.46 | | n/a | Viet Nam | n/a | n/a | n/a | |
| 70 | Turkey | 0.33 | 9.73 | 0.45 | | | | | | | |
| 71 | Pakistan | 0.33 | 9.67 | 0.44 | | | | | | | |
| 72 | Costa Rica | 0.32 | 9.42 | 0.43 | | | | | | | |

SOURCE: World Trade Organization, Trade in Commercial Services database, based on the International Monetary Fund Balance of Payments database
NOTE: ● indicates a strength; ○ a weakness

5.3.2 High-tech imports

High-tech net imports (% of total trade) | 2013

II: Data Tables

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Hong Kong (China) | 41.48 | 100.00 | 0.99 | ● | 73 | Nicaragua | 6.51 | 21.19 | 0.44 | ● |
| 1 | Malaysia | 23.42 | 100.00 | 0.99 | ● | 74 | Ukraine | 6.48 | 21.06 | 0.43 | |
| 3 | Fiji | 23.14 | 98.70 | 0.98 | ● | 75 | Bulgaria | 6.34 | 20.40 | 0.42 | |
| 4 | Viet Nam | 22.04 | 93.55 | 0.98 | ● | 76 | Namibia | 6.33 | 20.35 | 0.41 | |
| 5 | Costa Rica | 20.89 | 88.21 | 0.97 | ● | 77 | Portugal | 6.29 | 20.15 | 0.41 | ○ |
| 6 | Singapore | 20.75 | 87.54 | 0.96 | | 78 | Honduras | 6.23 | 19.87 | 0.40 | |
| 7 | Panama (2011) | 20.19 | 84.93 | 0.95 | ● | 79 | Denmark | 6.17 | 19.61 | 0.39 | ○ |
| 8 | China | 18.76 | 78.27 | 0.95 | ● | 80 | TFYR of Macedonia | 6.14 | 19.45 | 0.38 | |
| 9 | Mexico | 17.67 | 73.19 | 0.94 | ● | 81 | Spain | 6.04 | 19.02 | 0.38 | ○ |
| 10 | United States of America | 16.12 | 65.99 | 0.93 | | 82 | Georgia | 6.02 | 18.91 | 0.37 | |
| 11 | Paraguay | 16.02 | 65.51 | 0.92 | ● | 83 | Saudi Arabia | 6.02 | 18.89 | 0.36 | |
| 12 | Czech Republic | 15.65 | 63.79 | 0.91 | ● | 84 | Nepal | 6.00 | 18.83 | 0.35 | |
| 13 | Colombia | 15.63 | 63.67 | 0.91 | ● | 85 | Norway | 5.93 | 18.48 | 0.34 | ○ |
| 14 | Slovakia | 14.78 | 59.75 | 0.90 | ● | 86 | Greece | 5.84 | 18.08 | 0.34 | |
| 15 | Thailand | 14.69 | 59.30 | 0.89 | ● | 87 | Armenia | 5.71 | 17.46 | 0.33 | |
| 16 | Mozambique | 14.36 | 57.78 | 0.88 | ● | 88 | Belarus | 5.65 | 17.19 | 0.32 | |
| 17 | Japan | 13.95 | 55.87 | 0.88 | | 89 | Dominican Republic | 5.52 | 16.58 | 0.31 | |
| 18 | Hungary | 13.82 | 55.25 | 0.87 | ● | 90 | Slovenia | 5.50 | 16.48 | 0.30 | ○ |
| 19 | Malta | 13.35 | 53.08 | 0.86 | | 91 | United Arab Emirates | 5.45 | 16.27 | 0.30 | ○ |
| 20 | Malawi | 13.32 | 52.90 | 0.85 | ● | 92 | Bosnia and Herzegovina | 5.35 | 15.80 | 0.29 | |
| 21 | Korea, Rep. | 12.68 | 49.93 | 0.84 | | 93 | Kyrgyzstan | 5.32 | 15.63 | 0.28 | |
| 22 | Netherlands | 12.59 | 49.54 | 0.84 | | 94 | Sri Lanka | 5.30 | 15.56 | 0.27 | |
| 23 | Brazil | 12.02 | 46.86 | 0.83 | ● | 95 | Ireland | 5.15 | 14.83 | 0.27 | ○ |
| 24 | Estonia | 11.83 | 45.98 | 0.82 | | 96 | Jordan | 5.15 | 14.83 | 0.26 | |
| 25 | France | 11.56 | 44.71 | 0.81 | | 97 | Mali | 5.10 | 14.62 | 0.25 | |
| 26 | United Kingdom | 11.19 | 42.99 | 0.80 | | 98 | Mauritius | 5.08 | 14.52 | 0.24 | |
| 27 | Kenya | 10.90 | 41.65 | 0.80 | ● | 99 | Ghana | 5.06 | 14.43 | 0.23 | |
| 28 | Rwanda | 10.64 | 40.42 | 0.79 | ● | 100 | Iceland | 4.95 | 13.91 | 0.23 | ○ |
| 29 | Argentina | 10.53 | 39.93 | 0.78 | ● | 101 | Trinidad and Tobago | 4.92 | 13.76 | 0.22 | |
| 30 | Canada | 10.23 | 38.53 | 0.77 | | 102 | Montenegro | 4.89 | 13.63 | 0.21 | ○ |
| 31 | South Africa | 10.18 | 38.29 | 0.77 | | 103 | Lithuania | 4.73 | 12.89 | 0.20 | ○ |
| 32 | Switzerland | 9.92 | 37.10 | 0.76 | | 104 | Côte d'Ivoire | 4.63 | 12.45 | 0.20 | |
| 33 | Burundi | 9.81 | 36.55 | 0.75 | ● | 105 | Cyprus | 4.57 | 12.14 | 0.19 | ○ |
| 34 | El Salvador | 9.75 | 36.28 | 0.74 | ● | 106 | Zambia | 4.52 | 11.92 | 0.18 | |
| 35 | Chile | 9.67 | 35.92 | 0.73 | | 107 | Burkina Faso | 4.50 | 11.84 | 0.17 | |
| 36 | Ethiopia | 9.67 | 35.92 | 0.73 | ● | 108 | Cambodia | 4.38 | 11.28 | 0.16 | |
| 37 | Australia | 9.61 | 35.63 | 0.72 | | 109 | Bahrain | 4.22 | 10.51 | 0.16 | |
| 38 | Belgium | 9.61 | 35.61 | 0.71 | | 110 | Madagascar | 4.19 | 10.37 | 0.15 | |
| 39 | Germany | 9.57 | 35.46 | 0.70 | | 111 | Iran, Islamic Rep. | 4.02 | 9.59 | 0.14 | |
| 40 | New Zealand | 9.47 | 34.98 | 0.70 | | 112 | Azerbaijan | 3.94 | 9.19 | 0.13 | ○ |
| 41 | Bangladesh | 9.44 | 34.82 | 0.69 | ● | 113 | Luxembourg | 3.89 | 8.96 | 0.13 | ○ |
| 42 | Israel | 9.36 | 34.47 | 0.68 | | 114 | Kuwait | 3.83 | 8.69 | 0.12 | ○ |
| 43 | Ecuador | 9.36 | 34.46 | 0.67 | ● | 115 | Jamaica | 3.60 | 7.60 | 0.11 | ○ |
| 44 | Guatemala | 9.32 | 34.26 | 0.66 | ● | 116 | Albania | 3.58 | 7.54 | 0.10 | ○ |
| 45 | Poland | 9.23 | 33.85 | 0.66 | | 117 | Guyana | 3.56 | 7.46 | 0.09 | ○ |
| 46 | Sweden | 9.20 | 33.74 | 0.65 | | 118 | Cabo Verde | 3.54 | 7.33 | 0.09 | |
| 47 | Romania | 9.10 | 33.26 | 0.64 | | 119 | Bhutan | 3.29 | 6.20 | 0.08 | |
| 48 | Sudan | 9.02 | 32.89 | 0.63 | ● | 120 | Yemen | 3.24 | 5.95 | 0.07 | |
| 49 | Austria | 8.95 | 32.55 | 0.63 | | 121 | Botswana | 3.21 | 5.80 | 0.06 | ○ |
| 50 | Uruguay | 8.89 | 32.27 | 0.62 | | 122 | Senegal | 3.10 | 5.28 | 0.05 | ○ |
| 51 | Peru | 8.77 | 31.71 | 0.61 | | 123 | Togo | 3.03 | 4.97 | 0.05 | ○ |
| 52 | Indonesia | 8.36 | 29.80 | 0.60 | | 124 | Nigeria | 2.89 | 4.33 | 0.04 | ○ |
| 53 | Turkey | 8.14 | 28.77 | 0.59 | | 125 | Oman | 2.89 | 4.31 | 0.03 | ○ |
| 54 | Tunisia | 8.13 | 28.74 | 0.59 | | 126 | Lebanon | 2.76 | 3.70 | 0.02 | ○ |
| 55 | Bolivia, Plurinational St. | 7.90 | 27.64 | 0.58 | ● | 127 | Gambia | 2.73 | 3.59 | 0.02 | ○ |
| 56 | Zimbabwe | 7.88 | 27.56 | 0.57 | ● | 128 | Qatar | 2.26 | 1.40 | 0.01 | ○ |
| 57 | Latvia | 7.58 | 26.18 | 0.56 | | 129 | Myanmar | 1.96 | 0.00 | 0.00 | ○ |
| 58 | Croatia | 7.58 | 26.17 | 0.55 | | n/a | Angola | n/a | n/a | n/a | |
| 59 | Uganda | 7.47 | 25.65 | 0.55 | | n/a | Barbados | n/a | n/a | n/a | |
| 60 | Pakistan | 7.32 | 24.96 | 0.54 | ● | n/a | Cameroon | n/a | n/a | n/a | |
| 61 | Algeria | 7.26 | 24.67 | 0.53 | ● | n/a | Guinea | n/a | n/a | n/a | |
| 62 | Italy | 7.17 | 24.24 | 0.52 | | n/a | Lesotho | n/a | n/a | n/a | |
| 63 | Russian Federation | 7.14 | 24.13 | 0.52 | | n/a | Morocco | n/a | n/a | n/a | |
| 64 | Finland | 7.12 | 24.01 | 0.51 | ○ | n/a | Philippines | n/a | n/a | n/a | |
| 65 | Moldova, Rep. | 6.95 | 23.25 | 0.50 | | n/a | Seychelles | n/a | n/a | n/a | |
| 66 | Niger | 6.92 | 23.11 | 0.49 | ● | n/a | Swaziland | n/a | n/a | n/a | |
| 67 | Mongolia | 6.83 | 22.68 | 0.48 | | n/a | Tajikistan | n/a | n/a | n/a | |
| 68 | Tanzania, United Rep. | 6.82 | 22.62 | 0.48 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 69 | Kazakhstan | 6.82 | 22.62 | 0.47 | | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 70 | India | 6.75 | 22.30 | 0.46 | | | | | | | |
| 71 | Serbia | 6.59 | 21.57 | 0.45 | | | | | | | |
| 72 | Egypt | 6.52 | 21.23 | 0.45 | | | | | | | |

SOURCE: United Nations, COMTRADE database; Eurostat 'High-technology' aggregations based on SITC Rev. 4; WTO Trade in Commercial Services database

NOTE: ● indicates a strength; ○ a weakness

5.3.3

Communications, computer and information services imports

Communications, computer and information services imports (% of total trade) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|-------|---------------|--------------|---|------|-----------------------------------|-------|---------------|--------------|---|
| 1 | Finland | 3.40 | 100.00 | 0.99 | ● | 73 | Indonesia | 0.74 | 20.83 | 0.41 | |
| 1 | Niger (2011) | 7.82 | 100.00 | 0.99 | ● | 74 | India | 0.74 | 20.76 | 0.40 | |
| 3 | Gambia (2009) | 3.23 | 95.14 | 0.98 | ● | 75 | Philippines | 0.74 | 20.72 | 0.39 | |
| 4 | Luxembourg | 3.20 | 94.25 | 0.98 | ● | 76 | Bulgaria | 0.73 | 20.48 | 0.39 | |
| 5 | Madagascar (2012) | 2.97 | 87.34 | 0.97 | ● | 77 | Japan | 0.71 | 19.85 | 0.38 | ○ |
| 6 | Sweden | 2.82 | 82.86 | 0.96 | ● | 78 | Australia | 0.69 | 19.21 | 0.37 | ○ |
| 7 | Mali (2012) | 2.60 | 76.20 | 0.95 | ● | 79 | Mozambique (2012) | 0.69 | 19.16 | 0.36 | |
| 8 | Burkina Faso (2012) | 2.47 | 72.23 | 0.94 | ● | 80 | Honduras | 0.69 | 19.15 | 0.35 | |
| 9 | Togo (2011) | 2.18 | 63.65 | 0.93 | ● | 81 | Lesotho | 0.65 | 18.18 | 0.34 | |
| 10 | Uganda | 2.16 | 63.23 | 0.93 | ● | 82 | El Salvador | 0.62 | 17.09 | 0.34 | |
| 11 | Cyprus | 2.14 | 62.39 | 0.92 | ● | 83 | Bolivia, Plurinational St. (2012) | 0.61 | 16.97 | 0.33 | |
| 12 | Fiji (2012) | 2.03 | 59.32 | 0.91 | ● | 84 | Costa Rica | 0.60 | 16.62 | 0.32 | |
| 13 | Senegal (2012) | 2.03 | 59.22 | 0.90 | ● | 85 | Singapore (2008) | 0.60 | 16.53 | 0.31 | ○ |
| 14 | Estonia | 2.02 | 58.95 | 0.89 | | 86 | Iran, Islamic Rep. (2012) | 0.59 | 16.21 | 0.30 | |
| 15 | Sri Lanka | 2.02 | 58.80 | 0.89 | ● | 87 | Namibia (2011) | 0.54 | 14.70 | 0.30 | |
| 16 | Denmark | 2.00 | 58.35 | 0.88 | | 88 | Venezuela, Bolivarian Rep. (2012) | 0.54 | 14.63 | 0.29 | |
| 17 | Germany | 1.96 | 57.23 | 0.87 | | 89 | Lithuania | 0.53 | 14.49 | 0.28 | ○ |
| 18 | Belgium | 1.96 | 57.01 | 0.86 | | 90 | Hong Kong (China) (2012) | 0.52 | 14.31 | 0.27 | ○ |
| 19 | Montenegro | 1.86 | 54.26 | 0.85 | ● | 91 | Azerbaijan | 0.52 | 14.29 | 0.26 | |
| 20 | Barbados (2010) | 1.86 | 54.19 | 0.84 | ● | 92 | Kuwait | 0.51 | 13.89 | 0.25 | |
| 21 | Moldova, Rep. | 1.83 | 53.12 | 0.84 | ● | 93 | Guatemala | 0.51 | 13.73 | 0.25 | |
| 22 | Slovenia | 1.81 | 52.51 | 0.83 | | 94 | Cambodia | 0.50 | 13.54 | 0.24 | |
| 23 | Austria | 1.78 | 51.69 | 0.82 | | 95 | Guinea (2012) | 0.49 | 13.42 | 0.23 | ● |
| 24 | France | 1.78 | 51.69 | 0.81 | | 96 | Georgia | 0.48 | 12.87 | 0.22 | |
| 25 | Serbia | 1.75 | 50.80 | 0.80 | ● | 97 | Tanzania, United Rep. | 0.46 | 12.49 | 0.21 | |
| 26 | Mongolia | 1.74 | 50.41 | 0.80 | | 98 | Cameroon (2012) | 0.45 | 12.14 | 0.20 | |
| 27 | Guyana | 1.73 | 50.28 | 0.79 | ● | 99 | Belarus | 0.44 | 11.76 | 0.20 | ○ |
| 28 | Italy | 1.73 | 50.28 | 0.78 | | 100 | Kyrgyzstan | 0.43 | 11.55 | 0.19 | |
| 29 | Brazil | 1.73 | 50.23 | 0.77 | ● | 101 | Kazakhstan | 0.43 | 11.44 | 0.18 | |
| 30 | United Kingdom | 1.70 | 49.31 | 0.76 | | 102 | Tunisia (2012) | 0.42 | 11.17 | 0.17 | ○ |
| 31 | Norway | 1.69 | 49.11 | 0.75 | | 103 | Bhutan | 0.41 | 10.96 | 0.16 | |
| 32 | Iceland (2012) | 1.67 | 48.49 | 0.75 | | 104 | Botswana (2012) | 0.41 | 10.87 | 0.16 | |
| 33 | Croatia | 1.65 | 47.93 | 0.74 | | 105 | Slovakia | 0.38 | 10.05 | 0.15 | ○ |
| 34 | Ethiopia (2012) | 1.65 | 47.85 | 0.73 | ● | 106 | Morocco (2012) | 0.38 | 9.95 | 0.14 | ○ |
| 35 | TFYR of Macedonia | 1.64 | 47.47 | 0.72 | | 107 | Uruguay | 0.38 | 9.91 | 0.13 | ○ |
| 36 | Albania | 1.63 | 47.32 | 0.71 | ● | 108 | Korea, Rep. | 0.38 | 9.85 | 0.12 | ○ |
| 37 | Netherlands | 1.57 | 45.40 | 0.70 | | 109 | Malawi (2012) | 0.37 | 9.78 | 0.11 | |
| 38 | Romania | 1.54 | 44.70 | 0.70 | | 110 | South Africa | 0.36 | 9.41 | 0.11 | ○ |
| 39 | Czech Republic | 1.43 | 41.28 | 0.69 | | 111 | Dominican Republic (2012) | 0.36 | 9.31 | 0.10 | ○ |
| 40 | Cabo Verde | 1.42 | 40.93 | 0.68 | ● | 112 | China | 0.33 | 8.42 | 0.09 | ○ |
| 41 | United States of America | 1.40 | 40.43 | 0.67 | | 113 | Yemen (2011) | 0.29 | 7.43 | 0.08 | |
| 42 | New Zealand | 1.35 | 38.81 | 0.66 | | 114 | Panama | 0.25 | 6.24 | 0.07 | ○ |
| 43 | Malaysia | 1.32 | 38.05 | 0.66 | | 115 | Thailand | 0.21 | 4.88 | 0.07 | ○ |
| 44 | Latvia | 1.31 | 37.70 | 0.65 | | 116 | Sudan | 0.20 | 4.73 | 0.06 | |
| 45 | Spain | 1.29 | 37.01 | 0.64 | | 117 | Zambia (2012) | 0.20 | 4.70 | 0.05 | ○ |
| 46 | Portugal | 1.28 | 36.72 | 0.63 | | 118 | Algeria (2012) | 0.20 | 4.58 | 0.04 | |
| 47 | Malta | 1.24 | 35.67 | 0.62 | | 119 | Swaziland (2008) | 0.18 | 4.01 | 0.03 | ○ |
| 48 | Israel (2012) | 1.24 | 35.67 | 0.61 | | 120 | Turkey | 0.12 | 2.37 | 0.02 | ○ |
| 49 | Poland | 1.23 | 35.20 | 0.61 | | 121 | Bangladesh (2012) | 0.11 | 1.89 | 0.02 | ○ |
| 50 | Mauritius | 1.22 | 35.16 | 0.60 | | 122 | Kenya (2012) | 0.11 | 1.82 | 0.01 | ○ |
| 51 | Argentina | 1.21 | 34.73 | 0.59 | | 123 | Paraguay | 0.04 | 0.00 | 0.00 | ○ |
| 52 | Greece | 1.19 | 34.25 | 0.58 | | n/a | Bahrain | n/a | n/a | n/a | |
| 53 | Russian Federation | 1.15 | 32.83 | 0.57 | | n/a | Burundi | n/a | n/a | n/a | |
| 54 | Tajikistan (2012) | 1.11 | 31.64 | 0.57 | ● | n/a | Ecuador | n/a | n/a | n/a | |
| 55 | Armenia | 1.09 | 31.32 | 0.56 | | n/a | Ghana | n/a | n/a | n/a | |
| 56 | Lebanon (2012) | 1.08 | 30.85 | 0.55 | | n/a | Jordan | n/a | n/a | n/a | |
| 57 | Nigeria | 1.05 | 30.01 | 0.54 | ● | n/a | Mexico | n/a | n/a | n/a | |
| 58 | Canada | 1.05 | 29.93 | 0.53 | ○ | n/a | Myanmar | n/a | n/a | n/a | |
| 59 | Hungary | 1.04 | 29.72 | 0.52 | | n/a | Nepal | n/a | n/a | n/a | |
| 60 | Pakistan | 1.02 | 29.18 | 0.52 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 61 | Ireland | 0.95 | 27.13 | 0.51 | ○ | n/a | Oman | n/a | n/a | n/a | |
| 62 | Jamaica | 0.91 | 25.89 | 0.50 | | n/a | Qatar | n/a | n/a | n/a | |
| 63 | Trinidad and Tobago (2011) | 0.88 | 25.02 | 0.49 | | n/a | Saudi Arabia | n/a | n/a | n/a | |
| 64 | Angola (2012) | 0.87 | 24.47 | 0.48 | ● | n/a | Seychelles | n/a | n/a | n/a | |
| 65 | Bosnia and Herzegovina | 0.85 | 23.87 | 0.48 | | n/a | Switzerland | n/a | n/a | n/a | |
| 66 | Colombia | 0.84 | 23.66 | 0.47 | | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 67 | Chile (2012) | 0.83 | 23.52 | 0.46 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 68 | Ukraine | 0.83 | 23.51 | 0.45 | | n/a | Viet Nam | n/a | n/a | n/a | |
| 69 | Peru (2012) | 0.81 | 22.78 | 0.44 | | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Côte d'Ivoire (2010) | 0.78 | 21.83 | 0.43 | ● | | | | | | |
| 71 | Rwanda (2012) | 0.77 | 21.71 | 0.43 | | | | | | | |
| 72 | Egypt (2012) | 0.75 | 21.06 | 0.42 | | | | | | | |

SOURCE: World Trade Organization, *Trade in Commercial Services* database, based on the International Monetary Fund *Balance of Payments* database

NOTE: ● indicates a strength; ○ a weakness

5.3.4 Foreign direct investment net inflows

Foreign direct investment (FDI), net inflows (% of GDP) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-----------------------------|-------|---------------|--------------|---|------|----------------------------|--------|---------------|--------------|---|
| 1 | Hong Kong (China) | 27.97 | 100.00 | 0.99 | ● | 73 | Iceland | 2.37 | 45.93 | 0.48 | |
| 1 | Luxembourg | 49.81 | 100.00 | 0.99 | ● | 74 | Tunisia | 2.32 | 45.84 | 0.47 | |
| 1 | Mozambique | 42.11 | 100.00 | 0.99 | ● | 75 | South Africa | 2.32 | 45.82 | 0.47 | |
| 4 | Ireland | 22.94 | 89.37 | 0.98 | ● | 76 | Slovakia | 2.24 | 45.67 | 0.46 | |
| 5 | Singapore | 21.40 | 86.14 | 0.97 | | 77 | Mauritius | 2.17 | 45.50 | 0.45 | |
| 6 | Mongolia | 18.68 | 80.37 | 0.96 | ● | 78 | Ukraine | 2.13 | 45.42 | 0.45 | |
| 7 | Seychelles | 14.01 | 70.51 | 0.96 | ● | 79 | Indonesia | 2.12 | 45.41 | 0.44 | |
| 8 | Barbados (2012) | 12.20 | 66.70 | 0.95 | ● | 80 | Cabo Verde | 2.05 | 45.27 | 0.43 | |
| 9 | Panama | 11.84 | 65.94 | 0.94 | ● | 81 | Egypt | 2.04 | 45.24 | 0.42 | |
| 10 | Albania | 11.45 | 65.12 | 0.94 | ● | 82 | Ethiopia | 2.03 | 45.22 | 0.42 | |
| 11 | Kyrgyzstan | 10.48 | 63.07 | 0.93 | ● | 83 | Oman | 2.02 | 45.19 | 0.41 | |
| 12 | Montenegro | 10.08 | 62.23 | 0.92 | ● | 84 | Lesotho | 1.98 | 45.11 | 0.40 | |
| 13 | Cambodia | 8.82 | 59.56 | 0.91 | ● | 85 | Senegal | 1.97 | 45.09 | 0.40 | |
| 14 | Niger | 8.58 | 59.06 | 0.91 | ● | 86 | Romania | 1.97 | 45.08 | 0.39 | |
| 15 | Zambia | 8.09 | 58.02 | 0.90 | ● | 87 | Cameroon | 1.95 | 45.05 | 0.38 | |
| 16 | Madagascar | 7.76 | 57.31 | 0.89 | ● | 88 | Togo | 1.94 | 45.03 | 0.37 | |
| 17 | Nicaragua | 7.51 | 56.79 | 0.88 | ● | 89 | United Kingdom | 1.92 | 44.98 | 0.37 | ○ |
| 18 | Chile | 7.31 | 56.36 | 0.88 | ● | 90 | Uzbekistan | 1.90 | 44.93 | 0.36 | |
| 19 | Trinidad and Tobago | 6.95 | 55.61 | 0.87 | ● | 91 | Bosnia and Herzegovina | 1.81 | 44.74 | 0.35 | |
| 20 | Fiji | 6.75 | 55.19 | 0.86 | ● | 92 | Swaziland | 1.77 | 44.66 | 0.35 | |
| 21 | Ghana | 6.73 | 55.15 | 0.86 | ● | 93 | Argentina | 1.68 | 44.47 | 0.34 | |
| 22 | Guyana | 6.52 | 54.70 | 0.85 | ● | 94 | Venezuela, Bolivarian Rep. | 1.61 | 44.32 | 0.33 | |
| 23 | Costa Rica | 6.52 | 54.70 | 0.84 | ● | 95 | Turkey | 1.57 | 44.24 | 0.32 | |
| 24 | Lebanon | 6.39 | 54.42 | 0.83 | ● | 96 | Kuwait (2012) | 1.57 | 44.24 | 0.32 | |
| 25 | Georgia | 6.33 | 54.29 | 0.83 | ● | 97 | Lithuania | 1.55 | 44.20 | 0.31 | ○ |
| 26 | Honduras | 5.76 | 53.10 | 0.82 | ● | 98 | India | 1.50 | 44.10 | 0.30 | |
| 27 | Bolivia, Plurinational St. | 5.72 | 53.00 | 0.81 | ● | 99 | Rwanda | 1.49 | 44.07 | 0.29 | |
| 28 | Tanzania, United Rep. | 5.64 | 52.83 | 0.81 | ● | 100 | Philippines | 1.42 | 43.92 | 0.29 | |
| 29 | Namibia | 5.56 | 52.67 | 0.80 | ● | 101 | United States of America | 1.40 | 43.89 | 0.28 | ○ |
| 30 | Jordan | 5.34 | 52.21 | 0.79 | ● | 102 | Sri Lanka | 1.36 | 43.81 | 0.27 | |
| 31 | Uganda | 5.33 | 52.19 | 0.78 | ● | 103 | Botswana | 1.27 | 43.62 | 0.27 | |
| 32 | Viet Nam | 5.19 | 51.90 | 0.78 | ● | 104 | Tajikistan | 1.27 | 43.60 | 0.26 | |
| 33 | Uruguay | 5.08 | 51.66 | 0.77 | ● | 105 | Saudi Arabia | 1.25 | 43.56 | 0.25 | ○ |
| 34 | Peru | 5.03 | 51.55 | 0.76 | ● | 106 | Côte d'Ivoire | 1.20 | 43.46 | 0.24 | |
| 35 | Colombia | 4.44 | 50.30 | 0.76 | | 107 | Kenya | 1.17 | 43.39 | 0.24 | |
| 36 | Kazakhstan | 4.34 | 50.09 | 0.75 | ● | 108 | Bangladesh | 1.16 | 43.37 | 0.23 | |
| 37 | Israel | 4.05 | 49.48 | 0.74 | | 109 | Paraguay | 1.16 | 43.37 | 0.22 | |
| 38 | Jamaica | 4.02 | 49.41 | 0.73 | ● | 110 | Bhutan | 1.12 | 43.29 | 0.22 | |
| 39 | Netherlands | 4.01 | 49.40 | 0.73 | | 111 | Greece | 1.11 | 43.28 | 0.21 | ○ |
| 40 | China | 3.76 | 48.88 | 0.72 | | 112 | Nigeria | 1.07 | 43.20 | 0.20 | |
| 41 | Mali | 3.75 | 48.85 | 0.71 | ● | 113 | Croatia | 1.02 | 43.09 | 0.19 | ○ |
| 42 | Estonia | 3.72 | 48.78 | 0.71 | | 114 | Korea, Rep. | 0.94 | 42.91 | 0.19 | ○ |
| 43 | Malaysia | 3.71 | 48.76 | 0.70 | | 115 | Germany | 0.90 | 42.82 | 0.18 | ○ |
| 44 | Canada | 3.70 | 48.74 | 0.69 | | 116 | Iran, Islamic Rep. | 0.83 | 42.67 | 0.17 | |
| 45 | TFYR of Macedonia | 3.68 | 48.71 | 0.68 | | 117 | El Salvador | 0.81 | 42.64 | 0.17 | |
| 46 | Brazil | 3.60 | 48.53 | 0.68 | | 118 | Algeria | 0.80 | 42.63 | 0.16 | |
| 47 | Portugal | 3.58 | 48.49 | 0.67 | | 119 | Ecuador | 0.78 | 42.58 | 0.15 | |
| 48 | Bulgaria | 3.56 | 48.45 | 0.66 | | 120 | Italy | 0.63 | 42.27 | 0.14 | ○ |
| 49 | Azerbaijan | 3.56 | 48.45 | 0.65 | ● | 121 | Pakistan | 0.55 | 42.09 | 0.14 | |
| 50 | Armenia | 3.55 | 48.42 | 0.65 | | 122 | New Zealand | 0.49 | 41.97 | 0.13 | ○ |
| 51 | Russian Federation | 3.37 | 48.04 | 0.64 | | 123 | Denmark | 0.48 | 41.95 | 0.12 | ○ |
| 52 | Austria | 3.33 | 47.96 | 0.63 | | 124 | Guinea | 0.40 | 41.77 | 0.12 | |
| 53 | Spain | 3.31 | 47.91 | 0.63 | | 125 | Nepal | 0.38 | 41.73 | 0.11 | |
| 54 | Sudan | 3.27 | 47.84 | 0.62 | ● | 126 | Burundi | 0.25 | 41.46 | 0.10 | |
| 55 | Thailand | 3.27 | 47.83 | 0.61 | | 127 | France | 0.24 | 41.43 | 0.09 | ○ |
| 56 | Serbia | 3.24 | 47.77 | 0.60 | | 128 | Japan | 0.08 | 41.09 | 0.09 | ○ |
| 57 | Burkina Faso | 3.23 | 47.75 | 0.60 | ● | 129 | Yemen | -0.37 | 40.14 | 0.08 | |
| 58 | Morocco | 3.22 | 47.72 | 0.59 | | 130 | Qatar | -0.42 | 40.05 | 0.07 | ○ |
| 59 | Malawi | 3.20 | 47.68 | 0.58 | ● | 131 | Norway | -0.49 | 39.90 | 0.06 | ○ |
| 60 | Australia | 3.17 | 47.61 | 0.58 | | 132 | Hungary | -0.56 | 39.74 | 0.06 | ○ |
| 61 | Moldova, Rep. | 3.16 | 47.61 | 0.57 | | 133 | Belgium | -0.64 | 39.57 | 0.05 | ○ |
| 62 | Zimbabwe | 3.12 | 47.53 | 0.56 | ● | 134 | Poland | -0.89 | 39.06 | 0.04 | ○ |
| 63 | Belarus | 3.11 | 47.50 | 0.55 | | 135 | Slovenia | -0.89 | 39.04 | 0.04 | ○ |
| 64 | Mexico | 3.04 | 47.34 | 0.55 | | 136 | Sweden | -0.92 | 38.99 | 0.03 | ○ |
| 65 | Bahrain | 3.02 | 47.30 | 0.54 | | 137 | Switzerland | -1.26 | 38.27 | 0.02 | ○ |
| 66 | Latvia | 2.85 | 46.94 | 0.53 | | 138 | Finland | -2.06 | 36.57 | 0.01 | ○ |
| 67 | Cyprus | 2.77 | 46.78 | 0.53 | | 139 | Angola | -3.52 | 33.49 | 0.01 | ○ |
| 68 | Gambia | 2.76 | 46.77 | 0.52 | ● | 140 | Malta | -19.38 | 0.00 | 0.00 | ○ |
| 69 | Dominican Republic | 2.64 | 46.50 | 0.51 | | n/a | Myanmar | n/a | n/a | n/a | |
| 70 | Czech Republic | 2.52 | 46.26 | 0.50 | | | | | | | |
| 71 | Guatemala | 2.51 | 46.23 | 0.50 | | | | | | | |
| 72 | United Arab Emirates (2012) | 2.50 | 46.21 | 0.49 | | | | | | | |

SOURCE: International Monetary Fund (with World Bank and OECD GDP estimates), extracted from World Bank *World Development Indicators* database

NOTE: ● indicates a strength; ○ a weakness

6.1.1

National office patent applications

Number of patent applications filed by residents at the national patent office (per billion PPP\$ GDP) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|-----------------------------------|-------|---------------|--------------|---|
| 1 | China | 43.59 | 100.00 | 0.96 | ● | 73 | Mexico | 0.59 | 4.31 | 0.35 | |
| 1 | Germany | 13.12 | 100.00 | 0.96 | ● | 74 | Bhutan | 0.55 | 4.06 | 0.34 | |
| 1 | Japan | 58.00 | 100.00 | 0.96 | ● | 75 | Jordan | 0.46 | 3.35 | 0.33 | |
| 1 | Korea, Rep. | 94.27 | 100.00 | 0.96 | ● | 76 | Côte d'Ivoire (2012) | 0.44 | 3.19 | 0.32 | |
| 1 | United States of America | 17.17 | 100.00 | 0.96 | ● | 77 | Yemen | 0.42 | 3.04 | 0.32 | ● |
| 6 | New Zealand | 10.64 | 81.10 | 0.95 | ● | 78 | Colombia | 0.42 | 3.01 | 0.31 | |
| 7 | Belarus | 8.93 | 68.01 | 0.95 | ● | 79 | Paraguay (2010) | 0.41 | 2.93 | 0.30 | |
| 8 | Iran, Islamic Rep. | 8.85 | 67.43 | 0.94 | ● | 80 | Swaziland (2012) | 0.37 | 2.69 | 0.29 | |
| 9 | Russian Federation | 8.24 | 62.74 | 0.93 | ● | 81 | Uruguay (2012) | 0.35 | 2.50 | 0.28 | |
| 10 | Slovenia (2011) | 7.97 | 60.72 | 0.92 | ● | 82 | Philippines | 0.34 | 2.45 | 0.27 | |
| 11 | Finland | 7.32 | 55.71 | 0.91 | | 83 | Saudi Arabia | 0.32 | 2.29 | 0.26 | ○ |
| 12 | Ukraine | 7.28 | 55.44 | 0.90 | ● | 84 | Costa Rica | 0.31 | 2.21 | 0.25 | ○ |
| 13 | United Kingdom | 6.11 | 46.51 | 0.89 | | 85 | Nepal | 0.29 | 2.04 | 0.24 | |
| 14 | Kyrgyzstan | 6.09 | 46.34 | 0.88 | ● | 86 | Indonesia | 0.26 | 1.85 | 0.23 | |
| 15 | France | 5.80 | 44.09 | 0.87 | | 87 | Botswana | 0.25 | 1.76 | 0.23 | |
| 16 | Austria | 5.57 | 42.33 | 0.86 | | 88 | Algeria | 0.23 | 1.56 | 0.22 | |
| 17 | Denmark | 5.51 | 41.88 | 0.86 | | 89 | Peru | 0.20 | 1.39 | 0.21 | |
| 18 | Armenia | 5.40 | 41.09 | 0.85 | ● | 90 | Bosnia and Herzegovina | 0.19 | 1.27 | 0.20 | |
| 19 | Sweden | 5.39 | 41.00 | 0.84 | | 91 | Pakistan | 0.18 | 1.21 | 0.19 | |
| 20 | Mongolia (2010) | 5.37 | 40.83 | 0.83 | | 92 | Honduras | 0.16 | 1.06 | 0.18 | |
| 21 | Latvia | 4.85 | 36.87 | 0.82 | | 93 | Uganda | 0.14 | 0.89 | 0.17 | |
| 22 | Israel | 4.66 | 35.45 | 0.81 | | 94 | Zambia (2012) | 0.13 | 0.85 | 0.16 | |
| 23 | Poland | 4.65 | 35.36 | 0.80 | | 95 | Panama | 0.13 | 0.80 | 0.15 | |
| 24 | Kazakhstan | 4.61 | 35.06 | 0.79 | ● | 96 | Madagascar | 0.12 | 0.78 | 0.14 | |
| 25 | Moldova, Rep. | 4.01 | 30.49 | 0.78 | | 97 | Bangladesh | 0.12 | 0.76 | 0.14 | |
| 26 | Italy | 3.94 | 29.96 | 0.77 | | 98 | Nicaragua | 0.11 | 0.66 | 0.13 | |
| 27 | Georgia | 3.54 | 26.87 | 0.77 | | 99 | Albania (2011) | 0.10 | 0.63 | 0.12 | |
| 28 | Switzerland | 3.34 | 25.32 | 0.76 | | 100 | Tajikistan | 0.10 | 0.57 | 0.11 | |
| 29 | Norway | 3.31 | 25.10 | 0.75 | | 101 | Burkina Faso (2010) | 0.09 | 0.54 | 0.10 | |
| 30 | Czech Republic | 3.24 | 24.56 | 0.74 | | 102 | Mauritius | 0.09 | 0.52 | 0.09 | ○ |
| 31 | Turkey | 3.04 | 23.05 | 0.73 | | 103 | Dominican Republic | 0.09 | 0.50 | 0.08 | ○ |
| 32 | Canada | 2.99 | 22.63 | 0.72 | | 104 | Cyprus | 0.07 | 0.39 | 0.07 | ○ |
| 33 | Netherlands | 2.97 | 22.49 | 0.71 | | 105 | Venezuela, Bolivarian Rep. (2011) | 0.07 | 0.34 | 0.06 | |
| 34 | Australia | 2.91 | 22.07 | 0.70 | | 106 | Bahrain | 0.05 | 0.23 | 0.05 | ○ |
| 35 | Hungary | 2.74 | 20.76 | 0.69 | | 107 | Nigeria | 0.05 | 0.23 | 0.05 | |
| 36 | Romania | 2.64 | 19.99 | 0.68 | | 108 | Guatemala | 0.04 | 0.10 | 0.04 | ○ |
| 37 | Singapore | 2.64 | 19.97 | 0.68 | | 109 | United Arab Emirates | 0.03 | 0.08 | 0.03 | ○ |
| 38 | Croatia | 2.63 | 19.89 | 0.67 | | 110 | Qatar | 0.03 | 0.07 | 0.02 | ○ |
| 39 | Montenegro | 2.52 | 19.09 | 0.66 | | 111 | Ecuador (2010) | 0.03 | 0.06 | 0.01 | ○ |
| 40 | Greece | 2.51 | 19.01 | 0.65 | | 112 | Cambodia | 0.02 | 0.00 | 0.00 | ○ |
| 41 | Rwanda (2012) | 2.45 | 18.54 | 0.64 | | n/a | Angola | n/a | n/a | n/a | |
| 42 | Iceland | 2.40 | 18.14 | 0.63 | | n/a | Bolivia, Plurinational St. | n/a | n/a | n/a | |
| 43 | Portugal | 2.36 | 17.88 | 0.62 | | n/a | Burundi | n/a | n/a | n/a | |
| 44 | Luxembourg | 2.29 | 17.36 | 0.61 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 45 | Bulgaria | 2.26 | 17.11 | 0.60 | | n/a | Cameroon | n/a | n/a | n/a | |
| 46 | Serbia | 2.10 | 15.85 | 0.59 | | n/a | El Salvador | n/a | n/a | n/a | |
| 47 | Spain | 1.99 | 15.01 | 0.59 | | n/a | Ethiopia | n/a | n/a | n/a | |
| 48 | Uzbekistan | 1.91 | 14.42 | 0.58 | ● | n/a | Fiji | n/a | n/a | n/a | |
| 49 | Malaysia | 1.73 | 13.03 | 0.57 | | n/a | Gambia | n/a | n/a | n/a | |
| 50 | Sri Lanka | 1.64 | 12.39 | 0.56 | | n/a | Ghana | n/a | n/a | n/a | |
| 51 | Thailand | 1.63 | 12.28 | 0.55 | | n/a | Guinea | n/a | n/a | n/a | |
| 52 | TFYR of Macedonia | 1.60 | 12.06 | 0.54 | | n/a | Guyana | n/a | n/a | n/a | |
| 53 | India | 1.57 | 11.84 | 0.53 | | n/a | Kuwait | n/a | n/a | n/a | |
| 54 | Ireland | 1.56 | 11.76 | 0.52 | ○ | n/a | Lebanon | n/a | n/a | n/a | |
| 55 | Brazil | 1.54 | 11.62 | 0.51 | | n/a | Lesotho | n/a | n/a | n/a | |
| 56 | Lithuania | 1.53 | 11.55 | 0.50 | | n/a | Malawi | n/a | n/a | n/a | |
| 57 | Belgium | 1.52 | 11.46 | 0.50 | | n/a | Mali | n/a | n/a | n/a | |
| 58 | Morocco | 1.31 | 9.82 | 0.49 | | n/a | Mozambique | n/a | n/a | n/a | |
| 59 | Slovakia | 1.25 | 9.40 | 0.48 | | n/a | Myanmar | n/a | n/a | n/a | |
| 60 | Kenya | 1.02 | 7.66 | 0.47 | | n/a | Namibia | n/a | n/a | n/a | |
| 61 | Azerbaijan | 0.98 | 7.35 | 0.46 | | n/a | Niger | n/a | n/a | n/a | |
| 62 | Malta | 0.97 | 7.22 | 0.45 | | n/a | Oman | n/a | n/a | n/a | |
| 63 | Tunisia | 0.94 | 6.98 | 0.44 | | n/a | Senegal | n/a | n/a | n/a | |
| 64 | South Africa | 0.93 | 6.96 | 0.43 | | n/a | Seychelles | n/a | n/a | n/a | |
| 65 | Viet Nam | 0.93 | 6.96 | 0.42 | | n/a | Sudan | n/a | n/a | n/a | |
| 66 | Jamaica | 0.93 | 6.94 | 0.41 | | n/a | Tanzania, United Rep. | n/a | n/a | n/a | |
| 67 | Chile | 0.86 | 6.39 | 0.41 | | n/a | Togo | n/a | n/a | n/a | |
| 68 | Estonia | 0.73 | 5.38 | 0.40 | ○ | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 69 | Egypt | 0.70 | 5.21 | 0.39 | | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Argentina | 0.69 | 5.12 | 0.38 | | | | | | | |
| 71 | Barbados | 0.67 | 4.96 | 0.37 | | | | | | | |
| 72 | Hong Kong (China) | 0.59 | 4.34 | 0.36 | ○ | | | | | | |

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; International Monetary Fund *World Economic Outlook Database*, 2015 (PPPs GDP)
NOTE: ● indicates a strength; ○ a weakness

6.1.2 Patent Cooperation Treaty resident applications

Number of international patent applications filed by residents at the Patent Cooperation Treaty (per billion PPP\$ GDP) | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Barbados | 38.75 | 100.00 | 0.96 | ● | 73 | El Salvador | 0.06 | 0.67 | 0.27 | |
| 1 | Finland | 8.21 | 100.00 | 0.96 | ● | 74 | Rwanda (2013) | 0.06 | 0.66 | 0.26 | |
| 1 | Japan | 8.94 | 100.00 | 0.96 | ● | 75 | Qatar | 0.06 | 0.64 | 0.25 | |
| 1 | Sweden | 8.76 | 100.00 | 0.96 | ● | 76 | Kyrgyzstan | 0.05 | 0.59 | 0.24 | |
| 1 | Switzerland | 8.70 | 100.00 | 0.96 | ● | 77 | Uganda | 0.05 | 0.59 | 0.23 | |
| 6 | Luxembourg | 7.62 | 92.85 | 0.95 | | 78 | Egypt | 0.05 | 0.57 | 0.22 | |
| 7 | Korea, Rep. | 7.39 | 90.03 | 0.94 | | 79 | Philippines | 0.05 | 0.57 | 0.21 | |
| 8 | Israel | 5.95 | 72.39 | 0.93 | | 80 | Kazakhstan | 0.05 | 0.51 | 0.20 | |
| 9 | Netherlands | 5.28 | 64.31 | 0.92 | | 81 | Côte d'Ivoire | 0.04 | 0.47 | 0.19 | |
| 10 | Denmark | 5.21 | 63.48 | 0.91 | | 82 | Ecuador | 0.04 | 0.43 | 0.18 | |
| 11 | Germany | 4.84 | 58.91 | 0.90 | | 83 | Uzbekistan | 0.03 | 0.38 | 0.17 | |
| 12 | Malta | 4.11 | 49.97 | 0.89 | | 84 | Peru | 0.03 | 0.35 | 0.16 | ○ |
| 13 | United States of America | 3.53 | 42.97 | 0.88 | | 85 | Bahrain | 0.03 | 0.35 | 0.15 | |
| 14 | Austria | 3.51 | 42.68 | 0.87 | | 86 | Albania | 0.03 | 0.34 | 0.14 | |
| 15 | France | 3.22 | 39.23 | 0.86 | | 87 | Georgia | 0.03 | 0.31 | 0.13 | ○ |
| 16 | Iceland | 3.03 | 36.82 | 0.85 | | 88 | Sudan | 0.03 | 0.26 | 0.12 | |
| 17 | Slovenia | 2.55 | 31.05 | 0.84 | | 89 | Trinidad and Tobago | 0.02 | 0.23 | 0.11 | ○ |
| 18 | Belgium | 2.49 | 30.24 | 0.83 | | 90 | Dominican Republic | 0.02 | 0.22 | 0.10 | ○ |
| 19 | New Zealand | 2.18 | 26.49 | 0.82 | | 91 | Ghana (2013) | 0.02 | 0.19 | 0.09 | ○ |
| 20 | Singapore | 2.09 | 25.36 | 0.81 | | 92 | Oman (2013) | 0.02 | 0.19 | 0.08 | ○ |
| 21 | Seychelles | 2.08 | 25.27 | 0.80 | ● | 93 | Cameroon (2013) | 0.02 | 0.15 | 0.07 | ○ |
| 22 | United Kingdom | 2.07 | 25.20 | 0.79 | | 94 | Viet Nam | 0.01 | 0.12 | 0.06 | ○ |
| 23 | Norway | 2.00 | 24.31 | 0.78 | | 95 | Algeria | 0.01 | 0.11 | 0.05 | |
| 24 | Canada | 1.94 | 23.60 | 0.77 | | 96 | Angola | 0.01 | 0.09 | 0.04 | |
| 25 | Ireland | 1.94 | 23.59 | 0.76 | | 97 | Guatemala | 0.01 | 0.06 | 0.03 | ○ |
| 26 | Australia | 1.58 | 19.15 | 0.75 | | 98 | Indonesia | 0.01 | 0.03 | 0.02 | ○ |
| 27 | China | 1.45 | 17.62 | 0.74 | | 99 | Azerbaijan | 0.01 | 0.03 | 0.01 | ○ |
| 28 | Italy | 1.44 | 17.48 | 0.73 | | 100 | Nigeria | 0.00 | 0.00 | 0.00 | ○ |
| 29 | Cyprus | 1.39 | 16.84 | 0.72 | | n/a | Argentina | n/a | n/a | n/a | |
| 30 | Spain | 1.09 | 13.22 | 0.71 | | n/a | Bangladesh | n/a | n/a | n/a | |
| 31 | Estonia | 0.81 | 9.87 | 0.70 | | n/a | Bhutan | n/a | n/a | n/a | |
| 32 | Hungary | 0.65 | 7.82 | 0.69 | | n/a | Bolivia, Plurinational St. | n/a | n/a | n/a | |
| 33 | Lithuania | 0.62 | 7.45 | 0.68 | | n/a | Botswana | n/a | n/a | n/a | |
| 34 | Croatia | 0.61 | 7.39 | 0.67 | | n/a | Burkina Faso | n/a | n/a | n/a | |
| 35 | Latvia | 0.60 | 7.29 | 0.66 | | n/a | Burundi | n/a | n/a | n/a | |
| 36 | Czech Republic | 0.60 | 7.27 | 0.65 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 37 | Portugal | 0.56 | 6.82 | 0.64 | | n/a | Cambodia | n/a | n/a | n/a | |
| 38 | Turkey | 0.53 | 6.43 | 0.63 | | n/a | Ethiopia | n/a | n/a | n/a | |
| 39 | Greece | 0.47 | 5.65 | 0.62 | | n/a | Fiji | n/a | n/a | n/a | |
| 40 | Slovakia | 0.43 | 5.14 | 0.61 | | n/a | Gambia | n/a | n/a | n/a | |
| 41 | South Africa | 0.42 | 5.09 | 0.60 | | n/a | Guinea | n/a | n/a | n/a | |
| 42 | Malaysia | 0.42 | 5.08 | 0.59 | | n/a | Guyana | n/a | n/a | n/a | |
| 43 | Bulgaria | 0.40 | 4.78 | 0.58 | | n/a | Honduras | n/a | n/a | n/a | |
| 44 | Ukraine | 0.37 | 4.42 | 0.57 | | n/a | Hong Kong (China) | n/a | n/a | n/a | |
| 45 | Poland | 0.37 | 4.41 | 0.56 | | n/a | Iran, Islamic Rep. | n/a | n/a | n/a | |
| 46 | Chile | 0.35 | 4.24 | 0.55 | | n/a | Jamaica | n/a | n/a | n/a | |
| 47 | Russian Federation | 0.25 | 3.00 | 0.54 | | n/a | Jordan | n/a | n/a | n/a | |
| 48 | Panama | 0.21 | 2.50 | 0.53 | | n/a | Kuwait | n/a | n/a | n/a | |
| 49 | India | 0.19 | 2.26 | 0.52 | | n/a | Lebanon | n/a | n/a | n/a | |
| 50 | Morocco | 0.18 | 2.13 | 0.51 | | n/a | Lesotho | n/a | n/a | n/a | |
| 51 | Brazil | 0.18 | 2.12 | 0.49 | | n/a | Malawi | n/a | n/a | n/a | |
| 52 | Moldova, Rep. | 0.17 | 2.02 | 0.48 | | n/a | Mali | n/a | n/a | n/a | |
| 53 | Armenia | 0.16 | 1.96 | 0.47 | | n/a | Mauritius | n/a | n/a | n/a | |
| 54 | United Arab Emirates | 0.16 | 1.94 | 0.46 | | n/a | Mongolia | n/a | n/a | n/a | |
| 55 | Colombia | 0.16 | 1.90 | 0.45 | | n/a | Mozambique | n/a | n/a | n/a | |
| 56 | Serbia | 0.15 | 1.74 | 0.44 | | n/a | Myanmar | n/a | n/a | n/a | |
| 57 | TFYR of Macedonia | 0.14 | 1.72 | 0.43 | | n/a | Nepal | n/a | n/a | n/a | |
| 58 | Mexico | 0.13 | 1.57 | 0.42 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 59 | Bosnia and Herzegovina | 0.13 | 1.55 | 0.41 | | n/a | Pakistan | n/a | n/a | n/a | |
| 60 | Namibia | 0.13 | 1.50 | 0.40 | | n/a | Paraguay | n/a | n/a | n/a | |
| 61 | Costa Rica | 0.13 | 1.50 | 0.39 | | n/a | Saudi Arabia | n/a | n/a | n/a | |
| 62 | Zimbabwe (2013) | 0.12 | 1.36 | 0.38 | | n/a | Swaziland | n/a | n/a | n/a | |
| 63 | Montenegro | 0.11 | 1.26 | 0.37 | | n/a | Tajikistan | n/a | n/a | n/a | |
| 64 | Sri Lanka | 0.10 | 1.13 | 0.36 | | n/a | Tanzania, United Rep. | n/a | n/a | n/a | |
| 65 | Senegal | 0.09 | 1.04 | 0.35 | | n/a | Togo | n/a | n/a | n/a | |
| 66 | Belarus | 0.08 | 0.87 | 0.34 | | n/a | Uruguay | n/a | n/a | n/a | |
| 67 | Thailand | 0.07 | 0.79 | 0.33 | | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 68 | Kenya | 0.07 | 0.78 | 0.32 | | n/a | Yemen | n/a | n/a | n/a | |
| 69 | Romania | 0.07 | 0.76 | 0.31 | | n/a | Zambia | n/a | n/a | n/a | |
| 70 | Tunisia | 0.06 | 0.74 | 0.30 | | | | | | | |
| 71 | Niger (2012) | 0.06 | 0.74 | 0.29 | | | | | | | |
| 72 | Madagascar | 0.06 | 0.67 | 0.28 | | | | | | | |

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; International Monetary Fund *World Economic Outlook Database*, 2015 (PPP\$ GDP)

NOTE: ● indicates a strength; ○ a weakness

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank |
|------|----------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|
| 1 | Belarus | 6.25 | 100.00 | 0.95 | ● | n/a | Cambodia | n/a | n/a | n/a |
| 1 | China | 54.73 | 100.00 | 0.95 | ● | n/a | Cameroon | n/a | n/a | n/a |
| 1 | Moldova, Rep. | 12.64 | 100.00 | 0.95 | ● | n/a | Canada | n/a | n/a | n/a |
| 1 | Ukraine | 25.44 | 100.00 | 0.95 | ● | n/a | Côte d'Ivoire | n/a | n/a | n/a |
| 5 | Mongolia (2010) | 6.20 | 99.12 | 0.93 | ● | n/a | Cyprus | n/a | n/a | n/a |
| 6 | Korea, Rep. | 6.17 | 98.59 | 0.92 | | n/a | Egypt | n/a | n/a | n/a |
| 7 | Czech Republic | 5.47 | 87.37 | 0.90 | | n/a | El Salvador | n/a | n/a | n/a |
| 8 | Russian Federation | 3.89 | 62.15 | 0.88 | ● | n/a | Ethiopia | n/a | n/a | n/a |
| 9 | Germany | 3.23 | 51.47 | 0.86 | | n/a | Fiji | n/a | n/a | n/a |
| 10 | Tajikistan | 3.20 | 51.08 | 0.85 | ● | n/a | Ghana | n/a | n/a | n/a |
| 11 | Bulgaria | 2.90 | 46.19 | 0.83 | ● | n/a | Guinea | n/a | n/a | n/a |
| 12 | Estonia | 2.76 | 44.04 | 0.81 | | n/a | Guyana | n/a | n/a | n/a |
| 13 | Turkey | 2.40 | 38.22 | 0.80 | ● | n/a | Iceland | n/a | n/a | n/a |
| 14 | Slovakia | 2.31 | 36.76 | 0.78 | | n/a | India | n/a | n/a | n/a |
| 15 | Finland | 2.04 | 32.40 | 0.76 | | n/a | Iran, Islamic Rep. | n/a | n/a | n/a |
| 16 | Georgia | 1.93 | 30.64 | 0.75 | | n/a | Ireland | n/a | n/a | n/a |
| 17 | Armenia | 1.73 | 27.48 | 0.73 | | n/a | Israel | n/a | n/a | n/a |
| 18 | Spain | 1.66 | 26.37 | 0.71 | | n/a | Jamaica | n/a | n/a | n/a |
| 19 | Thailand | 1.62 | 25.71 | 0.69 | | n/a | Jordan | n/a | n/a | n/a |
| 20 | Austria | 1.46 | 23.25 | 0.68 | | n/a | Kuwait | n/a | n/a | n/a |
| 21 | Japan | 1.27 | 20.18 | 0.66 | | n/a | Latvia | n/a | n/a | n/a |
| 22 | Italy | 1.18 | 18.65 | 0.64 | | n/a | Lebanon | n/a | n/a | n/a |
| 23 | Philippines | 1.16 | 18.29 | 0.63 | | n/a | Lesotho | n/a | n/a | n/a |
| 24 | Uzbekistan | 1.09 | 17.28 | 0.61 | ● | n/a | Lithuania | n/a | n/a | n/a |
| 25 | Poland | 1.08 | 17.13 | 0.59 | | n/a | Luxembourg | n/a | n/a | n/a |
| 26 | Australia | 1.08 | 17.02 | 0.58 | | n/a | Madagascar | n/a | n/a | n/a |
| 27 | Hungary | 0.99 | 15.71 | 0.56 | | n/a | Malawi | n/a | n/a | n/a |
| 28 | Gambia | 0.99 | 15.57 | 0.54 | ● | n/a | Mali | n/a | n/a | n/a |
| 29 | Brazil | 0.90 | 14.20 | 0.53 | | n/a | Malta | n/a | n/a | n/a |
| 30 | Croatia | 0.89 | 14.05 | 0.51 | | n/a | Mauritius | n/a | n/a | n/a |
| 31 | Hong Kong (China) | 0.81 | 12.83 | 0.49 | | n/a | Montenegro | n/a | n/a | n/a |
| 32 | Serbia | 0.74 | 11.65 | 0.47 | | n/a | Morocco | n/a | n/a | n/a |
| 33 | Rwanda (2012) | 0.73 | 11.55 | 0.46 | | n/a | Mozambique | n/a | n/a | n/a |
| 34 | Denmark | 0.64 | 10.11 | 0.44 | ○ | n/a | Myanmar | n/a | n/a | n/a |
| 35 | Kenya | 0.63 | 9.86 | 0.42 | | n/a | Namibia | n/a | n/a | n/a |
| 36 | Uruguay (2012) | 0.60 | 9.44 | 0.41 | | n/a | Nepal | n/a | n/a | n/a |
| 37 | Viet Nam | 0.48 | 7.40 | 0.39 | | n/a | Netherlands | n/a | n/a | n/a |
| 38 | Kyrgyzstan | 0.44 | 6.81 | 0.37 | | n/a | New Zealand | n/a | n/a | n/a |
| 39 | Colombia | 0.37 | 5.72 | 0.36 | | n/a | Nicaragua | n/a | n/a | n/a |
| 40 | Portugal | 0.35 | 5.33 | 0.34 | ○ | n/a | Niger | n/a | n/a | n/a |
| 41 | Peru | 0.35 | 5.33 | 0.32 | | n/a | Nigeria | n/a | n/a | n/a |
| 42 | Kazakhstan | 0.32 | 4.96 | 0.31 | | n/a | Norway | n/a | n/a | n/a |
| 43 | Mexico | 0.31 | 4.78 | 0.29 | | n/a | Oman | n/a | n/a | n/a |
| 44 | Chile | 0.22 | 3.33 | 0.27 | ○ | n/a | Pakistan | n/a | n/a | n/a |
| 45 | Honduras | 0.19 | 2.78 | 0.25 | | n/a | Paraguay | n/a | n/a | n/a |
| 46 | Guatemala | 0.18 | 2.61 | 0.24 | | n/a | Qatar | n/a | n/a | n/a |
| 47 | Argentina | 0.17 | 2.55 | 0.22 | | n/a | Saudi Arabia | n/a | n/a | n/a |
| 48 | Slovenia (2010) | 0.16 | 2.29 | 0.20 | ○ | n/a | Senegal | n/a | n/a | n/a |
| 49 | Romania | 0.14 | 2.07 | 0.19 | ○ | n/a | Seychelles | n/a | n/a | n/a |
| 50 | Burkina Faso (2010) | 0.14 | 1.98 | 0.17 | | n/a | Singapore | n/a | n/a | n/a |
| 51 | Ecuador (2010) | 0.13 | 1.88 | 0.15 | | n/a | South Africa | n/a | n/a | n/a |
| 52 | Botswana (2012) | 0.10 | 1.40 | 0.14 | ○ | n/a | Sri Lanka | n/a | n/a | n/a |
| 53 | Malaysia | 0.10 | 1.39 | 0.12 | ○ | n/a | Sudan | n/a | n/a | n/a |
| 54 | Indonesia | 0.09 | 1.26 | 0.10 | | n/a | Swaziland | n/a | n/a | n/a |
| 55 | Greece | 0.09 | 1.22 | 0.08 | ○ | n/a | Sweden | n/a | n/a | n/a |
| 56 | France | 0.08 | 1.04 | 0.07 | ○ | n/a | Switzerland | n/a | n/a | n/a |
| 57 | Azerbaijan | 0.07 | 0.89 | 0.05 | ○ | n/a | Tanzania, United Rep. | n/a | n/a | n/a |
| 58 | Costa Rica | 0.04 | 0.49 | 0.03 | ○ | n/a | TFYR of Macedonia | n/a | n/a | n/a |
| 59 | Dominican Republic | 0.04 | 0.41 | 0.02 | ○ | n/a | Togo | n/a | n/a | n/a |
| 60 | Panama | 0.01 | 0.00 | 0.00 | ○ | n/a | Trinidad and Tobago | n/a | n/a | n/a |
| n/a | Albania | n/a | n/a | n/a | | n/a | Tunisia | n/a | n/a | n/a |
| n/a | Algeria | n/a | n/a | n/a | | n/a | Uganda | n/a | n/a | n/a |
| n/a | Angola | n/a | n/a | n/a | | n/a | United Arab Emirates | n/a | n/a | n/a |
| n/a | Bahrain | n/a | n/a | n/a | | n/a | United Kingdom | n/a | n/a | n/a |
| n/a | Bangladesh | n/a | n/a | n/a | | n/a | United States of America | n/a | n/a | n/a |
| n/a | Barbados | n/a | n/a | n/a | | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a |
| n/a | Belgium | n/a | n/a | n/a | | n/a | Yemen | n/a | n/a | n/a |
| n/a | Bhutan | n/a | n/a | n/a | | n/a | Zambia | n/a | n/a | n/a |
| n/a | Bolivia, Plurinational St. | n/a | n/a | n/a | | n/a | Zimbabwe | n/a | n/a | n/a |
| n/a | Bosnia and Herzegovina | n/a | n/a | n/a | | | | | | |
| n/a | Burundi | n/a | n/a | n/a | | | | | | |
| n/a | Cabo Verde | n/a | n/a | n/a | | | | | | |

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; International Monetary Fund *World Economic Outlook Database*, 2015 (PPPS GDP)

NOTE: ● indicates a strength; ○ a weakness

6.1.4 Scientific and technical publications

Number of scientific and technical journal articles (per billion PPP\$ GDP) | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Iceland | 65.94 | 100.00 | 1.00 | ● | 73 | Cabo Verde | 8.23 | 12.10 | 0.48 | |
| 2 | Denmark | 63.36 | 96.08 | 0.99 | ● | 74 | Russian Federation | 8.21 | 12.05 | 0.47 | |
| 3 | Slovenia | 59.35 | 89.96 | 0.99 | ● | 75 | Pakistan | 7.78 | 11.40 | 0.47 | |
| 4 | Switzerland | 55.74 | 84.47 | 0.98 | | 76 | Botswana | 7.74 | 11.34 | 0.46 | |
| 5 | Finland | 54.05 | 81.89 | 0.97 | | 77 | India | 7.46 | 10.92 | 0.45 | |
| 6 | Sweden | 53.73 | 81.40 | 0.96 | ● | 78 | Nepal | 7.35 | 10.75 | 0.45 | ● |
| 7 | New Zealand | 51.89 | 78.59 | 0.96 | ● | 79 | Bhutan | 7.34 | 10.74 | 0.44 | |
| 8 | Serbia | 51.56 | 78.10 | 0.95 | ● | 80 | Costa Rica | 7.24 | 10.59 | 0.43 | |
| 9 | Estonia | 48.54 | 73.49 | 0.94 | ● | 81 | Ethiopia | 6.93 | 10.11 | 0.42 | |
| 10 | Australia | 47.67 | 72.17 | 0.94 | | 82 | Saudi Arabia | 6.92 | 10.09 | 0.42 | |
| 11 | Israel | 46.40 | 70.24 | 0.93 | | 83 | Tanzania, United Rep. | 6.80 | 9.91 | 0.41 | |
| 12 | Portugal | 45.00 | 68.10 | 0.92 | ● | 84 | Togo | 6.70 | 9.76 | 0.40 | ● |
| 13 | Netherlands | 43.83 | 66.32 | 0.91 | | 85 | Thailand | 6.67 | 9.71 | 0.40 | |
| 14 | United Kingdom | 41.46 | 62.70 | 0.91 | | 86 | Namibia | 6.66 | 9.70 | 0.39 | |
| 15 | Belgium | 40.50 | 61.25 | 0.90 | | 87 | Niger | 6.58 | 9.57 | 0.38 | |
| 16 | Gambia | 39.58 | 59.85 | 0.89 | ● | 88 | Ghana | 6.54 | 9.52 | 0.37 | |
| 17 | Canada | 37.40 | 56.52 | 0.88 | | 89 | Morocco | 6.35 | 9.23 | 0.37 | |
| 18 | Czech Republic | 35.44 | 53.54 | 0.88 | | 90 | Belarus | 6.34 | 9.22 | 0.36 | |
| 19 | Cyprus | 35.16 | 53.12 | 0.87 | | 91 | Mongolia | 6.10 | 8.84 | 0.35 | |
| 20 | Croatia | 34.96 | 52.80 | 0.86 | ● | 92 | Madagascar | 5.70 | 8.23 | 0.35 | |
| 21 | Austria | 34.58 | 52.23 | 0.86 | | 93 | Jamaica | 5.64 | 8.15 | 0.34 | |
| 22 | Greece | 33.98 | 51.32 | 0.85 | ● | 94 | Mozambique | 5.53 | 7.98 | 0.33 | |
| 23 | Spain | 33.65 | 50.81 | 0.84 | | 95 | Mexico | 5.52 | 7.96 | 0.32 | |
| 24 | Norway | 33.62 | 50.77 | 0.83 | | 96 | Albania | 5.26 | 7.57 | 0.32 | |
| 25 | Ireland | 31.41 | 47.40 | 0.83 | | 97 | Colombia | 5.09 | 7.30 | 0.31 | |
| 26 | Korea, Rep. | 29.83 | 45.00 | 0.82 | | 98 | Mali | 4.87 | 6.97 | 0.30 | |
| 27 | Armenia | 28.54 | 43.03 | 0.81 | ● | 99 | Viet Nam | 4.74 | 6.78 | 0.29 | |
| 28 | Italy | 27.26 | 41.09 | 0.81 | | 100 | Guyana | 4.72 | 6.74 | 0.29 | |
| 29 | Hungary | 26.36 | 39.71 | 0.80 | | 101 | Panama | 4.62 | 6.59 | 0.28 | |
| 30 | Malawi | 26.23 | 39.51 | 0.79 | ● | 102 | Zambia | 4.57 | 6.52 | 0.27 | |
| 31 | Germany | 25.98 | 39.13 | 0.78 | | 103 | Mauritius | 4.54 | 6.47 | 0.27 | |
| 32 | France | 25.73 | 38.75 | 0.78 | | 104 | Kyrgyzstan | 4.44 | 6.31 | 0.26 | |
| 33 | Singapore | 25.70 | 38.71 | 0.77 | | 105 | Lesotho | 4.35 | 6.19 | 0.25 | |
| 34 | Lithuania | 25.46 | 38.33 | 0.76 | | 106 | Cambodia | 4.32 | 6.14 | 0.24 | |
| 35 | Tunisia | 25.44 | 38.30 | 0.76 | ● | 107 | Algeria | 4.22 | 5.98 | 0.24 | |
| 36 | Poland | 24.74 | 37.24 | 0.75 | | 108 | Qatar | 3.94 | 5.56 | 0.23 | |
| 37 | Montenegro | 21.58 | 32.43 | 0.74 | | 109 | Swaziland | 3.83 | 5.38 | 0.22 | |
| 38 | Slovakia | 21.50 | 32.30 | 0.73 | | 110 | Oman | 3.82 | 5.38 | 0.22 | |
| 39 | United States of America | 20.58 | 30.90 | 0.73 | | 111 | Trinidad and Tobago | 3.71 | 5.20 | 0.21 | |
| 40 | Iran, Islamic Rep. | 19.99 | 30.00 | 0.72 | ● | 112 | Guinea | 3.47 | 4.84 | 0.20 | ● |
| 41 | Luxembourg | 19.33 | 29.01 | 0.71 | | 113 | Bolivia, Plurinational St. | 3.22 | 4.45 | 0.19 | |
| 42 | Romania | 17.92 | 26.85 | 0.71 | | 114 | Côte d'Ivoire | 3.21 | 4.44 | 0.19 | |
| 43 | Fiji | 17.28 | 25.87 | 0.70 | ● | 115 | Ecuador | 3.01 | 4.14 | 0.18 | |
| 44 | Turkey | 17.18 | 25.72 | 0.69 | | 116 | Sri Lanka | 2.90 | 3.97 | 0.17 | ○ |
| 45 | Malta | 17.13 | 25.64 | 0.68 | | 117 | Bangladesh | 2.83 | 3.87 | 0.17 | |
| 46 | Chile | 16.57 | 24.80 | 0.68 | | 118 | Burundi | 2.75 | 3.73 | 0.16 | |
| 47 | Georgia | 16.34 | 24.45 | 0.67 | | 119 | United Arab Emirates | 2.70 | 3.67 | 0.15 | ○ |
| 48 | Bulgaria | 16.07 | 24.03 | 0.66 | | 120 | Azerbaijan | 2.66 | 3.61 | 0.14 | |
| 49 | Japan | 15.65 | 23.39 | 0.65 | | 121 | Bahrain | 2.65 | 3.59 | 0.14 | ○ |
| 50 | South Africa | 15.45 | 23.08 | 0.65 | | 122 | Peru | 2.40 | 3.22 | 0.13 | ○ |
| 51 | Jordan | 14.92 | 22.28 | 0.64 | | 123 | Kuwait | 2.36 | 3.14 | 0.12 | |
| 52 | Barbados | 14.17 | 21.14 | 0.63 | | 124 | Nigeria | 2.08 | 2.72 | 0.12 | |
| 53 | China | 13.98 | 20.85 | 0.63 | | 125 | Nicaragua | 2.07 | 2.71 | 0.11 | |
| 54 | Malaysia | 13.91 | 20.74 | 0.62 | | 126 | Tajikistan | 2.06 | 2.69 | 0.10 | |
| 55 | Moldova, Rep. | 13.77 | 20.53 | 0.61 | | 127 | Sudan | 2.05 | 2.67 | 0.09 | |
| 56 | Seychelles | 13.72 | 20.45 | 0.60 | | 128 | Yemen | 2.04 | 2.65 | 0.09 | |
| 57 | Zimbabwe | 13.34 | 19.88 | 0.60 | ● | 129 | Uzbekistan | 1.89 | 2.43 | 0.08 | |
| 58 | Ukraine | 13.24 | 19.72 | 0.59 | | 130 | Kazakhstan | 1.57 | 1.94 | 0.07 | ○ |
| 59 | Lebanon | 13.13 | 19.55 | 0.58 | | 131 | Philippines | 1.56 | 1.94 | 0.06 | ○ |
| 60 | Latvia | 12.83 | 19.09 | 0.58 | | 132 | Venezuela, Bolivarian Rep. | 1.50 | 1.84 | 0.06 | |
| 61 | Uruguay | 12.65 | 18.82 | 0.57 | | 133 | Paraguay | 1.03 | 1.12 | 0.05 | ○ |
| 62 | TFYR of Macedonia | 12.60 | 18.74 | 0.56 | | 134 | Guatemala | 1.02 | 1.11 | 0.04 | ○ |
| 63 | Brazil | 11.82 | 17.55 | 0.55 | | 135 | Honduras | 0.92 | 0.96 | 0.04 | ○ |
| 64 | Kenya | 11.49 | 17.06 | 0.55 | | 136 | El Salvador | 0.88 | 0.90 | 0.03 | ○ |
| 65 | Uganda | 11.46 | 17.02 | 0.54 | | 137 | Indonesia | 0.61 | 0.48 | 0.02 | ○ |
| 66 | Cameroon | 11.28 | 16.74 | 0.53 | ● | 138 | Dominican Republic | 0.44 | 0.23 | 0.01 | ○ |
| 67 | Senegal | 10.65 | 15.78 | 0.53 | | 139 | Angola | 0.31 | 0.02 | 0.01 | ○ |
| 68 | Burkina Faso | 9.96 | 14.73 | 0.52 | ● | 140 | Myanmar | 0.29 | 0.00 | 0.00 | ○ |
| 69 | Egypt | 9.16 | 13.50 | 0.51 | | n/a | Hong Kong (China) | n/a | n/a | n/a | |
| 70 | Bosnia and Herzegovina | 9.09 | 13.40 | 0.50 | | | | | | | |
| 71 | Argentina | 8.55 | 12.58 | 0.50 | | | | | | | |
| 72 | Rwanda | 8.38 | 12.33 | 0.49 | | | | | | | |

SOURCE: Thomson Reuters, Web of Science, SCl and SSCI; International Monetary Fund *World Economic Outlook Database*, 2015 (PPP\$ GDP)

NOTE: ● indicates a strength; ○ a weakness

6.1.5 Citable documents H index

The H index is the economy's number of published articles (H) that have received at least H citations in the period 1996–2013 | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|----------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | United Kingdom | 934.00 | 100.00 | 0.99 | ● | 73 | Tunisia | 97.00 | 9.12 | 0.49 | |
| 1 | United States of America | 1,518.00 | 100.00 | 0.99 | ● | 74 | Sri Lanka | 96.00 | 9.01 | 0.48 | |
| 3 | Germany | 815.00 | 87.08 | 0.99 | ● | 75 | Latvia | 94.00 | 8.79 | 0.47 | |
| 4 | France | 742.00 | 79.15 | 0.98 | ● | 76 | Ecuador | 92.00 | 8.58 | 0.44 | |
| 5 | Canada | 725.00 | 77.31 | 0.97 | ● | 76 | Jordan | 92.00 | 8.58 | 0.44 | |
| 6 | Japan | 694.00 | 73.94 | 0.96 | ● | 76 | Kuwait | 92.00 | 8.58 | 0.44 | |
| 7 | Italy | 654.00 | 69.60 | 0.96 | ● | 76 | Luxembourg | 92.00 | 8.58 | 0.44 | |
| 8 | Netherlands | 636.00 | 67.64 | 0.95 | | 80 | Georgia | 90.00 | 8.26 | 0.44 | |
| 9 | Switzerland | 629.00 | 66.88 | 0.94 | | 81 | Algeria | 89.00 | 8.25 | 0.42 | ● |
| 10 | Australia | 583.00 | 61.89 | 0.94 | | 81 | Malawi | 89.00 | 8.25 | 0.42 | |
| 11 | Sweden | 567.00 | 60.15 | 0.93 | | 83 | Serbia | 86.00 | 7.93 | 0.41 | |
| 12 | Spain | 531.00 | 56.24 | 0.92 | ● | 84 | Gambia | 85.00 | 7.82 | 0.41 | |
| 13 | Belgium | 502.00 | 53.09 | 0.91 | ● | 85 | Senegal | 83.00 | 7.60 | 0.40 | |
| 14 | Denmark | 476.00 | 50.27 | 0.91 | | 86 | Ethiopia | 82.00 | 7.49 | 0.39 | |
| 15 | Israel | 456.00 | 48.10 | 0.90 | | 86 | Ghana | 82.00 | 7.49 | 0.39 | |
| 16 | China | 436.00 | 45.93 | 0.89 | | 88 | Zimbabwe | 81.00 | 7.38 | 0.38 | |
| 17 | Austria | 416.00 | 43.76 | 0.89 | | 89 | Nepal | 80.00 | 7.27 | 0.37 | |
| 18 | Finland | 407.00 | 42.78 | 0.88 | | 90 | Cameroon | 78.00 | 7.06 | 0.36 | |
| 19 | Korea, Rep. | 375.00 | 39.31 | 0.87 | | 91 | Côte d'Ivoire | 76.00 | 6.84 | 0.36 | |
| 20 | Norway | 362.00 | 37.89 | 0.86 | | 92 | Zambia | 75.00 | 6.73 | 0.35 | |
| 21 | Russian Federation | 355.00 | 37.13 | 0.86 | ● | 93 | Oman | 74.00 | 6.62 | 0.34 | |
| 22 | Brazil | 342.00 | 35.72 | 0.85 | ● | 94 | Bolivia, Plurinational St. | 71.00 | 6.30 | 0.33 | |
| 23 | India | 341.00 | 35.61 | 0.84 | ● | 94 | Burkina Faso | 71.00 | 6.30 | 0.33 | |
| 24 | Poland | 336.00 | 35.07 | 0.84 | ● | 96 | Malta | 70.00 | 6.19 | 0.32 | ○ |
| 25 | Hong Kong (China) | 325.00 | 33.88 | 0.83 | | 97 | Moldova, Rep. | 68.00 | 5.97 | 0.31 | |
| 26 | New Zealand | 318.00 | 33.12 | 0.82 | | 98 | TFYR of Macedonia | 67.00 | 5.86 | 0.30 | ○ |
| 27 | Singapore | 308.00 | 32.03 | 0.81 | | 98 | Trinidad and Tobago | 67.00 | 5.86 | 0.30 | |
| 28 | Ireland | 299.00 | 31.05 | 0.81 | | 100 | Jamaica | 64.00 | 5.54 | 0.29 | |
| 29 | Greece | 295.00 | 30.62 | 0.80 | | 101 | Botswana | 63.00 | 5.43 | 0.29 | |
| 30 | Hungary | 277.00 | 28.66 | 0.79 | | 102 | Madagascar | 62.00 | 5.32 | 0.27 | |
| 31 | Portugal | 269.00 | 27.80 | 0.79 | | 102 | Namibia | 62.00 | 5.32 | 0.27 | |
| 32 | Czech Republic | 268.00 | 27.69 | 0.78 | | 104 | Mongolia | 61.00 | 5.21 | 0.26 | |
| 33 | Mexico | 261.00 | 26.93 | 0.77 | ● | 105 | Mozambique | 60.00 | 5.10 | 0.25 | |
| 34 | South Africa | 260.00 | 26.82 | 0.76 | | 105 | Qatar | 60.00 | 5.10 | 0.25 | |
| 35 | Argentina | 249.00 | 25.62 | 0.76 | ● | 107 | Kazakhstan | 59.00 | 4.99 | 0.24 | |
| 36 | Turkey | 237.00 | 24.32 | 0.75 | | 107 | Mali | 59.00 | 4.99 | 0.24 | |
| 37 | Chile | 214.00 | 21.82 | 0.74 | | 109 | Guatemala | 58.00 | 4.89 | 0.21 | |
| 38 | Thailand | 190.00 | 19.22 | 0.74 | | 109 | Sudan | 58.00 | 4.89 | 0.21 | |
| 39 | Iceland | 181.00 | 18.24 | 0.73 | | 109 | Uzbekistan | 58.00 | 4.89 | 0.21 | |
| 40 | Slovenia | 172.00 | 17.26 | 0.72 | | 112 | Cambodia | 57.00 | 4.78 | 0.21 | |
| 41 | Slovakia | 165.00 | 16.50 | 0.71 | | 113 | Barbados | 55.00 | 4.56 | 0.20 | ○ |
| 42 | Croatia | 161.00 | 16.07 | 0.71 | | 114 | Nicaragua | 51.00 | 4.13 | 0.19 | |
| 43 | Ukraine | 159.00 | 15.85 | 0.70 | | 114 | Niger | 51.00 | 4.13 | 0.19 | |
| 44 | Iran, Islamic Rep. | 158.00 | 15.74 | 0.69 | ● | 116 | Azerbaijan | 50.00 | 4.02 | 0.18 | |
| 45 | Bulgaria | 154.00 | 15.31 | 0.69 | | 117 | Bosnia and Herzegovina | 49.00 | 3.91 | 0.17 | ○ |
| 46 | Romania | 153.00 | 15.20 | 0.68 | | 118 | Paraguay | 48.00 | 3.80 | 0.16 | |
| 47 | Colombia | 151.00 | 14.98 | 0.67 | | 119 | Fiji | 46.00 | 3.58 | 0.16 | ○ |
| 48 | Kenya | 149.00 | 14.77 | 0.66 | | 120 | Honduras | 45.00 | 3.47 | 0.14 | ○ |
| 49 | Egypt | 148.00 | 14.66 | 0.65 | ● | 120 | Mauritius | 45.00 | 3.47 | 0.14 | ○ |
| 49 | Estonia | 148.00 | 14.66 | 0.65 | | 122 | Bahrain | 43.00 | 3.26 | 0.12 | ○ |
| 51 | Malaysia | 145.00 | 14.33 | 0.64 | | 122 | Dominican Republic | 43.00 | 3.26 | 0.12 | ○ |
| 52 | Saudi Arabia | 144.00 | 14.22 | 0.64 | | 122 | Rwanda | 43.00 | 3.26 | 0.12 | |
| 53 | Venezuela, Bolivarian Rep. | 141.00 | 13.90 | 0.63 | ● | 125 | Yemen | 42.00 | 3.15 | 0.11 | |
| 54 | Philippines | 131.00 | 12.81 | 0.62 | | 126 | Myanmar | 41.00 | 3.04 | 0.11 | |
| 55 | Pakistan | 130.00 | 12.70 | 0.61 | ● | 127 | Albania | 40.00 | 2.93 | 0.10 | ○ |
| 56 | Indonesia | 126.00 | 12.27 | 0.60 | | 128 | Seychelles | 38.00 | 2.71 | 0.09 | ○ |
| 56 | Peru | 126.00 | 12.27 | 0.60 | | 129 | Guinea | 37.00 | 2.61 | 0.09 | |
| 58 | Lithuania | 122.00 | 11.83 | 0.59 | | 130 | El Salvador | 36.00 | 2.50 | 0.08 | ○ |
| 58 | Viet Nam | 122.00 | 11.83 | 0.59 | | 131 | Kyrgyzstan | 35.00 | 2.39 | 0.06 | ○ |
| 60 | Panama | 119.00 | 11.51 | 0.58 | | 131 | Swaziland | 35.00 | 2.39 | 0.06 | ○ |
| 61 | Armenia | 116.00 | 11.18 | 0.57 | | 133 | Togo | 33.00 | 2.17 | 0.06 | |
| 62 | Costa Rica | 115.00 | 11.07 | 0.56 | | 134 | Angola | 28.00 | 1.63 | 0.04 | |
| 63 | Belarus | 114.00 | 10.97 | 0.55 | | 134 | Guyana | 28.00 | 1.63 | 0.04 | ○ |
| 63 | Uruguay | 114.00 | 10.97 | 0.55 | | 136 | Burundi | 26.00 | 1.41 | 0.04 | |
| 65 | Bangladesh | 112.00 | 10.75 | 0.54 | ● | 137 | Tajikistan | 24.00 | 1.19 | 0.03 | ○ |
| 66 | Uganda | 111.00 | 10.64 | 0.54 | | 138 | Lesotho | 23.00 | 1.09 | 0.01 | ○ |
| 67 | Lebanon | 109.00 | 10.42 | 0.52 | | 138 | Montenegro | 23.00 | 1.09 | 0.01 | ○ |
| 67 | Morocco | 109.00 | 10.42 | 0.52 | | 140 | Bhutan | 20.00 | 0.76 | 0.01 | ○ |
| 69 | Nigeria | 103.00 | 9.77 | 0.51 | ● | 141 | Cabo Verde | 13.00 | 0.00 | 0.00 | ○ |
| 70 | Tanzania, United Rep. | 102.00 | 9.66 | 0.51 | ● | | | | | | |
| 71 | Cyprus | 100.00 | 9.45 | 0.49 | | | | | | | |
| 71 | United Arab Emirates | 100.00 | 9.45 | 0.49 | | | | | | | |

SOURCE: SCImago. (2007). SJR — SCImago Journal & Country Rank. Retrieved February, 2015.

NOTE: ● indicates a strength; ○ a weakness

6.2.1 Growth rate of GDP per person engaged

Growth rate of GDP per person engaged (constant 1990 PPP\$) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | China | .713 | 100.00 | 1.00 | ● | 73 | Senegal | -.095 | 57.60 | 0.37 | |
| 2 | Kyrgyzstan | 6.55 | 96.01 | 0.99 | ● | 74 | Sudan | -.094 | 57.51 | 0.37 | ● |
| 3 | Sri Lanka | 6.21 | 93.67 | 0.98 | ● | 75 | Pakistan | -.090 | 57.22 | 0.36 | |
| 4 | Moldova, Rep. | 5.35 | 87.75 | 0.97 | ● | 76 | Denmark | -.086 | 56.98 | 0.35 | ○ |
| 5 | Ghana | 5.31 | 87.48 | 0.97 | ● | 77 | Slovakia | -.085 | 56.92 | 0.34 | ○ |
| 6 | Uzbekistan | 5.31 | 87.48 | 0.96 | ● | 78 | United Kingdom | -.082 | 56.68 | 0.33 | ○ |
| 7 | Myanmar | 5.24 | 87.06 | 0.95 | ● | 79 | United States of America | -.081 | 56.61 | 0.32 | ○ |
| 8 | Côte d'Ivoire | 5.17 | 86.58 | 0.94 | ● | 80 | Brazil | -.079 | 56.52 | 0.31 | |
| 9 | Cambodia | 5.05 | 85.70 | 0.93 | ● | 81 | New Zealand | -.079 | 56.50 | 0.30 | ○ |
| 10 | Philippines | 4.61 | 82.71 | 0.92 | ● | 82 | Albania | -.068 | 55.74 | 0.30 | |
| 11 | Armenia | 4.58 | 82.49 | 0.91 | ● | 83 | Bulgaria | -.065 | 55.56 | 0.29 | ○ |
| 12 | Tajikistan | 4.45 | 81.61 | 0.90 | ● | 84 | Finland | -.056 | 54.91 | 0.28 | ○ |
| 13 | Kazakhstan | 4.15 | 79.57 | 0.90 | ● | 85 | Qatar | -.043 | 54.04 | 0.27 | |
| 14 | Mozambique | 3.97 | 78.34 | 0.89 | ● | 86 | Switzerland | -.043 | 54.00 | 0.26 | ○ |
| 15 | Peru | 3.93 | 78.01 | 0.88 | ● | 87 | Netherlands | -.040 | 53.85 | 0.25 | ○ |
| 16 | Chile | 3.85 | 77.46 | 0.87 | ● | 88 | Guatemala | -.040 | 53.81 | 0.24 | |
| 17 | Viet Nam | 3.80 | 77.15 | 0.86 | ● | 89 | Portugal | -.035 | 53.46 | 0.23 | ○ |
| 18 | Tanzania, United Rep. | 3.66 | 76.22 | 0.85 | ● | 90 | Bosnia and Herzegovina | -.034 | 53.43 | 0.23 | |
| 19 | Morocco | 3.61 | 75.83 | 0.84 | ● | 91 | Germany | -.030 | 53.14 | 0.22 | ○ |
| 20 | Ethiopia | 3.60 | 75.78 | 0.83 | ● | 92 | Mexico | -.028 | 53.03 | 0.21 | ○ |
| 21 | Indonesia | 3.60 | 75.77 | 0.83 | ● | 93 | Dominican Republic | -.020 | 52.43 | 0.20 | |
| 22 | Nigeria | 3.48 | 74.95 | 0.82 | ● | 94 | Hungary | -.019 | 52.39 | 0.19 | ○ |
| 23 | South Africa | 3.47 | 74.85 | 0.81 | ● | 95 | France | -.018 | 52.35 | 0.18 | ○ |
| 24 | Bangladesh | 3.43 | 74.62 | 0.80 | ● | 96 | Croatia | -.014 | 52.06 | 0.17 | ○ |
| 25 | Jordan | 3.40 | 74.40 | 0.79 | ● | 97 | Canada | -.012 | 51.90 | 0.17 | ○ |
| 26 | Hong Kong (China) | 3.34 | 73.98 | 0.78 | ● | 98 | Belgium | -.002 | 51.22 | 0.16 | ○ |
| 27 | Kenya | 3.14 | 72.63 | 0.77 | ● | 99 | Italy | -.001 | 51.18 | 0.15 | ○ |
| 28 | Bolivia, Plurinational St. | 3.11 | 72.41 | 0.77 | ● | 100 | Austria | -.002 | 50.97 | 0.14 | ○ |
| 29 | Malaysia | 2.96 | 71.39 | 0.76 | ● | 101 | Egypt | -.012 | 50.24 | 0.13 | |
| 30 | Burkina Faso | 2.91 | 71.04 | 0.75 | ● | 102 | Luxembourg | -.017 | 49.94 | 0.12 | ○ |
| 31 | Azerbaijan | 2.87 | 70.78 | 0.74 | ● | 103 | Iceland | -.019 | 49.75 | 0.11 | ○ |
| 32 | Zambia | 2.86 | 70.69 | 0.73 | ● | 104 | Malta | -.028 | 49.14 | 0.10 | ○ |
| 33 | Georgia | 2.83 | 70.52 | 0.72 | ● | 105 | Czech Republic | -.037 | 48.56 | 0.10 | ○ |
| 34 | Uruguay | 2.76 | 70.04 | 0.71 | ● | 106 | Turkey | -.061 | 46.92 | 0.09 | ○ |
| 35 | Belarus | 2.76 | 69.98 | 0.70 | ● | 107 | Madagascar | -.064 | 46.70 | 0.08 | |
| 36 | Oman | 2.62 | 69.08 | 0.70 | ● | 108 | Greece | -.073 | 46.09 | 0.07 | ○ |
| 37 | Thailand | 2.50 | 68.20 | 0.69 | ● | 109 | Venezuela, Bolivarian Rep. | -.089 | 44.99 | 0.06 | |
| 38 | India | 2.42 | 67.69 | 0.68 | ● | 110 | Barbados | -.099 | 44.30 | 0.05 | ○ |
| 39 | Niger | 2.38 | 67.39 | 0.67 | ● | 111 | Slovenia | -.104 | 43.96 | 0.04 | ○ |
| 40 | Trinidad and Tobago | 2.20 | 66.15 | 0.66 | ● | 112 | Jamaica | -.106 | 43.83 | 0.03 | ○ |
| 41 | Colombia | 2.16 | 65.89 | 0.65 | ● | 113 | Kuwait | -.106 | 43.78 | 0.03 | ○ |
| 42 | Tunisia | 2.13 | 65.69 | 0.64 | ● | 114 | Iran, Islamic Rep. | -.276 | 32.15 | 0.02 | ○ |
| 43 | Angola | 2.05 | 65.14 | 0.63 | ● | 115 | Zimbabwe | -.339 | 27.81 | 0.01 | ○ |
| 44 | Latvia | 2.03 | 65.00 | 0.63 | ● | 116 | Cyprus | -.745 | 0.00 | 0.00 | ○ |
| 45 | Yemen | 2.03 | 64.98 | 0.62 | ● | n/a | Bhutan | n/a | n/a | n/a | |
| 46 | Lithuania | 1.99 | 64.74 | 0.61 | ● | n/a | Botswana | n/a | n/a | n/a | |
| 47 | Costa Rica | 1.98 | 64.66 | 0.60 | ● | n/a | Burundi | n/a | n/a | n/a | |
| 48 | Ecuador | 1.94 | 64.41 | 0.59 | ● | n/a | Cabo Verde | n/a | n/a | n/a | |
| 49 | Mali | 1.84 | 63.67 | 0.58 | ● | n/a | El Salvador | n/a | n/a | n/a | |
| 50 | Korea, Rep. | 1.74 | 63.05 | 0.57 | ● | n/a | Fiji | n/a | n/a | n/a | |
| 51 | Uganda | 1.74 | 63.00 | 0.57 | ● | n/a | Gambia | n/a | n/a | n/a | |
| 52 | Malawi | 1.73 | 62.96 | 0.56 | ● | n/a | Guinea | n/a | n/a | n/a | |
| 53 | Israel | 1.69 | 62.67 | 0.55 | ● | n/a | Guyana | n/a | n/a | n/a | |
| 54 | Cameroon | 1.67 | 62.56 | 0.54 | ● | n/a | Honduras | n/a | n/a | n/a | |
| 55 | Romania | 1.67 | 62.52 | 0.53 | ● | n/a | Lebanon | n/a | n/a | n/a | |
| 56 | Russian Federation | 1.65 | 62.38 | 0.52 | ● | n/a | Lesotho | n/a | n/a | n/a | |
| 57 | Algeria | 1.63 | 62.28 | 0.51 | ● | n/a | Mauritius | n/a | n/a | n/a | |
| 58 | Spain | 1.58 | 61.93 | 0.50 | ○ | n/a | Mongolia | n/a | n/a | n/a | |
| 59 | Singapore | 1.58 | 61.89 | 0.50 | ○ | n/a | Montenegro | n/a | n/a | n/a | |
| 60 | Japan | 1.55 | 61.68 | 0.49 | ○ | n/a | Namibia | n/a | n/a | n/a | |
| 61 | Bahrain | 1.48 | 61.26 | 0.48 | ○ | n/a | Nepal | n/a | n/a | n/a | |
| 62 | Argentina | 1.43 | 60.90 | 0.47 | ○ | n/a | Nicaragua | n/a | n/a | n/a | |
| 63 | Norway | 1.39 | 60.63 | 0.46 | ○ | n/a | Panama | n/a | n/a | n/a | |
| 64 | Australia | 1.38 | 60.56 | 0.45 | ○ | n/a | Paraguay | n/a | n/a | n/a | |
| 65 | Sweden | 1.35 | 60.36 | 0.44 | ○ | n/a | Rwanda | n/a | n/a | n/a | |
| 66 | Ukraine | 1.23 | 59.54 | 0.43 | ○ | n/a | Serbia | n/a | n/a | n/a | |
| 67 | Poland | 1.22 | 59.42 | 0.43 | ○ | n/a | Seychelles | n/a | n/a | n/a | |
| 68 | Saudi Arabia | 1.21 | 59.39 | 0.42 | ○ | n/a | Swaziland | n/a | n/a | n/a | |
| 69 | United Arab Emirates | 1.19 | 59.23 | 0.41 | ○ | n/a | Togo | n/a | n/a | n/a | |
| 70 | TFYR of Macedonia | 1.12 | 58.79 | 0.40 | ○ | | | | | | |
| 71 | Estonia | 0.98 | 57.80 | 0.39 | ○ | | | | | | |
| 72 | Ireland | 0.97 | 57.74 | 0.38 | ○ | | | | | | |

SOURCE: The Conference Board Total Economy Database™ Output, Labor and Labor Productivity Country Details, 1950–2013, January 2014

NOTE: ● indicates a strength; ○ a weakness

6.2.2

New business density

New business density (new registrations per thousand population 15–64 years old) | 2012

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Cyprus | 22.51 | 100.00 | 0.97 | ● | 73 | Mexico | 0.88 | 5.80 | 0.31 | |
| 1 | Hong Kong (China) | 28.12 | 100.00 | 0.97 | ● | 74 | Albania | 0.88 | 5.79 | 0.30 | |
| 1 | Luxembourg | 20.98 | 100.00 | 0.97 | ● | 75 | Thailand | 0.86 | 5.66 | 0.30 | |
| 1 | New Zealand | 15.07 | 100.00 | 0.97 | ● | 76 | Namibia | 0.85 | 5.65 | 0.29 | |
| 5 | Panama | 14.10 | 93.57 | 0.96 | ● | 77 | Kenya (2008) | 0.84 | 5.57 | 0.28 | |
| 6 | Malta | 13.61 | 90.31 | 0.95 | | 78 | Turkey | 0.79 | 5.20 | 0.27 | |
| 7 | Botswana | 12.30 | 81.59 | 0.94 | ● | 79 | Greece (2010) | 0.77 | 5.06 | 0.26 | |
| 8 | Australia | 12.16 | 80.69 | 0.93 | | 80 | Bosnia and Herzegovina | 0.70 | 4.62 | 0.25 | |
| 9 | Latvia | 11.63 | 77.17 | 0.92 | ● | 81 | Azerbaijan | 0.70 | 4.60 | 0.24 | |
| 10 | United Kingdom | 11.04 | 73.21 | 0.91 | | 82 | Nepal | 0.66 | 4.35 | 0.23 | |
| 11 | Montenegro (2011) | 10.66 | 70.75 | 0.90 | ● | 83 | Uzbekistan | 0.64 | 4.25 | 0.22 | |
| 12 | Bulgaria | 9.03 | 59.88 | 0.90 | ● | 84 | Bolivia, Plurinational St. | 0.56 | 3.71 | 0.21 | |
| 13 | Iceland | 8.17 | 54.18 | 0.89 | | 85 | Algeria | 0.53 | 3.52 | 0.20 | |
| 14 | Singapore | 8.04 | 53.37 | 0.88 | | 86 | Poland (2009) | 0.53 | 3.49 | 0.19 | ○ |
| 15 | Estonia (2007) | 7.92 | 52.52 | 0.87 | | 87 | Guatemala | 0.52 | 3.44 | 0.18 | |
| 16 | Norway | 7.83 | 51.92 | 0.86 | | 88 | Sri Lanka | 0.51 | 3.40 | 0.17 | ○ |
| 17 | Mauritius | 7.40 | 49.06 | 0.85 | ● | 89 | Austria | 0.50 | 3.28 | 0.16 | ○ |
| 18 | South Africa | 6.54 | 43.36 | 0.84 | ● | 90 | El Salvador | 0.48 | 3.18 | 0.15 | |
| 19 | Sweden | 6.41 | 42.51 | 0.83 | | 91 | Argentina | 0.47 | 3.07 | 0.14 | |
| 20 | Chile | 5.69 | 37.71 | 0.82 | | 92 | Indonesia | 0.29 | 1.93 | 0.13 | |
| 21 | Slovakia | 5.11 | 33.88 | 0.81 | ● | 93 | Philippines | 0.27 | 1.78 | 0.12 | ○ |
| 22 | Georgia | 4.86 | 32.25 | 0.80 | ● | 94 | Senegal | 0.27 | 1.75 | 0.11 | |
| 23 | Hungary | 4.75 | 31.53 | 0.79 | | 95 | Tajikistan | 0.26 | 1.68 | 0.10 | |
| 24 | Lithuania | 4.71 | 31.25 | 0.78 | | 96 | Guinea | 0.23 | 1.48 | 0.10 | |
| 25 | Ireland | 4.50 | 29.84 | 0.77 | | 97 | Bhutan | 0.20 | 1.32 | 0.09 | |
| 26 | Netherlands | 4.44 | 29.46 | 0.76 | | 98 | Burkina Faso | 0.15 | 0.96 | 0.08 | ○ |
| 27 | Slovenia | 4.36 | 28.92 | 0.75 | | 99 | India | 0.12 | 0.80 | 0.07 | ○ |
| 28 | Denmark | 4.36 | 28.90 | 0.74 | | 100 | Togo | 0.12 | 0.79 | 0.06 | |
| 29 | Russian Federation | 4.30 | 28.53 | 0.73 | | 101 | Bangladesh | 0.09 | 0.59 | 0.05 | ○ |
| 30 | Romania | 4.12 | 27.34 | 0.72 | | 102 | Malawi (2009) | 0.08 | 0.53 | 0.04 | ○ |
| 31 | Peru | 3.83 | 25.39 | 0.71 | | 103 | Madagascar | 0.05 | 0.32 | 0.03 | ○ |
| 32 | Portugal (2010) | 3.62 | 24.02 | 0.70 | | 104 | Pakistan | 0.04 | 0.23 | 0.02 | ○ |
| 33 | TFYR of Macedonia | 3.60 | 23.90 | 0.70 | | 105 | Ethiopia (2009) | 0.03 | 0.18 | 0.01 | ○ |
| 34 | Costa Rica | 3.55 | 23.52 | 0.69 | | 106 | Niger (2009) | 0.00 | 0.00 | 0.00 | ○ |
| 35 | Uruguay | 2.98 | 19.77 | 0.68 | | n/a | Angola | n/a | n/a | n/a | |
| 36 | Czech Republic | 2.96 | 19.64 | 0.67 | | n/a | Bahrain | n/a | n/a | n/a | |
| 37 | Israel | 2.96 | 19.63 | 0.66 | | n/a | Barbados | n/a | n/a | n/a | |
| 38 | France | 2.88 | 19.08 | 0.65 | | n/a | Burundi | n/a | n/a | n/a | |
| 39 | Croatia | 2.82 | 18.70 | 0.64 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 40 | Spain | 2.71 | 17.99 | 0.63 | | n/a | Cambodia | n/a | n/a | n/a | |
| 41 | Switzerland | 2.53 | 16.79 | 0.62 | ○ | n/a | Cameroon | n/a | n/a | n/a | |
| 42 | Belgium | 2.48 | 16.43 | 0.61 | | n/a | China | n/a | n/a | n/a | |
| 43 | Finland | 2.32 | 15.35 | 0.60 | | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 44 | Malaysia | 2.28 | 15.10 | 0.59 | | n/a | Ecuador | n/a | n/a | n/a | |
| 45 | Brazil | 2.17 | 14.36 | 0.58 | | n/a | Egypt | n/a | n/a | n/a | |
| 46 | Korea, Rep. | 2.03 | 13.44 | 0.57 | | n/a | Fiji | n/a | n/a | n/a | |
| 47 | Colombia | 2.00 | 13.25 | 0.56 | | n/a | Gambia | n/a | n/a | n/a | |
| 48 | Italy | 1.91 | 12.63 | 0.55 | | n/a | Guyana | n/a | n/a | n/a | |
| 49 | Oman (2009) | 1.74 | 11.52 | 0.54 | | n/a | Honduras | n/a | n/a | n/a | |
| 50 | Qatar | 1.74 | 11.51 | 0.53 | | n/a | Iran, Islamic Rep. | n/a | n/a | n/a | |
| 51 | Kazakhstan | 1.71 | 11.35 | 0.52 | | n/a | Kuwait | n/a | n/a | n/a | |
| 52 | Serbia | 1.68 | 11.10 | 0.51 | | n/a | Lebanon | n/a | n/a | n/a | |
| 53 | Moldova, Rep. (2009) | 1.63 | 10.80 | 0.50 | | n/a | Mali | n/a | n/a | n/a | |
| 54 | Armenia | 1.55 | 10.26 | 0.50 | | n/a | Mongolia | n/a | n/a | n/a | |
| 55 | Tunisia (2011) | 1.52 | 10.07 | 0.49 | | n/a | Mozambique | n/a | n/a | n/a | |
| 56 | Lesotho | 1.49 | 9.84 | 0.48 | ● | n/a | Myanmar | n/a | n/a | n/a | |
| 57 | United Arab Emirates | 1.38 | 9.12 | 0.47 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 58 | Zambia | 1.36 | 8.99 | 0.46 | | n/a | Paraguay | n/a | n/a | n/a | |
| 59 | Germany | 1.29 | 8.53 | 0.45 | ○ | n/a | Saudi Arabia | n/a | n/a | n/a | |
| 60 | Morocco (2009) | 1.26 | 8.33 | 0.44 | | n/a | Seychelles | n/a | n/a | n/a | |
| 61 | Uganda | 1.17 | 7.72 | 0.43 | | n/a | Sudan | n/a | n/a | n/a | |
| 62 | Japan | 1.15 | 7.62 | 0.42 | ○ | n/a | Swaziland | n/a | n/a | n/a | |
| 63 | Belarus | 1.14 | 7.54 | 0.41 | | n/a | Tanzania, United Rep. | n/a | n/a | n/a | |
| 64 | Jamaica | 1.11 | 7.37 | 0.40 | | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 65 | Rwanda | 1.07 | 7.10 | 0.39 | | n/a | United States of America | n/a | n/a | n/a | |
| 66 | Canada | 1.07 | 7.09 | 0.38 | ○ | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 67 | Dominican Republic | 1.05 | 6.92 | 0.37 | | n/a | Viet Nam | n/a | n/a | n/a | |
| 68 | Jordan | 0.98 | 6.49 | 0.36 | | n/a | Yemen | n/a | n/a | n/a | |
| 69 | Kyrgyzstan | 0.92 | 6.10 | 0.35 | | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Ukraine | 0.92 | 6.10 | 0.34 | | | | | | | |
| 71 | Nigeria | 0.91 | 5.99 | 0.33 | | | | | | | |
| 72 | Ghana | 0.90 | 5.92 | 0.32 | | | | | | | |

SOURCE: World Bank, *Doing Business 2014, Entrepreneurship*

NOTE: ● indicates a strength; ○ a weakness

6.2.3 Total computer software spending

Total computer software spending (% of GDP) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|-------|---------------|--------------|---|------|------------------------|-------|---------------|--------------|---|
| 1 | United States of America | 1.00 | 100.00 | 1.00 | ● | 73 | Cameroon | 0.18 | 9.38 | 0.01 | ○ |
| 2 | Switzerland | 0.78 | 75.85 | 0.99 | ● | 74 | Nigeria | 0.10 | 0.00 | 0.00 | ○ |
| 3 | Canada | 0.78 | 75.26 | 0.97 | ● | n/a | Albania | n/a | n/a | n/a | |
| 4 | Ireland | 0.75 | 72.07 | 0.96 | | n/a | Algeria | n/a | n/a | n/a | |
| 5 | United Kingdom | 0.70 | 66.44 | 0.95 | | n/a | Angola | n/a | n/a | n/a | |
| 6 | Belgium | 0.69 | 65.35 | 0.93 | ● | n/a | Armenia | n/a | n/a | n/a | |
| 7 | Netherlands | 0.66 | 62.07 | 0.92 | | n/a | Azerbaijan | n/a | n/a | n/a | |
| 8 | Turkey | 0.66 | 62.06 | 0.90 | ● | n/a | Barbados | n/a | n/a | n/a | |
| 9 | Spain | 0.65 | 61.47 | 0.89 | ● | n/a | Belarus | n/a | n/a | n/a | |
| 10 | Portugal | 0.65 | 61.29 | 0.88 | | n/a | Bhutan | n/a | n/a | n/a | |
| 11 | Italy | 0.62 | 57.37 | 0.86 | ● | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 12 | Denmark | 0.61 | 57.31 | 0.85 | | n/a | Botswana | n/a | n/a | n/a | |
| 13 | Austria | 0.61 | 57.21 | 0.84 | | n/a | Burkina Faso | n/a | n/a | n/a | |
| 14 | France | 0.61 | 56.81 | 0.82 | | n/a | Burundi | n/a | n/a | n/a | |
| 15 | Sweden | 0.60 | 55.53 | 0.81 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 16 | Greece | 0.60 | 55.34 | 0.79 | | n/a | Cambodia | n/a | n/a | n/a | |
| 17 | Norway | 0.59 | 54.27 | 0.78 | | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 18 | Germany | 0.58 | 53.03 | 0.77 | | n/a | Croatia | n/a | n/a | n/a | |
| 19 | Finland | 0.58 | 52.96 | 0.75 | | n/a | Cyprus | n/a | n/a | n/a | |
| 20 | Malaysia | 0.41 | 34.39 | 0.74 | | n/a | Dominican Republic | n/a | n/a | n/a | |
| 21 | Singapore | 0.38 | 31.26 | 0.73 | | n/a | El Salvador | n/a | n/a | n/a | |
| 22 | Zimbabwe | 0.38 | 31.17 | 0.71 | ● | n/a | Estonia | n/a | n/a | n/a | |
| 23 | China | 0.38 | 31.17 | 0.70 | | n/a | Ethiopia | n/a | n/a | n/a | |
| 24 | Hong Kong (China) | 0.37 | 30.26 | 0.68 | | n/a | Fiji | n/a | n/a | n/a | |
| 25 | South Africa | 0.36 | 29.00 | 0.67 | | n/a | Gambia | n/a | n/a | n/a | |
| 26 | Thailand | 0.34 | 27.16 | 0.66 | | n/a | Georgia | n/a | n/a | n/a | |
| 27 | Bahrain | 0.34 | 26.24 | 0.64 | | n/a | Ghana | n/a | n/a | n/a | |
| 28 | Jamaica | 0.34 | 26.20 | 0.63 | ● | n/a | Guatemala | n/a | n/a | n/a | |
| 29 | Saudi Arabia | 0.33 | 25.23 | 0.62 | | n/a | Guinea | n/a | n/a | n/a | |
| 30 | Sri Lanka | 0.32 | 24.83 | 0.60 | | n/a | Guyana | n/a | n/a | n/a | |
| 31 | Viet Nam | 0.32 | 24.79 | 0.59 | | n/a | Iceland | n/a | n/a | n/a | |
| 32 | Korea, Rep. | 0.32 | 24.14 | 0.58 | | n/a | Kazakhstan | n/a | n/a | n/a | |
| 33 | New Zealand | 0.32 | 23.89 | 0.56 | | n/a | Kyrgyzstan | n/a | n/a | n/a | |
| 34 | Czech Republic | 0.31 | 23.38 | 0.55 | | n/a | Latvia | n/a | n/a | n/a | |
| 35 | Slovakia | 0.31 | 23.10 | 0.53 | | n/a | Lebanon | n/a | n/a | n/a | |
| 36 | Tunisia | 0.31 | 22.98 | 0.52 | | n/a | Lesotho | n/a | n/a | n/a | |
| 37 | Romania | 0.30 | 22.29 | 0.51 | | n/a | Lithuania | n/a | n/a | n/a | |
| 38 | Japan | 0.30 | 22.29 | 0.49 | | n/a | Luxembourg | n/a | n/a | n/a | |
| 39 | Israel | 0.30 | 22.06 | 0.48 | | n/a | Madagascar | n/a | n/a | n/a | |
| 40 | Bulgaria | 0.29 | 21.51 | 0.47 | | n/a | Malawi | n/a | n/a | n/a | |
| 41 | Hungary | 0.29 | 21.46 | 0.45 | | n/a | Mali | n/a | n/a | n/a | |
| 42 | Kuwait | 0.29 | 21.20 | 0.44 | | n/a | Malta | n/a | n/a | n/a | |
| 43 | Jordan | 0.29 | 21.10 | 0.42 | | n/a | Mauritius | n/a | n/a | n/a | |
| 44 | Indonesia | 0.29 | 21.08 | 0.41 | | n/a | Moldova, Rep. | n/a | n/a | n/a | |
| 45 | Chile | 0.29 | 20.74 | 0.40 | | n/a | Mongolia | n/a | n/a | n/a | |
| 46 | Australia | 0.28 | 20.40 | 0.38 | ○ | n/a | Montenegro | n/a | n/a | n/a | |
| 47 | Ukraine | 0.28 | 20.26 | 0.37 | | n/a | Mozambique | n/a | n/a | n/a | |
| 48 | Costa Rica | 0.28 | 20.21 | 0.36 | | n/a | Myanmar | n/a | n/a | n/a | |
| 49 | Brazil | 0.28 | 20.16 | 0.34 | | n/a | Namibia | n/a | n/a | n/a | |
| 50 | Poland | 0.28 | 19.93 | 0.33 | | n/a | Nepal | n/a | n/a | n/a | |
| 51 | Pakistan | 0.28 | 19.60 | 0.32 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 52 | Honduras | 0.28 | 19.60 | 0.30 | | n/a | Niger | n/a | n/a | n/a | |
| 53 | Philippines | 0.27 | 18.97 | 0.29 | | n/a | Oman | n/a | n/a | n/a | |
| 54 | Russian Federation | 0.26 | 18.19 | 0.27 | ○ | n/a | Paraguay | n/a | n/a | n/a | |
| 55 | Iran, Islamic Rep. | 0.26 | 17.80 | 0.26 | | n/a | Rwanda | n/a | n/a | n/a | |
| 56 | Morocco | 0.26 | 17.72 | 0.25 | | n/a | Serbia | n/a | n/a | n/a | |
| 57 | Peru | 0.26 | 17.42 | 0.23 | | n/a | Seychelles | n/a | n/a | n/a | |
| 58 | Qatar | 0.26 | 17.24 | 0.22 | | n/a | Slovenia | n/a | n/a | n/a | |
| 59 | United Arab Emirates | 0.25 | 17.08 | 0.21 | ○ | n/a | Sudan | n/a | n/a | n/a | |
| 60 | Senegal | 0.25 | 16.81 | 0.19 | | n/a | Swaziland | n/a | n/a | n/a | |
| 61 | Uruguay | 0.25 | 16.73 | 0.18 | ○ | n/a | Tajikistan | n/a | n/a | n/a | |
| 62 | Panama | 0.25 | 16.58 | 0.16 | | n/a | Tanzania, United Rep. | n/a | n/a | n/a | |
| 63 | Bolivia, Plurinational St. | 0.25 | 16.17 | 0.15 | | n/a | TFYR of Macedonia | n/a | n/a | n/a | |
| 64 | Colombia | 0.24 | 15.98 | 0.14 | ○ | n/a | Togo | n/a | n/a | n/a | |
| 65 | Egypt | 0.24 | 15.86 | 0.12 | ○ | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 66 | Ecuador | 0.24 | 15.65 | 0.11 | ○ | n/a | Uganda | n/a | n/a | n/a | |
| 67 | Kenya | 0.24 | 15.34 | 0.10 | ○ | n/a | Uzbekistan | n/a | n/a | n/a | |
| 68 | India | 0.23 | 14.74 | 0.08 | ○ | n/a | Yemen | n/a | n/a | n/a | |
| 69 | Venezuela, Bolivarian Rep. | 0.23 | 14.60 | 0.07 | | n/a | Zambia | n/a | n/a | n/a | |
| 70 | Mexico | 0.23 | 14.01 | 0.05 | ○ | | | | | | |
| 71 | Argentina | 0.20 | 10.74 | 0.04 | ○ | | | | | | |
| 72 | Bangladesh | 0.19 | 9.70 | 0.03 | ○ | | | | | | |

SOURCE: IHS Global Insight, *Information and Communication Technology Database*; International Monetary Fund *World Economic Outlook 2014* (GDP)

NOTE: ● indicates a strength; ○ a weakness

6.2.4 ISO 9001 quality certificates

ISO 9001 Quality management systems—Requirements: Number of certificates issued (per billion PPP\$ GDP) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Italy | 76.43 | 100.00 | 0.99 | ● | 73 | Cabo Verde | 3.44 | 7.01 | 0.49 | |
| 1 | Romania | 49.04 | 100.00 | 0.99 | ● | 74 | Russian Federation | 3.37 | 6.87 | 0.48 | |
| 3 | Bulgaria | 43.14 | 87.97 | 0.99 | ● | 75 | Bolivia, Plurinational St. | 3.32 | 6.76 | 0.47 | |
| 4 | Czech Republic | 41.72 | 85.07 | 0.98 | ● | 76 | Sri Lanka | 3.29 | 6.70 | 0.46 | |
| 5 | Israel | 34.83 | 71.02 | 0.97 | ● | 77 | Ukraine | 3.25 | 6.63 | 0.46 | |
| 6 | Malta | 34.28 | 69.90 | 0.96 | ● | 78 | Costa Rica | 3.23 | 6.58 | 0.45 | |
| 7 | Slovenia | 33.95 | 69.23 | 0.96 | ● | 79 | Indonesia | 3.14 | 6.41 | 0.44 | |
| 8 | Hungary | 30.67 | 62.54 | 0.95 | ● | 80 | Oman | 3.03 | 6.18 | 0.44 | |
| 9 | Croatia | 30.10 | 61.39 | 0.94 | ● | 81 | Philippines | 3.01 | 6.15 | 0.43 | |
| 10 | Spain | 28.00 | 57.09 | 0.94 | ● | 82 | Georgia | 2.95 | 6.02 | 0.42 | |
| 11 | Estonia | 27.21 | 55.49 | 0.93 | ● | 83 | Peru | 2.91 | 5.93 | 0.41 | |
| 12 | Slovakia | 26.37 | 53.77 | 0.92 | ● | 84 | Fiji | 2.90 | 5.91 | 0.41 | |
| 13 | Switzerland | 26.33 | 53.69 | 0.91 | ● | 85 | Morocco | 2.85 | 5.81 | 0.40 | |
| 14 | Greece | 26.23 | 53.49 | 0.91 | ● | 86 | Pakistan | 2.84 | 5.78 | 0.39 | |
| 15 | Portugal | 25.71 | 52.43 | 0.90 | ● | 87 | Mexico | 2.60 | 5.29 | 0.39 | |
| 16 | Serbia | 24.68 | 50.33 | 0.89 | ● | 88 | Egypt | 2.34 | 4.78 | 0.38 | |
| 17 | Colombia | 22.19 | 45.26 | 0.89 | ● | 89 | Qatar | 2.24 | 4.57 | 0.37 | |
| 18 | Bosnia and Herzegovina | 21.33 | 43.50 | 0.88 | ● | 90 | United States of America | 2.08 | 4.24 | 0.36 | ○ |
| 19 | China | 20.84 | 42.49 | 0.87 | | 91 | Panama | 2.04 | 4.17 | 0.36 | |
| 20 | Latvia | 19.89 | 40.57 | 0.86 | ● | 92 | Swaziland | 2.03 | 4.15 | 0.35 | |
| 21 | United Kingdom | 18.20 | 37.11 | 0.86 | | 93 | Iran, Islamic Rep. | 1.97 | 4.02 | 0.34 | |
| 22 | Malaysia | 17.30 | 35.29 | 0.85 | | 94 | Guatemala | 1.83 | 3.72 | 0.34 | |
| 23 | Germany | 15.60 | 31.80 | 0.84 | | 95 | Togo | 1.79 | 3.65 | 0.33 | |
| 24 | Cyprus | 15.45 | 31.50 | 0.84 | | 96 | Nicaragua | 1.76 | 3.60 | 0.32 | |
| 25 | TFYR of Macedonia | 15.21 | 31.01 | 0.83 | ● | 97 | Mozambique | 1.75 | 3.57 | 0.31 | |
| 26 | Netherlands | 14.63 | 29.83 | 0.82 | | 98 | Malawi | 1.72 | 3.51 | 0.31 | |
| 27 | Lithuania | 14.56 | 29.69 | 0.81 | | 99 | Senegal | 1.67 | 3.41 | 0.30 | |
| 28 | Singapore | 13.82 | 28.17 | 0.81 | | 100 | Bhutan | 1.66 | 3.38 | 0.29 | |
| 29 | Finland | 13.01 | 26.53 | 0.80 | | 101 | Kuwait | 1.65 | 3.37 | 0.29 | |
| 30 | Montenegro | 12.94 | 26.38 | 0.79 | ● | 102 | Azerbaijan | 1.61 | 3.29 | 0.28 | |
| 31 | Australia | 12.48 | 25.46 | 0.79 | | 103 | Dominican Republic | 1.60 | 3.27 | 0.27 | |
| 32 | Uruguay | 12.46 | 25.41 | 0.78 | ● | 104 | Burkina Faso | 1.58 | 3.23 | 0.26 | |
| 33 | Viet Nam | 11.99 | 24.45 | 0.77 | ● | 105 | Saudi Arabia | 1.52 | 3.11 | 0.26 | ○ |
| 34 | Austria | 11.94 | 24.34 | 0.76 | | 106 | Madagascar | 1.42 | 2.89 | 0.25 | |
| 35 | France | 11.68 | 23.81 | 0.76 | | 107 | Namibia | 1.36 | 2.77 | 0.24 | |
| 36 | Poland | 11.56 | 23.57 | 0.75 | | 108 | Kazakhstan | 1.33 | 2.72 | 0.24 | |
| 37 | Ireland | 11.20 | 22.83 | 0.74 | | 109 | Trinidad and Tobago | 1.25 | 2.55 | 0.23 | |
| 38 | Chile | 10.70 | 21.81 | 0.74 | | 110 | Venezuela, Bolivarian Rep. | 1.11 | 2.27 | 0.22 | |
| 39 | Sweden | 10.66 | 21.75 | 0.73 | | 111 | Nepal | 1.11 | 2.25 | 0.21 | |
| 40 | Barbados | 10.30 | 21.01 | 0.72 | | 112 | Jamaica | 1.10 | 2.24 | 0.21 | ○ |
| 41 | Mauritius | 10.05 | 20.48 | 0.71 | | 113 | Côte d'Ivoire | 1.04 | 2.13 | 0.20 | |
| 42 | Japan | 9.82 | 20.02 | 0.71 | | 114 | Algeria | 1.03 | 2.11 | 0.19 | |
| 43 | Lebanon | 9.77 | 19.93 | 0.70 | | 115 | Gambia | 0.99 | 2.01 | 0.19 | |
| 44 | Thailand | 9.23 | 18.82 | 0.69 | | 116 | Uganda | 0.97 | 1.97 | 0.18 | |
| 45 | Belgium | 8.12 | 16.55 | 0.69 | | 117 | Zambia | 0.82 | 1.68 | 0.17 | |
| 46 | New Zealand | 8.08 | 16.48 | 0.68 | | 118 | Belarus | 0.78 | 1.59 | 0.16 | ○ |
| 47 | Ecuador | 7.99 | 16.29 | 0.67 | ● | 119 | Armenia | 0.73 | 1.50 | 0.16 | ○ |
| 48 | Moldova, Rep. | 7.19 | 14.66 | 0.66 | | 120 | Sudan | 0.69 | 1.40 | 0.15 | |
| 49 | Argentina | 7.14 | 14.55 | 0.66 | | 121 | Niger | 0.67 | 1.36 | 0.14 | |
| 50 | Tunisia | 7.00 | 14.27 | 0.65 | | 122 | Mongolia | 0.54 | 1.09 | 0.14 | ○ |
| 51 | Brazil | 6.89 | 14.05 | 0.64 | | 123 | Bangladesh | 0.53 | 1.08 | 0.13 | |
| 52 | United Arab Emirates | 6.78 | 13.83 | 0.64 | | 124 | Cameroon | 0.51 | 1.04 | 0.12 | |
| 53 | Korea, Rep. | 6.69 | 13.65 | 0.63 | | 125 | Myanmar | 0.51 | 1.03 | 0.11 | |
| 54 | Hong Kong (China) | 6.43 | 13.12 | 0.62 | | 126 | Tanzania, United Rep. | 0.48 | 0.98 | 0.11 | |
| 55 | Denmark | 6.27 | 12.79 | 0.61 | | 127 | Ghana | 0.48 | 0.98 | 0.10 | ○ |
| 56 | Norway | 6.25 | 12.75 | 0.61 | | 128 | Guinea | 0.41 | 0.83 | 0.09 | |
| 57 | India | 6.02 | 12.28 | 0.60 | | 129 | Yemen | 0.40 | 0.82 | 0.09 | |
| 58 | Albania | 5.48 | 11.18 | 0.59 | | 130 | Uzbekistan | 0.40 | 0.81 | 0.08 | ○ |
| 59 | Canada | 5.45 | 11.12 | 0.59 | | 131 | Cambodia | 0.39 | 0.80 | 0.07 | ○ |
| 60 | Guyana | 5.35 | 10.91 | 0.58 | ● | 132 | Ethiopia | 0.38 | 0.77 | 0.06 | |
| 61 | Luxembourg | 5.26 | 10.73 | 0.57 | | 133 | Botswana | 0.38 | 0.77 | 0.06 | ○ |
| 62 | South Africa | 5.21 | 10.63 | 0.56 | | 134 | Angola | 0.34 | 0.69 | 0.05 | |
| 63 | Turkey | 4.97 | 10.13 | 0.56 | | 135 | Kyrgyzstan | 0.33 | 0.67 | 0.04 | ○ |
| 64 | Bahrain | 4.77 | 9.73 | 0.55 | | 136 | Tajikistan | 0.24 | 0.49 | 0.04 | ○ |
| 65 | Kenya | 4.76 | 9.71 | 0.54 | | 137 | Lesotho | 0.20 | 0.40 | 0.03 | ○ |
| 66 | Paraguay | 4.70 | 9.59 | 0.54 | ● | 138 | Rwanda | 0.17 | 0.35 | 0.02 | ○ |
| 67 | Iceland | 4.65 | 9.48 | 0.53 | | 139 | Mali | 0.16 | 0.32 | 0.01 | ○ |
| 68 | Zimbabwe | 4.40 | 8.97 | 0.52 | ● | 140 | Nigeria | 0.09 | 0.18 | 0.01 | ○ |
| 69 | El Salvador | 4.02 | 8.20 | 0.51 | | 141 | Burundi | 0.00 | 0.00 | 0.00 | ○ |
| 70 | Seychelles | 3.91 | 7.97 | 0.51 | | | | | | | |
| 71 | Honduras | 3.88 | 7.91 | 0.50 | | | | | | | |
| 72 | Jordan | 3.53 | 7.21 | 0.49 | | | | | | | |

SOURCE: International Organization for Standardization, *The ISO Survey of Certifications 2013*; International Monetary Fund World Economic Outlook, 2015 (PPP\$ GDP)
NOTE: ● indicates a strength; ○ a weakness

6.2.5 High-tech and medium high-tech output

High-tech and medium-high-tech output (% of total manufactures output) | 2011

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|---------------------------------|-------|---------------|--------------|---|------|------------------------------|-------|---------------|--------------|---|
| 1 | Singapore | 69.24 | 100.00 | 1.00 | ● | 73 | Azerbaijan | 10.95 | 15.72 | 0.28 | |
| 2 | Switzerland (2010) | 63.96 | 92.37 | 0.99 | ● | 74 | Bangladesh (2006) | 10.91 | 15.67 | 0.27 | |
| 3 | Ireland (2010) | 57.39 | 82.88 | 0.98 | ● | 75 | Uruguay (2009) | 10.90 | 15.65 | 0.26 | |
| 4 | Slovakia | 55.80 | 80.58 | 0.97 | ● | 76 | Ethiopia (2009) | 10.87 | 15.61 | 0.25 | |
| 5 | Germany | 55.53 | 80.18 | 0.96 | ● | 77 | Kuwait | 10.49 | 15.07 | 0.24 | |
| 6 | Korea, Rep. (2010) | 53.44 | 77.15 | 0.95 | | 78 | Bahrain (2010) | 9.93 | 14.26 | 0.23 | |
| 7 | Czech Republic (2010) | 50.24 | 72.54 | 0.94 | ● | 79 | Peru | 9.25 | 13.26 | 0.22 | |
| 8 | Hungary | 48.72 | 70.34 | 0.93 | ● | 80 | Mauritius | 9.19 | 13.19 | 0.21 | ○ |
| 9 | Slovenia | 46.50 | 67.12 | 0.92 | ● | 81 | Sri Lanka (2010) | 8.85 | 12.70 | 0.20 | |
| 10 | Denmark | 44.30 | 63.94 | 0.91 | | 82 | Malawi (2010) | 8.62 | 12.37 | 0.19 | |
| 11 | Thailand (2006) | 43.88 | 63.33 | 0.90 | ● | 83 | Moldova, Rep. | 8.29 | 11.88 | 0.18 | ○ |
| 12 | Mexico | 43.70 | 63.08 | 0.89 | ● | 84 | Kenya | 7.74 | 11.09 | 0.17 | |
| 13 | Japan (2010) | 43.65 | 63.00 | 0.88 | | 85 | Iceland (2006) | 7.13 | 10.21 | 0.16 | ○ |
| 14 | United States of America (2008) | 43.27 | 62.45 | 0.87 | | 86 | Fiji (2010) | 7.12 | 10.19 | 0.15 | ○ |
| 15 | China | 43.13 | 62.26 | 0.86 | | 87 | Kazakhstan (2007) | 6.84 | 9.79 | 0.14 | ○ |
| 16 | France | 43.07 | 62.16 | 0.85 | | 88 | Mongolia | 5.53 | 7.89 | 0.13 | ○ |
| 17 | United Kingdom | 42.90 | 61.92 | 0.84 | | 89 | Panama (2005) | 5.23 | 7.46 | 0.12 | ○ |
| 18 | Austria | 42.40 | 61.21 | 0.83 | | 90 | Cameroon (2008) | 5.13 | 7.32 | 0.11 | ○ |
| 19 | Malaysia (2010) | 42.00 | 60.62 | 0.82 | | 91 | Armenia | 4.23 | 6.01 | 0.10 | ○ |
| 20 | Netherlands (2010) | 41.24 | 59.53 | 0.81 | | 92 | Luxembourg | 3.43 | 4.85 | 0.09 | ○ |
| 21 | Finland | 40.98 | 59.15 | 0.80 | | 93 | Kyrgyzstan (2010) | 3.26 | 4.61 | 0.08 | |
| 22 | Brazil | 39.81 | 57.45 | 0.79 | ● | 94 | Madagascar (2006) | 2.42 | 3.39 | 0.07 | |
| 23 | Estonia | 38.21 | 55.14 | 0.78 | | 95 | Tajikistan (2008) | 2.40 | 3.36 | 0.06 | |
| 24 | Norway (2010) | 37.88 | 54.66 | 0.77 | | 96 | Yemen (2009) | 1.88 | 2.61 | 0.05 | |
| 25 | Italy (2010) | 37.62 | 54.29 | 0.76 | | 97 | Burundi (2010) | 1.84 | 2.56 | 0.04 | |
| 26 | Romania | 35.96 | 51.89 | 0.75 | | 98 | Nepal (2008) | 1.36 | 1.86 | 0.03 | ○ |
| 27 | Saudi Arabia (2009) | 35.85 | 51.73 | 0.74 | | 99 | Albania | 1.00 | 1.34 | 0.02 | ○ |
| 28 | Iran, Islamic Rep. (2010) | 35.48 | 51.20 | 0.73 | ● | 100 | Malta (2009) | 0.32 | 0.36 | 0.01 | ○ |
| 29 | Belgium | 34.96 | 50.45 | 0.72 | | 101 | Tanzania, United Rep. (2010) | 0.07 | 0.00 | 0.00 | ○ |
| 30 | Spain | 34.77 | 50.16 | 0.71 | | n/a | Angola | n/a | n/a | n/a | |
| 31 | Poland | 33.60 | 48.48 | 0.70 | | n/a | Argentina | n/a | n/a | n/a | |
| 32 | India (2010) | 32.54 | 46.95 | 0.69 | | n/a | Barbados | n/a | n/a | n/a | |
| 33 | Tunisia (2007) | 32.43 | 46.78 | 0.68 | ● | n/a | Bhutan | n/a | n/a | n/a | |
| 34 | Sweden | 31.76 | 45.82 | 0.67 | | n/a | Bolivia, Plurinational St. | n/a | n/a | n/a | |
| 35 | Belarus | 31.35 | 45.23 | 0.66 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 36 | Indonesia | 30.88 | 44.54 | 0.65 | | n/a | Botswana | n/a | n/a | n/a | |
| 37 | Israel (2010) | 30.76 | 44.36 | 0.64 | | n/a | Burkina Faso | n/a | n/a | n/a | |
| 38 | Algeria (2010) | 29.07 | 41.93 | 0.63 | ● | n/a | Cabo Verde | n/a | n/a | n/a | |
| 39 | Canada | 28.50 | 41.10 | 0.62 | | n/a | Cambodia | n/a | n/a | n/a | |
| 40 | Morocco | 28.31 | 40.83 | 0.61 | | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 41 | South Africa (2010) | 28.24 | 40.73 | 0.60 | | n/a | Croatia | n/a | n/a | n/a | |
| 42 | Turkey (2009) | 28.16 | 40.62 | 0.59 | | n/a | Dominican Republic | n/a | n/a | n/a | |
| 43 | Portugal | 26.96 | 38.88 | 0.58 | | n/a | El Salvador | n/a | n/a | n/a | |
| 44 | Viet Nam (2008) | 26.17 | 37.73 | 0.57 | | n/a | Ghana | n/a | n/a | n/a | |
| 45 | Russian Federation | 25.97 | 37.45 | 0.56 | | n/a | Guatemala | n/a | n/a | n/a | |
| 46 | Ukraine | 24.92 | 35.93 | 0.55 | | n/a | Guinea | n/a | n/a | n/a | |
| 47 | Jordan | 24.51 | 35.34 | 0.54 | | n/a | Guyana | n/a | n/a | n/a | |
| 48 | Trinidad and Tobago (2006) | 24.11 | 34.76 | 0.53 | | n/a | Honduras | n/a | n/a | n/a | |
| 49 | Pakistan (2006) | 23.71 | 34.18 | 0.52 | ● | n/a | Jamaica | n/a | n/a | n/a | |
| 50 | Colombia | 22.06 | 31.79 | 0.51 | | n/a | Lesotho | n/a | n/a | n/a | |
| 51 | Lebanon (2007) | 22.00 | 31.71 | 0.50 | | n/a | Mali | n/a | n/a | n/a | |
| 52 | Chile (2008) | 21.73 | 31.31 | 0.49 | | n/a | Montenegro | n/a | n/a | n/a | |
| 53 | Egypt (2010) | 21.45 | 30.91 | 0.48 | | n/a | Mozambique | n/a | n/a | n/a | |
| 54 | Qatar (2010) | 20.78 | 29.94 | 0.47 | | n/a | Myanmar | n/a | n/a | n/a | |
| 55 | Lithuania | 20.64 | 29.74 | 0.46 | | n/a | Namibia | n/a | n/a | n/a | |
| 56 | Australia | 20.36 | 29.34 | 0.45 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 57 | Serbia | 19.71 | 28.39 | 0.44 | | n/a | Niger | n/a | n/a | n/a | |
| 58 | TFYR of Macedonia | 19.58 | 28.21 | 0.43 | | n/a | Nigeria | n/a | n/a | n/a | |
| 59 | Hong Kong (China) | 19.43 | 27.99 | 0.42 | ○ | n/a | Rwanda | n/a | n/a | n/a | |
| 60 | Bulgaria | 18.88 | 27.19 | 0.41 | | n/a | Seychelles | n/a | n/a | n/a | |
| 61 | Gambia (2004) | 16.81 | 24.20 | 0.40 | | n/a | Sudan | n/a | n/a | n/a | |
| 62 | Philippines (2008) | 16.28 | 23.44 | 0.39 | | n/a | Swaziland | n/a | n/a | n/a | |
| 63 | Senegal (2010) | 15.28 | 21.99 | 0.38 | | n/a | Togo | n/a | n/a | n/a | |
| 64 | Paraguay (2010) | 15.11 | 21.75 | 0.37 | | n/a | Uganda | n/a | n/a | n/a | |
| 65 | Oman (2010) | 14.87 | 21.40 | 0.36 | | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 66 | New Zealand (2010) | 14.80 | 21.29 | 0.35 | ○ | n/a | Uzbekistan | n/a | n/a | n/a | |
| 67 | Latvia | 14.11 | 20.30 | 0.34 | ○ | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 68 | Greece (2007) | 14.08 | 20.25 | 0.33 | | n/a | Zambia | n/a | n/a | n/a | |
| 69 | Ecuador (2008) | 13.96 | 20.08 | 0.32 | | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Cyprus | 13.39 | 19.26 | 0.31 | | | | | | | |
| 71 | Georgia | 12.92 | 18.58 | 0.30 | | | | | | | |
| 72 | Costa Rica | 11.92 | 17.13 | 0.29 | | | | | | | |

SOURCE: United Nations Industrial Development Organization *Industrial Statistics Database* INDSTAT4 2012; OECD 'ISIC REV. 3 Tech. Intensity Def.' (2004–11)

NOTE: ● indicates a strength; ○ a weakness

6.3.1

Royalties and license fees receipts

Royalty and license fees, receipts (% of total trade) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-----------------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Switzerland (2012) | 7.15 | 100.00 | 1.00 | ● | 73 | Portugal | 0.04 | 8.39 | 0.37 | ○ |
| 2 | Netherlands | 5.31 | 93.11 | 0.99 | ● | 74 | Malaysia | 0.04 | 8.17 | 0.36 | ○ |
| 3 | United States of America | 5.13 | 92.36 | 0.98 | ● | 75 | Georgia | 0.04 | 7.92 | 0.35 | |
| 4 | Finland | 3.55 | 83.91 | 0.97 | | 76 | China | 0.04 | 7.58 | 0.34 | |
| 5 | Japan | 3.53 | 83.82 | 0.96 | ● | 77 | Mozambique (2012) | 0.04 | 7.39 | 0.33 | |
| 6 | Paraguay (2008) | 3.09 | 80.75 | 0.96 | ● | 78 | Montenegro | 0.03 | 6.43 | 0.32 | |
| 7 | Sweden | 2.60 | 76.85 | 0.95 | | 79 | Zimbabwe (2012) | 0.03 | 5.37 | 0.32 | |
| 8 | Ireland | 2.53 | 76.25 | 0.94 | | 80 | Indonesia | 0.02 | 5.01 | 0.31 | |
| 9 | Rwanda (2011) | 2.02 | 71.23 | 0.93 | ● | 81 | Peru (2012) | 0.02 | 4.81 | 0.30 | |
| 10 | Iceland (2012) | 1.72 | 67.63 | 0.92 | | 82 | Cambodia | 0.02 | 4.72 | 0.29 | |
| 11 | United Kingdom | 1.65 | 66.75 | 0.91 | | 83 | Angola (2008) | 0.02 | 4.71 | 0.28 | ● |
| 12 | France | 1.43 | 63.62 | 0.90 | ● | 84 | Sudan (2011) | 0.02 | 4.70 | 0.27 | ● |
| 13 | Denmark | 1.38 | 62.84 | 0.89 | | 85 | Costa Rica | 0.02 | 4.55 | 0.26 | |
| 14 | Israel (2012) | 1.07 | 57.23 | 0.89 | | 86 | Albania | 0.02 | 4.41 | 0.25 | |
| 15 | Germany | 1.06 | 57.19 | 0.88 | | 87 | Burkina Faso (2012) | 0.02 | 4.32 | 0.25 | |
| 16 | Hungary | 1.00 | 55.95 | 0.87 | ● | 88 | Pakistan | 0.02 | 3.34 | 0.24 | |
| 17 | Luxembourg | 0.87 | 52.93 | 0.86 | | 89 | Tajikistan (2012) | 0.01 | 3.13 | 0.23 | |
| 18 | Belgium | 0.77 | 50.29 | 0.85 | | 90 | Cyprus | 0.01 | 3.06 | 0.22 | ○ |
| 19 | Canada | 0.67 | 47.47 | 0.84 | | 91 | Mongolia | 0.01 | 3.04 | 0.21 | |
| 20 | Italy | 0.65 | 46.87 | 0.83 | | 92 | Iran, Islamic Rep. (2012) | 0.01 | 2.59 | 0.20 | |
| 21 | Korea, Rep. | 0.63 | 46.34 | 0.82 | | 93 | Mali (2011) | 0.01 | 2.54 | 0.19 | |
| 22 | New Zealand | 0.59 | 44.98 | 0.82 | | 94 | Guinea (2008) | 0.01 | 1.38 | 0.18 | |
| 23 | Mexico | 0.57 | 44.11 | 0.81 | ● | 95 | Lebanon (2012) | 0.01 | 1.11 | 0.18 | ○ |
| 24 | Austria | 0.46 | 40.19 | 0.80 | | 96 | Slovakia | 0.00 | 1.08 | 0.17 | ○ |
| 25 | Yemen (2009) | 0.40 | 37.27 | 0.79 | ● | 97 | Algeria (2012) | 0.00 | 0.92 | 0.16 | |
| 26 | Singapore | 0.38 | 36.57 | 0.78 | | 98 | Philippines | 0.00 | 0.91 | 0.15 | |
| 27 | El Salvador | 0.34 | 34.50 | 0.77 | ● | 99 | Ethiopia (2010) | 0.00 | 0.77 | 0.14 | |
| 28 | Guyana | 0.28 | 30.84 | 0.76 | ● | 100 | Uruguay | 0.00 | 0.67 | 0.13 | ○ |
| 29 | Egypt (2007) | 0.25 | 29.27 | 0.75 | ● | 101 | Morocco | 0.00 | 0.59 | 0.12 | ○ |
| 30 | Norway | 0.25 | 29.12 | 0.75 | | 102 | Cameroon (2012) | 0.00 | 0.55 | 0.11 | |
| 31 | Madagascar (2012) | 0.25 | 29.09 | 0.74 | ● | 103 | Fiji (2012) | 0.00 | 0.49 | 0.11 | ○ |
| 32 | Australia | 0.23 | 27.99 | 0.73 | | 104 | Trinidad and Tobago (2011) | 0.00 | 0.49 | 0.10 | ○ |
| 33 | Kenya (2012) | 0.23 | 27.80 | 0.72 | | 105 | Bhutan | 0.00 | 0.48 | 0.09 | |
| 34 | Uganda | 0.22 | 27.14 | 0.71 | ● | 106 | Botswana (2012) | 0.00 | 0.46 | 0.08 | ○ |
| 35 | Malta | 0.22 | 27.13 | 0.70 | | 107 | Côte d'Ivoire (2009) | 0.00 | 0.26 | 0.07 | ○ |
| 36 | Spain | 0.22 | 26.86 | 0.69 | | 108 | Burundi (2012) | 0.00 | 0.16 | 0.06 | |
| 37 | Serbia | 0.21 | 26.04 | 0.68 | | 109 | Togo (2010) | 0.00 | 0.16 | 0.05 | |
| 38 | Brazil | 0.20 | 25.36 | 0.68 | | 110 | Bangladesh (2012) | 0.00 | 0.15 | 0.04 | ○ |
| 39 | Bosnia and Herzegovina | 0.20 | 25.34 | 0.67 | | 111 | Kazakhstan | 0.00 | 0.06 | 0.04 | ○ |
| 40 | Ukraine | 0.18 | 23.97 | 0.66 | | 112 | Namibia (2011) | 0.00 | 0.02 | 0.03 | ○ |
| 41 | Czech Republic | 0.16 | 22.51 | 0.65 | | 113 | Niger (2007) | 0.00 | 0.02 | 0.02 | ○ |
| 42 | Barbados (2010) | 0.16 | 22.44 | 0.64 | | 114 | Azerbaijan (2012) | 0.00 | 0.00 | 0.01 | ○ |
| 43 | Slovenia | 0.16 | 22.42 | 0.63 | | 115 | Cabo Verde (2012) | 0.00 | 0.00 | 0.00 | ○ |
| 44 | Seychelles (2012) | 0.15 | 21.55 | 0.62 | | n/a | Armenia | n/a | n/a | n/a | |
| 45 | Romania | 0.15 | 21.49 | 0.61 | | n/a | Bahrain | n/a | n/a | n/a | |
| 46 | Russian Federation | 0.14 | 20.14 | 0.61 | | n/a | Dominican Republic | n/a | n/a | n/a | |
| 47 | TFYR of Macedonia | 0.13 | 19.62 | 0.60 | | n/a | Ecuador | n/a | n/a | n/a | |
| 48 | Argentina | 0.13 | 19.60 | 0.59 | | n/a | Gambia | n/a | n/a | n/a | |
| 49 | Poland | 0.13 | 19.40 | 0.58 | | n/a | Ghana | n/a | n/a | n/a | |
| 50 | Moldova, Rep. | 0.12 | 18.68 | 0.57 | | n/a | Honduras | n/a | n/a | n/a | |
| 51 | Latvia | 0.10 | 16.34 | 0.56 | | n/a | Jordan | n/a | n/a | n/a | |
| 52 | Croatia | 0.10 | 16.21 | 0.55 | | n/a | Kuwait | n/a | n/a | n/a | |
| 53 | Colombia | 0.10 | 15.91 | 0.54 | | n/a | Lesotho | n/a | n/a | n/a | |
| 54 | Guatemala | 0.10 | 15.81 | 0.54 | | n/a | Malawi | n/a | n/a | n/a | |
| 55 | Tunisia (2012) | 0.10 | 15.59 | 0.53 | | n/a | Myanmar | n/a | n/a | n/a | |
| 56 | Hong Kong (China) (2012) | 0.09 | 15.15 | 0.52 | | n/a | Nepal | n/a | n/a | n/a | |
| 57 | India | 0.09 | 14.50 | 0.51 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 58 | Chile | 0.09 | 14.37 | 0.50 | | n/a | Nigeria | n/a | n/a | n/a | |
| 59 | Jamaica | 0.08 | 14.03 | 0.49 | | n/a | Oman | n/a | n/a | n/a | |
| 60 | Greece | 0.08 | 13.92 | 0.48 | | n/a | Qatar | n/a | n/a | n/a | |
| 61 | Thailand | 0.08 | 13.55 | 0.47 | | n/a | Saudi Arabia | n/a | n/a | n/a | |
| 62 | Bolivia, Plurinational St. (2012) | 0.08 | 13.35 | 0.46 | | n/a | Sri Lanka | n/a | n/a | n/a | |
| 63 | Bulgaria | 0.07 | 12.57 | 0.46 | | n/a | Tanzania, United Rep. | n/a | n/a | n/a | |
| 64 | Senegal (2012) | 0.06 | 11.31 | 0.45 | | n/a | Turkey | n/a | n/a | n/a | |
| 65 | Belarus | 0.06 | 10.97 | 0.44 | | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 66 | Lithuania | 0.06 | 10.92 | 0.43 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 67 | Swaziland (2012) | 0.06 | 10.69 | 0.42 | | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 68 | Kyrgyzstan (2012) | 0.06 | 10.43 | 0.41 | | n/a | Viet Nam | n/a | n/a | n/a | |
| 69 | South Africa | 0.06 | 10.16 | 0.40 | | n/a | Zambia | n/a | n/a | n/a | |
| 70 | Estonia | 0.05 | 9.69 | 0.39 | ○ | | | | | | |
| 71 | Mauritius | 0.05 | 8.64 | 0.39 | | | | | | | |
| 72 | Panama | 0.04 | 8.58 | 0.38 | | | | | | | |

SOURCE: World Trade Organization, Trade in Commercial Services database, based on the International Monetary Fund Balance of Payments database

NOTE: ● indicates a strength; ○ a weakness

6.3.2 High-tech exports

High-tech net exports (% of total trade) | 2013

II: Data Tables

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | China | 28.37 | 100.00 | 0.98 | ● | 73 | Zambia | 0.58 | 2.46 | 0.44 | |
| 1 | Malaysia | 27.82 | 100.00 | 0.98 | ● | 74 | Kenya | 0.56 | 2.38 | 0.43 | |
| 1 | Singapore | 26.81 | 100.00 | 0.98 | ● | 75 | Iran, Islamic Rep. | 0.53 | 2.26 | 0.42 | |
| 1 | Viet Nam | 23.58 | 100.00 | 0.98 | ● | 76 | Paraguay | 0.48 | 2.04 | 0.41 | |
| 5 | Korea, Rep. | 22.08 | 93.66 | 0.97 | | 77 | Tanzania, United Rep. | 0.46 | 1.94 | 0.41 | |
| 6 | Panama (2011) | 18.36 | 77.87 | 0.96 | ● | 78 | Jordan | 0.43 | 1.83 | 0.40 | |
| 7 | Switzerland | 17.06 | 72.36 | 0.95 | | 79 | Peru | 0.41 | 1.76 | 0.39 | |
| 8 | Costa Rica | 16.77 | 71.12 | 0.95 | ● | 80 | Zimbabwe | 0.41 | 1.74 | 0.38 | |
| 9 | Czech Republic | 16.29 | 69.10 | 0.94 | ● | 81 | Sri Lanka | 0.40 | 1.68 | 0.38 | |
| 10 | Mexico | 14.42 | 61.15 | 0.93 | ● | 82 | Bolivia, Plurinational St. | 0.38 | 1.60 | 0.37 | |
| 11 | Hungary | 14.34 | 60.81 | 0.92 | ● | 83 | Mongolia | 0.36 | 1.53 | 0.36 | |
| 12 | France | 14.27 | 60.52 | 0.91 | ● | 84 | Honduras | 0.36 | 1.52 | 0.35 | |
| 13 | Netherlands | 13.26 | 56.22 | 0.91 | | 85 | Moldova, Rep. | 0.34 | 1.45 | 0.34 | |
| 14 | Thailand | 13.18 | 55.92 | 0.90 | ● | 86 | Botswana | 0.32 | 1.37 | 0.34 | |
| 15 | Israel | 12.62 | 53.52 | 0.89 | | 87 | Ghana | 0.32 | 1.36 | 0.33 | |
| 16 | Japan | 12.40 | 52.58 | 0.88 | | 88 | Oman | 0.32 | 1.34 | 0.32 | |
| 17 | Germany | 11.99 | 50.87 | 0.88 | | 89 | Montenegro | 0.29 | 1.22 | 0.31 | |
| 18 | Malta | 11.80 | 50.03 | 0.87 | | 90 | Georgia | 0.29 | 1.22 | 0.30 | |
| 19 | Estonia | 11.56 | 49.01 | 0.86 | | 91 | Ecuador | 0.27 | 1.15 | 0.30 | |
| 20 | Ireland | 11.27 | 47.81 | 0.85 | | 92 | Azerbaijan | 0.27 | 1.13 | 0.29 | |
| 21 | Belgium | 10.00 | 42.43 | 0.84 | | 93 | Armenia | 0.23 | 0.99 | 0.28 | |
| 22 | Sweden | 9.43 | 40.01 | 0.84 | | 94 | Albania | 0.19 | 0.82 | 0.27 | |
| 23 | United Kingdom | 9.38 | 39.79 | 0.83 | | 95 | Burundi | 0.16 | 0.67 | 0.27 | |
| 24 | Austria | 9.01 | 38.23 | 0.82 | | 96 | Niger | 0.15 | 0.63 | 0.26 | |
| 25 | Slovakia | 8.98 | 38.10 | 0.81 | ● | 97 | Senegal | 0.15 | 0.62 | 0.25 | |
| 26 | United States of America | 6.78 | 28.74 | 0.80 | | 98 | Kyrgyzstan | 0.15 | 0.62 | 0.24 | |
| 27 | Denmark | 5.89 | 24.99 | 0.80 | | 99 | Uganda | 0.15 | 0.62 | 0.23 | |
| 28 | Latvia | 5.83 | 24.74 | 0.79 | | 100 | Lebanon | 0.14 | 0.61 | 0.23 | |
| 29 | Canada | 5.75 | 24.39 | 0.78 | | 101 | Rwanda | 0.14 | 0.61 | 0.22 | |
| 30 | Poland | 5.63 | 23.88 | 0.77 | | 102 | Bangladesh | 0.14 | 0.59 | 0.21 | |
| 31 | Italy | 5.26 | 22.31 | 0.77 | | 103 | Egypt | 0.13 | 0.56 | 0.20 | |
| 32 | Lithuania | 4.79 | 20.33 | 0.76 | | 104 | Nicaragua | 0.11 | 0.49 | 0.20 | |
| 33 | Slovenia | 4.56 | 19.33 | 0.75 | | 105 | Kuwait | 0.11 | 0.47 | 0.19 | |
| 34 | Romania | 4.49 | 19.03 | 0.74 | | 106 | Hong Kong (China) | 0.11 | 0.47 | 0.18 | ○ |
| 35 | Finland | 4.47 | 18.97 | 0.73 | | 107 | Mali | 0.11 | 0.46 | 0.17 | |
| 36 | Kazakhstan | 4.15 | 17.60 | 0.73 | | 108 | Nigeria | 0.11 | 0.46 | 0.16 | |
| 37 | Croatia | 4.08 | 17.29 | 0.72 | | 109 | Fiji | 0.11 | 0.45 | 0.16 | ○ |
| 38 | Spain | 3.88 | 16.45 | 0.71 | | 110 | Burkina Faso | 0.10 | 0.43 | 0.15 | |
| 39 | India | 3.48 | 14.78 | 0.70 | ● | 111 | Saudi Arabia | 0.10 | 0.41 | 0.14 | ○ |
| 40 | Tunisia | 3.34 | 14.17 | 0.70 | ● | 112 | Ethiopia | 0.09 | 0.40 | 0.13 | |
| 41 | Norway | 3.20 | 13.56 | 0.69 | | 113 | Mauritius | 0.09 | 0.39 | 0.13 | ○ |
| 42 | Bulgaria | 3.13 | 13.27 | 0.68 | | 114 | United Arab Emirates | 0.09 | 0.38 | 0.12 | ○ |
| 43 | Indonesia | 3.11 | 13.21 | 0.67 | | 115 | Jamaica | 0.07 | 0.31 | 0.11 | ○ |
| 44 | Brazil | 3.01 | 12.75 | 0.66 | | 116 | Madagascar | 0.06 | 0.26 | 0.10 | |
| 45 | Argentina | 2.65 | 11.23 | 0.66 | | 117 | Sudan | 0.05 | 0.19 | 0.09 | |
| 46 | El Salvador | 2.63 | 11.15 | 0.65 | ● | 118 | Togo | 0.04 | 0.17 | 0.09 | |
| 47 | Ukraine | 2.42 | 10.25 | 0.64 | | 119 | Nepal | 0.04 | 0.17 | 0.08 | ○ |
| 48 | Portugal | 2.39 | 10.13 | 0.63 | | 120 | Trinidad and Tobago | 0.03 | 0.14 | 0.07 | ○ |
| 49 | South Africa | 2.31 | 9.78 | 0.63 | | 121 | Yemen | 0.02 | 0.10 | 0.06 | |
| 50 | Serbia | 2.03 | 8.63 | 0.62 | | 122 | Gambia | 0.02 | 0.06 | 0.05 | ○ |
| 51 | TFYR of Macedonia | 1.91 | 8.10 | 0.61 | | 123 | Bahrain | 0.01 | 0.04 | 0.05 | ○ |
| 52 | Belarus | 1.75 | 7.43 | 0.60 | | 124 | Bhutan | 0.01 | 0.03 | 0.04 | ○ |
| 53 | Russian Federation | 1.72 | 7.31 | 0.59 | | 125 | Cabo Verde | 0.01 | 0.03 | 0.03 | ○ |
| 54 | Australia | 1.71 | 7.24 | 0.59 | | 126 | Algeria | 0.00 | 0.02 | 0.02 | ○ |
| 55 | New Zealand | 1.48 | 6.29 | 0.58 | | 127 | Guyana | 0.00 | 0.01 | 0.02 | ○ |
| 56 | Greece | 1.42 | 6.00 | 0.57 | | 128 | Myanmar | 0.00 | 0.00 | 0.01 | ○ |
| 57 | Uruguay | 1.38 | 5.84 | 0.56 | | 129 | Qatar | 0.00 | 0.00 | 0.00 | ○ |
| 58 | Guatemala | 1.36 | 5.75 | 0.55 | | n/a | Angola | n/a | n/a | n/a | |
| 59 | Iceland | 1.21 | 5.14 | 0.55 | | n/a | Barbados | n/a | n/a | n/a | |
| 60 | Colombia | 1.15 | 4.90 | 0.54 | | n/a | Cameroon | n/a | n/a | n/a | |
| 61 | Dominican Republic | 1.14 | 4.83 | 0.53 | | n/a | Guinea | n/a | n/a | n/a | |
| 62 | Namibia | 1.14 | 4.81 | 0.52 | | n/a | Lesotho | n/a | n/a | n/a | |
| 63 | Turkey | 1.11 | 4.71 | 0.52 | | n/a | Morocco | n/a | n/a | n/a | |
| 64 | Malawi | 1.03 | 4.39 | 0.51 | | n/a | Philippines | n/a | n/a | n/a | |
| 65 | Luxembourg | 0.95 | 4.03 | 0.50 | | n/a | Seychelles | n/a | n/a | n/a | |
| 66 | Bosnia and Herzegovina | 0.93 | 3.93 | 0.49 | | n/a | Swaziland | n/a | n/a | n/a | |
| 67 | Pakistan | 0.93 | 3.92 | 0.48 | | n/a | Tajikistan | n/a | n/a | n/a | |
| 68 | Côte d'Ivoire | 0.87 | 3.68 | 0.48 | ● | n/a | Uzbekistan | n/a | n/a | n/a | |
| 69 | Mozambique | 0.83 | 3.54 | 0.47 | ● | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 70 | Cambodia | 0.74 | 3.13 | 0.46 | | | | | | | |
| 71 | Chile | 0.68 | 2.87 | 0.45 | | | | | | | |
| 72 | Cyprus | 0.61 | 2.57 | 0.45 | | | | | | | |

SOURCE: United Nations, COMTRADE database; Eurostat 'High-technology' aggregations based on SITC Rev. 4; WTO Trade in Commercial Services database

NOTE: ● indicates a strength; ○ a weakness

6.3.3

Communications, computer and information services exports

Communications, computer and information services exports (% of total trade) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|---------------------------|-------|---------------|--------------|---|------|-----------------------------------|-------|---------------|--------------|---|
| 1 | Costa Rica | 11.12 | 100.00 | 0.97 | ● | 73 | Malawi (2012) | 1.24 | 19.80 | 0.39 | |
| 1 | Gambia (2009) | 5.99 | 100.00 | 0.97 | ● | 74 | Cyprus | 1.22 | 19.46 | 0.38 | |
| 1 | India | 10.12 | 100.00 | 0.97 | ● | 75 | Malaysia | 1.18 | 18.93 | 0.37 | |
| 1 | Ireland | 25.08 | 100.00 | 0.97 | ● | 76 | New Zealand | 1.15 | 18.37 | 0.36 | ○ |
| 5 | Finland | 5.96 | 99.62 | 0.97 | | 77 | Bolivia, Plurinational St. (2012) | 1.05 | 16.61 | 0.36 | |
| 6 | Israel (2012) | 4.95 | 82.42 | 0.96 | ● | 78 | Rwanda (2012) | 0.96 | 15.14 | 0.35 | |
| 7 | Luxembourg | 4.73 | 78.81 | 0.95 | | 79 | Australia | 0.95 | 14.95 | 0.34 | ○ |
| 8 | Sweden | 4.69 | 78.14 | 0.94 | | 80 | Côte d'Ivoire (2010) | 0.91 | 14.31 | 0.33 | |
| 9 | Senegal (2012) | 4.61 | 76.76 | 0.93 | ● | 81 | Fiji (2012) | 0.90 | 14.22 | 0.32 | |
| 10 | Philippines | 4.56 | 75.96 | 0.92 | ● | 82 | Russian Federation | 0.82 | 12.71 | 0.31 | |
| 11 | Moldova, Rep. | 4.06 | 67.54 | 0.92 | ● | 83 | Jamaica | 0.78 | 12.17 | 0.31 | |
| 12 | Sri Lanka | 3.94 | 65.45 | 0.91 | ● | 84 | Slovakia | 0.77 | 12.03 | 0.30 | ○ |
| 13 | Togo (2008) | 3.80 | 63.11 | 0.90 | ● | 85 | Cambodia | 0.75 | 11.60 | 0.29 | |
| 14 | United Kingdom | 3.46 | 57.34 | 0.89 | | 86 | China | 0.74 | 11.44 | 0.28 | |
| 15 | Kenya (2012) | 3.39 | 56.17 | 0.88 | ● | 87 | Georgia | 0.71 | 10.94 | 0.27 | |
| 16 | Albania | 3.35 | 55.56 | 0.87 | ● | 88 | Niger (2009) | 0.71 | 10.88 | 0.26 | |
| 17 | Mali (2008) | 3.34 | 55.37 | 0.86 | ● | 89 | Guyana | 0.70 | 10.75 | 0.25 | |
| 18 | Romania | 3.31 | 54.85 | 0.86 | ● | 90 | Singapore (2008) | 0.65 | 9.98 | 0.25 | ○ |
| 19 | Cabo Verde | 2.86 | 47.19 | 0.85 | ● | 91 | Lithuania | 0.58 | 8.77 | 0.24 | ○ |
| 20 | Austria | 2.78 | 45.95 | 0.84 | | 92 | Indonesia | 0.50 | 7.39 | 0.23 | |
| 21 | Armenia | 2.76 | 45.62 | 0.83 | ● | 93 | Hong Kong (China) (2012) | 0.49 | 7.24 | 0.22 | ○ |
| 22 | Serbia | 2.73 | 45.11 | 0.82 | ● | 94 | Zambia (2008) | 0.45 | 6.52 | 0.21 | |
| 23 | Morocco (2012) | 2.69 | 44.30 | 0.81 | ● | 95 | Mozambique (2012) | 0.44 | 6.44 | 0.20 | |
| 24 | Belgium | 2.67 | 43.98 | 0.81 | | 96 | Tanzania, United Rep. (2012) | 0.44 | 6.38 | 0.19 | |
| 25 | Estonia | 2.63 | 43.34 | 0.80 | | 97 | Kyrgyzstan | 0.43 | 6.29 | 0.19 | |
| 26 | Tajikistan (2012) | 2.63 | 43.33 | 0.79 | ● | 98 | South Africa | 0.43 | 6.17 | 0.18 | ○ |
| 27 | Mauritius | 2.62 | 43.22 | 0.78 | | 99 | Azerbaijan | 0.42 | 6.01 | 0.17 | |
| 28 | TFYR of Macedonia | 2.55 | 41.95 | 0.77 | ● | 100 | Colombia | 0.42 | 5.97 | 0.16 | ○ |
| 29 | Nicaragua | 2.41 | 39.66 | 0.76 | ● | 101 | Chile (2012) | 0.40 | 5.78 | 0.15 | ○ |
| 30 | Honduras | 2.31 | 37.97 | 0.75 | ● | 102 | Peru (2012) | 0.39 | 5.51 | 0.14 | ○ |
| 31 | Burkina Faso (2012) | 2.29 | 37.67 | 0.75 | ● | 103 | Algeria (2012) | 0.39 | 5.46 | 0.14 | |
| 32 | Spain | 2.26 | 37.13 | 0.74 | | 104 | Swaziland (2012) | 0.36 | 5.07 | 0.13 | |
| 33 | Guatemala | 2.26 | 37.07 | 0.73 | ● | 105 | Japan | 0.30 | 4.08 | 0.12 | ○ |
| 34 | Pakistan | 2.25 | 36.97 | 0.72 | ● | 106 | Korea, Rep. | 0.28 | 3.73 | 0.11 | ○ |
| 35 | Germany | 2.18 | 35.72 | 0.71 | | 107 | Lesotho (2011) | 0.27 | 3.45 | 0.10 | |
| 36 | Ukraine | 2.16 | 35.45 | 0.70 | | 108 | Sudan (2012) | 0.26 | 3.30 | 0.09 | |
| 37 | Latvia | 2.14 | 35.02 | 0.69 | | 109 | Brazil | 0.25 | 3.22 | 0.08 | ○ |
| 38 | Bulgaria | 2.05 | 33.61 | 0.69 | | 110 | Mongolia | 0.20 | 2.39 | 0.08 | ○ |
| 39 | Montenegro | 2.04 | 33.33 | 0.68 | | 111 | Kazakhstan | 0.20 | 2.37 | 0.07 | ○ |
| 40 | Netherlands | 2.01 | 32.96 | 0.67 | | 112 | Thailand | 0.19 | 2.20 | 0.06 | ○ |
| 41 | Croatia | 1.96 | 32.05 | 0.66 | | 113 | Venezuela, Bolivarian Rep. (2012) | 0.18 | 1.91 | 0.05 | |
| 42 | Guinea (2012) | 1.96 | 32.05 | 0.65 | ● | 114 | Iran, Islamic Rep. (2012) | 0.17 | 1.85 | 0.04 | ○ |
| 43 | Argentina | 1.94 | 31.74 | 0.64 | | 115 | Turkey | 0.17 | 1.78 | 0.03 | ○ |
| 44 | France | 1.88 | 30.68 | 0.64 | | 116 | Namibia | 0.16 | 1.68 | 0.03 | ○ |
| 45 | Egypt (2012) | 1.87 | 30.47 | 0.63 | ● | 117 | Paraguay | 0.10 | 0.61 | 0.02 | ○ |
| 46 | Denmark | 1.82 | 29.60 | 0.62 | | 118 | Botswana (2012) | 0.10 | 0.60 | 0.01 | ○ |
| 47 | Barbados (2010) | 1.81 | 29.47 | 0.61 | | 119 | Trinidad and Tobago (2011) | 0.06 | 0.00 | 0.00 | ○ |
| 48 | Slovenia | 1.75 | 28.51 | 0.60 | | n/a | Angola | n/a | n/a | n/a | |
| 49 | El Salvador | 1.74 | 28.25 | 0.59 | | n/a | Bahrain | n/a | n/a | n/a | |
| 50 | Uganda | 1.73 | 28.23 | 0.58 | | n/a | Bhutan | n/a | n/a | n/a | |
| 51 | Czech Republic | 1.72 | 28.02 | 0.58 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 52 | Canada | 1.71 | 27.75 | 0.57 | ○ | n/a | Burundi | n/a | n/a | n/a | |
| 53 | Madagascar (2012) | 1.69 | 27.55 | 0.56 | | n/a | Ecuador | n/a | n/a | n/a | |
| 54 | Belarus | 1.67 | 27.17 | 0.55 | | n/a | Ghana | n/a | n/a | n/a | |
| 55 | Ethiopia (2012) | 1.66 | 26.91 | 0.54 | ● | n/a | Jordan | n/a | n/a | n/a | |
| 56 | Tunisia (2012) | 1.58 | 25.60 | 0.53 | | n/a | Kuwait | n/a | n/a | n/a | |
| 57 | Greece | 1.55 | 25.12 | 0.53 | | n/a | Mexico | n/a | n/a | n/a | |
| 58 | Italy | 1.55 | 25.11 | 0.52 | | n/a | Myanmar | n/a | n/a | n/a | |
| 59 | Uruguay | 1.53 | 24.70 | 0.51 | | n/a | Nepal | n/a | n/a | n/a | |
| 60 | Portugal | 1.52 | 24.57 | 0.50 | | n/a | Nigeria | n/a | n/a | n/a | |
| 61 | Norway | 1.52 | 24.53 | 0.49 | ○ | n/a | Oman | n/a | n/a | n/a | |
| 62 | Seychelles (2006) | 1.45 | 23.36 | 0.48 | | n/a | Qatar | n/a | n/a | n/a | |
| 63 | Poland | 1.44 | 23.32 | 0.47 | | n/a | Saudi Arabia | n/a | n/a | n/a | |
| 64 | Hungary | 1.41 | 22.72 | 0.47 | | n/a | Switzerland | n/a | n/a | n/a | |
| 65 | Dominican Republic (2012) | 1.34 | 21.57 | 0.46 | | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 66 | Lebanon (2012) | 1.33 | 21.47 | 0.45 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 67 | United States of America | 1.33 | 21.33 | 0.44 | | n/a | Viet Nam | n/a | n/a | n/a | |
| 68 | Panama | 1.31 | 21.03 | 0.43 | | n/a | Yemen | n/a | n/a | n/a | |
| 69 | Bangladesh (2012) | 1.30 | 20.87 | 0.42 | | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Malta | 1.28 | 20.58 | 0.42 | | | | | | | |
| 71 | Cameroon (2012) | 1.25 | 19.98 | 0.41 | | | | | | | |
| 72 | Iceland (2012) | 1.24 | 19.81 | 0.40 | ○ | | | | | | |

SOURCE: World Trade Organization, Trade in Commercial Services database, based on the International Monetary Fund Balance of Payments database

NOTE: ● indicates a strength; ○ a weakness

6.3.4 Foreign direct investment net outflows

Foreign direct investment (FDI), net outflows (% of GDP) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-----------------------------------|--------|---------------|--------------|---|------|-----------------------------------|-------|---------------|--------------|---|
| 1 | Hong Kong (China) | 33.40 | 100.00 | 0.97 | ● | 73 | Mongolia | 0.36 | 37.49 | 0.41 | |
| 1 | Ireland | 16.20 | 100.00 | 0.97 | ● | 74 | Nigeria (2012) | 0.33 | 37.29 | 0.40 | |
| 1 | Luxembourg | 610.05 | 100.00 | 0.97 | ● | 75 | Senegal (2011) | 0.33 | 37.26 | 0.39 | |
| 1 | Mauritius | 210.16 | 100.00 | 0.97 | ● | 76 | Cambodia | 0.30 | 37.08 | 0.39 | |
| 1 | Singapore | 9.05 | 100.00 | 0.97 | ● | 77 | Uganda | 0.28 | 36.92 | 0.38 | |
| 6 | Switzerland | 8.28 | 94.44 | 0.96 | | 78 | United Kingdom | 0.26 | 36.80 | 0.37 | ○ |
| 7 | Barbados (2010) | 7.66 | 90.03 | 0.95 | ● | 79 | El Salvador | 0.25 | 36.67 | 0.36 | |
| 8 | Kuwait | 5.50 | 74.46 | 0.94 | ● | 80 | Ukraine | 0.24 | 36.64 | 0.35 | |
| 9 | Netherlands | 4.90 | 70.14 | 0.93 | | 81 | Albania | 0.22 | 36.47 | 0.34 | |
| 10 | Angola | 4.87 | 69.91 | 0.93 | ● | 82 | Namibia | 0.20 | 36.31 | 0.34 | |
| 11 | Trinidad and Tobago (2011) | 4.48 | 67.11 | 0.92 | ● | 83 | Honduras | 0.19 | 36.28 | 0.33 | |
| 12 | Malaysia | 4.15 | 64.76 | 0.91 | | 84 | Argentina | 0.18 | 36.19 | 0.32 | |
| 13 | Russian Federation | 4.14 | 64.65 | 0.90 | ● | 85 | Armenia | 0.18 | 36.19 | 0.31 | |
| 14 | Iceland | 4.07 | 64.18 | 0.89 | | 86 | Côte d'Ivoire (2010) | 0.18 | 36.17 | 0.30 | |
| 15 | Qatar | 3.95 | 63.29 | 0.89 | | 87 | Guatemala | 0.14 | 35.90 | 0.30 | |
| 16 | Chile | 3.94 | 63.24 | 0.88 | ● | 88 | Bosnia and Herzegovina | 0.13 | 35.80 | 0.29 | |
| 17 | Austria | 3.84 | 62.49 | 0.87 | | 89 | Fiji | 0.12 | 35.77 | 0.28 | |
| 18 | Sweden | 3.49 | 60.04 | 0.86 | | 90 | Pakistan | 0.10 | 35.63 | 0.27 | |
| 19 | Mozambique | 3.34 | 58.93 | 0.85 | ● | 91 | Sri Lanka | 0.10 | 35.60 | 0.26 | |
| 20 | Denmark | 3.23 | 58.11 | 0.84 | | 92 | India | 0.09 | 35.58 | 0.25 | |
| 21 | Bahrain | 3.20 | 57.91 | 0.84 | ● | 93 | Egypt (2012) | 0.08 | 35.48 | 0.25 | |
| 22 | Malta | 2.77 | 54.85 | 0.83 | | 94 | Peru | 0.07 | 35.39 | 0.24 | |
| 23 | Japan | 2.77 | 54.85 | 0.82 | | 95 | Jordan | 0.05 | 35.24 | 0.23 | ○ |
| 24 | Portugal | 2.70 | 54.32 | 0.81 | | 96 | Mali (2011) | 0.04 | 35.20 | 0.22 | |
| 25 | Lebanon | 2.69 | 54.26 | 0.80 | ● | 97 | Uruguay | 0.04 | 35.15 | 0.21 | |
| 26 | Canada | 2.49 | 52.82 | 0.80 | | 98 | Kenya (2012) | 0.03 | 35.13 | 0.20 | |
| 27 | United States of America | 2.43 | 52.41 | 0.79 | | 99 | Swaziland | 0.01 | 34.96 | 0.20 | |
| 28 | Togo (2010) | 2.40 | 52.20 | 0.78 | ● | 100 | Burkina Faso (2010) | 0.01 | 34.95 | 0.19 | |
| 29 | Spain | 2.29 | 51.40 | 0.77 | | 101 | Burundi | 0.01 | 34.94 | 0.18 | |
| 30 | Norway | 2.25 | 51.11 | 0.76 | | 102 | Niger (2012) | 0.01 | 34.94 | 0.17 | |
| 31 | Korea, Rep. | 2.24 | 50.98 | 0.75 | | 103 | Bangladesh | 0.00 | 34.92 | 0.16 | |
| 32 | Germany | 2.17 | 50.51 | 0.75 | | 104 | Ghana | 0.00 | 34.91 | 0.16 | |
| 33 | Colombia | 2.02 | 49.44 | 0.74 | | 105 | Bolivia, Plurinational St. (2011) | 0.00 | 34.91 | 0.15 | ○ |
| 34 | Azerbaijan | 2.01 | 49.35 | 0.73 | ● | 106 | Kyrgyzstan | 0.00 | 34.90 | 0.14 | |
| 35 | Cyprus | 1.78 | 47.68 | 0.72 | | 107 | Guinea | 0.00 | 34.89 | 0.13 | |
| 36 | China | 1.76 | 47.58 | 0.71 | | 108 | Botswana | 0.00 | 34.87 | 0.12 | ○ |
| 37 | Thailand | 1.74 | 47.41 | 0.70 | | 109 | France | -0.01 | 34.80 | 0.11 | ○ |
| 38 | Oman | 1.74 | 47.39 | 0.70 | | 110 | Romania | -0.03 | 34.66 | 0.11 | ○ |
| 39 | Costa Rica | 1.63 | 46.65 | 0.69 | | 111 | Finland | -0.10 | 34.19 | 0.10 | ○ |
| 40 | Israel | 1.61 | 46.46 | 0.68 | | 112 | Paraguay | -0.13 | 34.00 | 0.09 | |
| 41 | Panama | 1.60 | 46.38 | 0.67 | | 113 | Algeria | -0.13 | 33.97 | 0.08 | |
| 42 | Czech Republic | 1.58 | 46.28 | 0.66 | | 114 | Australia | -0.27 | 32.95 | 0.07 | ○ |
| 43 | South Africa | 1.58 | 46.27 | 0.66 | | 115 | Greece | -0.29 | 32.83 | 0.07 | ○ |
| 44 | Estonia | 1.47 | 45.45 | 0.65 | | 116 | Croatia | -0.31 | 32.66 | 0.06 | ○ |
| 45 | Philippines | 1.40 | 44.98 | 0.64 | | 117 | Jamaica | -0.60 | 30.55 | 0.05 | ○ |
| 46 | Latvia | 1.33 | 44.48 | 0.63 | | 118 | Dominican Republic | -0.64 | 30.31 | 0.04 | ○ |
| 47 | Italy | 1.33 | 44.48 | 0.62 | | 119 | Poland | -0.82 | 29.04 | 0.03 | ○ |
| 48 | Malawi (2012) | 1.17 | 43.35 | 0.61 | ● | 120 | New Zealand | -0.85 | 28.77 | 0.02 | ○ |
| 49 | Bulgaria | 1.17 | 43.29 | 0.61 | | 121 | Cameroon | -1.28 | 25.67 | 0.02 | ○ |
| 50 | Viet Nam | 1.14 | 43.11 | 0.60 | | 122 | Hungary | -2.59 | 16.28 | 0.01 | ○ |
| 51 | Slovakia | 1.13 | 43.04 | 0.59 | | 123 | Belgium | -4.85 | 0.00 | 0.00 | ○ |
| 52 | Indonesia | 1.11 | 42.87 | 0.58 | | n/a | Bhutan | n/a | n/a | n/a | |
| 53 | Mexico | 1.05 | 42.43 | 0.57 | | n/a | Ecuador | n/a | n/a | n/a | |
| 54 | Nicaragua | 0.92 | 41.55 | 0.57 | ● | n/a | Ethiopia | n/a | n/a | n/a | |
| 55 | Kazakhstan | 0.84 | 40.94 | 0.56 | | n/a | Gambia | n/a | n/a | n/a | |
| 56 | Serbia | 0.75 | 40.30 | 0.55 | | n/a | Guyana | n/a | n/a | n/a | |
| 57 | Georgia | 0.75 | 40.26 | 0.54 | | n/a | Iran, Islamic Rep. | n/a | n/a | n/a | |
| 58 | Lesotho | 0.74 | 40.19 | 0.53 | ● | n/a | Madagascar | n/a | n/a | n/a | |
| 59 | Cabo Verde | 0.68 | 39.76 | 0.52 | ● | n/a | Myanmar | n/a | n/a | n/a | |
| 60 | Zambia | 0.67 | 39.74 | 0.52 | | n/a | Nepal | n/a | n/a | n/a | |
| 61 | Saudi Arabia | 0.66 | 39.65 | 0.51 | | n/a | Rwanda | n/a | n/a | n/a | |
| 62 | Slovenia | 0.62 | 39.35 | 0.50 | | n/a | Sudan | n/a | n/a | n/a | |
| 63 | Lithuania | 0.61 | 39.30 | 0.49 | | n/a | Tajikistan | n/a | n/a | n/a | |
| 64 | Brazil | 0.59 | 39.18 | 0.48 | | n/a | Tanzania, United Rep. | n/a | n/a | n/a | |
| 65 | Seychelles | 0.55 | 38.85 | 0.48 | | n/a | Tunisia | n/a | n/a | n/a | |
| 66 | Moldova, Rep. | 0.52 | 38.66 | 0.47 | | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 67 | Morocco | 0.43 | 37.98 | 0.46 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 68 | Montenegro | 0.40 | 37.78 | 0.45 | | n/a | Yemen | n/a | n/a | n/a | |
| 69 | TFYR of Macedonia | 0.39 | 37.73 | 0.44 | | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Turkey | 0.38 | 37.62 | 0.43 | | | | | | | |
| 71 | Venezuela, Bolivarian Rep. (2012) | 0.38 | 37.62 | 0.43 | | | | | | | |
| 72 | Belarus | 0.37 | 37.53 | 0.42 | | | | | | | |

SOURCE: International Monetary Fund (with World Bank and OECD GDP estimates), extracted from World Bank *World Development Indicators* database

NOTE: ● indicates a strength; ○ a weakness

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------|--------|---------------|--------------|---|------|-----------------------------------|-------|---------------|--------------|---|
| 1 | Moldova, Rep. | 176.73 | 100.00 | 0.99 | ● | 73 | Jordan | 27.76 | 14.41 | 0.29 | |
| 1 | Paraguay (2010) | 296.27 | 100.00 | 0.99 | ● | 74 | Sri Lanka | 27.47 | 14.24 | 0.28 | |
| 3 | Mongolia | 135.17 | 76.12 | 0.98 | ● | 75 | India | 27.00 | 13.98 | 0.27 | |
| 4 | Malta | 132.50 | 74.59 | 0.97 | ● | 76 | Philippines | 26.03 | 13.42 | 0.26 | |
| 5 | Turkey | 130.49 | 73.43 | 0.96 | ● | 77 | Azerbaijan | 22.43 | 11.35 | 0.25 | |
| 6 | Luxembourg | 122.36 | 68.76 | 0.95 | | 78 | Venezuela, Bolivarian Rep. (2011) | 22.12 | 11.17 | 0.25 | |
| 7 | France | 120.99 | 67.98 | 0.94 | ● | 79 | Myanmar (2012) | 21.93 | 11.06 | 0.24 | |
| 8 | Slovenia (2010) | 111.61 | 62.59 | 0.93 | ● | 80 | Malaysia | 21.20 | 10.64 | 0.23 | ○ |
| 9 | Bulgaria | 111.48 | 62.51 | 0.92 | ● | 81 | Cambodia | 21.03 | 10.54 | 0.22 | |
| 10 | Czech Republic | 109.54 | 61.40 | 0.91 | ● | 82 | United States of America | 20.33 | 10.14 | 0.21 | ○ |
| 11 | China | 107.18 | 60.04 | 0.90 | | 83 | Nigeria | 19.88 | 9.88 | 0.20 | |
| 12 | Costa Rica (2012) | 101.01 | 56.49 | 0.89 | ● | 84 | Pakistan | 18.81 | 9.27 | 0.19 | |
| 13 | Iceland | 98.51 | 55.06 | 0.88 | | 85 | Gambia | 18.40 | 9.03 | 0.18 | |
| 14 | Belarus | 97.00 | 54.19 | 0.87 | ● | 86 | Yemen | 18.33 | 8.99 | 0.17 | |
| 15 | New Zealand | 95.16 | 53.14 | 0.86 | | 87 | Indonesia | 18.07 | 8.84 | 0.16 | |
| 16 | Korea, Rep. | 93.14 | 51.97 | 0.85 | | 88 | Bosnia and Herzegovina | 17.89 | 8.74 | 0.15 | ○ |
| 17 | Portugal | 91.74 | 51.17 | 0.84 | | 89 | Kyrgyzstan | 17.89 | 8.74 | 0.14 | |
| 18 | Armenia | 86.22 | 48.00 | 0.83 | ● | 90 | Kazakhstan | 17.81 | 8.69 | 0.13 | ○ |
| 19 | Ukraine | 83.83 | 46.63 | 0.82 | ● | 91 | Singapore | 17.39 | 8.45 | 0.12 | ○ |
| 20 | Estonia | 81.03 | 45.02 | 0.81 | | 92 | Bangladesh | 16.14 | 7.73 | 0.11 | |
| 21 | Switzerland | 76.35 | 42.33 | 0.80 | | 93 | Israel | 12.81 | 5.82 | 0.10 | ○ |
| 22 | Viet Nam | 76.29 | 42.30 | 0.79 | ● | 94 | Tajikistan | 11.98 | 5.34 | 0.09 | |
| 23 | Jamaica | 76.23 | 42.26 | 0.78 | ● | 95 | Uganda | 10.03 | 4.22 | 0.08 | |
| 24 | Chile | 73.62 | 40.76 | 0.77 | | 96 | United Arab Emirates | 9.28 | 3.79 | 0.07 | ○ |
| 25 | Argentina | 70.39 | 38.90 | 0.76 | ● | 97 | Bahrain | 7.36 | 2.69 | 0.06 | ○ |
| 26 | Austria | 69.82 | 38.58 | 0.75 | | 98 | Zambia | 7.32 | 2.67 | 0.05 | ○ |
| 27 | Slovakia | 68.51 | 37.82 | 0.75 | | 99 | Algeria (2012) | 6.94 | 2.45 | 0.04 | |
| 28 | Hong Kong (China) | 67.07 | 37.00 | 0.74 | | 100 | Rwanda (2012) | 6.67 | 2.30 | 0.03 | ○ |
| 29 | Uruguay | 66.67 | 36.77 | 0.73 | | 101 | Sudan (2012) | 5.90 | 1.85 | 0.02 | ○ |
| 30 | Germany | 66.27 | 36.54 | 0.72 | | 102 | Bhutan | 2.95 | 0.16 | 0.01 | ○ |
| 31 | Australia | 65.90 | 36.32 | 0.71 | | 103 | Qatar | 2.68 | 0.00 | 0.00 | ○ |
| 32 | Finland | 64.28 | 35.39 | 0.70 | | n/a | Angola | n/a | n/a | n/a | |
| 33 | Romania | 64.02 | 35.24 | 0.69 | | n/a | Bolivia, Plurinational St. | n/a | n/a | n/a | |
| 34 | Ecuador (2010) | 63.94 | 35.20 | 0.68 | ● | n/a | Botswana | n/a | n/a | n/a | |
| 35 | Panama | 63.03 | 34.67 | 0.67 | | n/a | Burkina Faso | n/a | n/a | n/a | |
| 36 | Cyprus | 62.69 | 34.48 | 0.66 | | n/a | Burundi | n/a | n/a | n/a | |
| 37 | Netherlands | 59.56 | 32.68 | 0.65 | ○ | n/a | Cabo Verde | n/a | n/a | n/a | |
| 38 | Spain | 56.99 | 31.20 | 0.64 | | n/a | Cameroon | n/a | n/a | n/a | |
| 39 | Honduras | 55.48 | 30.33 | 0.63 | ● | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 40 | Morocco | 54.64 | 29.85 | 0.62 | | n/a | Egypt | n/a | n/a | n/a | |
| 41 | Peru (2012) | 54.30 | 29.66 | 0.61 | | n/a | El Salvador | n/a | n/a | n/a | |
| 42 | Croatia | 53.06 | 28.95 | 0.60 | | n/a | Ethiopia | n/a | n/a | n/a | |
| 43 | Latvia | 52.98 | 28.90 | 0.59 | | n/a | Fiji | n/a | n/a | n/a | |
| 44 | Sweden | 52.85 | 28.83 | 0.58 | ○ | n/a | Ghana | n/a | n/a | n/a | |
| 45 | Madagascar | 51.52 | 28.06 | 0.57 | | n/a | Greece | n/a | n/a | n/a | |
| 46 | Lithuania | 51.44 | 28.01 | 0.56 | | n/a | Guinea | n/a | n/a | n/a | |
| 47 | Canada | 51.42 | 28.01 | 0.55 | ○ | n/a | Guyana | n/a | n/a | n/a | |
| 48 | Georgia | 51.25 | 27.91 | 0.54 | | n/a | Iran, Islamic Rep. | n/a | n/a | n/a | |
| 49 | Italy | 50.25 | 27.33 | 0.53 | | n/a | Ireland | n/a | n/a | n/a | |
| 50 | United Kingdom | 50.18 | 27.29 | 0.52 | ○ | n/a | Kenya | n/a | n/a | n/a | |
| 51 | Poland | 50.08 | 27.23 | 0.51 | | n/a | Kuwait | n/a | n/a | n/a | |
| 52 | Albania | 49.93 | 27.15 | 0.50 | | n/a | Lebanon | n/a | n/a | n/a | |
| 53 | Barbados | 49.72 | 27.03 | 0.49 | | n/a | Lesotho | n/a | n/a | n/a | |
| 54 | Russian Federation | 48.19 | 26.15 | 0.48 | | n/a | Malawi | n/a | n/a | n/a | |
| 55 | Denmark | 47.42 | 25.71 | 0.47 | ○ | n/a | Mali | n/a | n/a | n/a | |
| 56 | Seychelles | 46.01 | 24.89 | 0.46 | | n/a | Montenegro | n/a | n/a | n/a | |
| 57 | Belgium | 45.48 | 24.59 | 0.45 | ○ | n/a | Mozambique | n/a | n/a | n/a | |
| 58 | Serbia | 43.72 | 23.58 | 0.44 | | n/a | Namibia | n/a | n/a | n/a | |
| 59 | Dominican Republic | 41.41 | 22.26 | 0.43 | | n/a | Niger | n/a | n/a | n/a | |
| 60 | Nicaragua | 41.24 | 22.16 | 0.42 | | n/a | Oman | n/a | n/a | n/a | |
| 61 | Brazil | 41.19 | 22.13 | 0.41 | | n/a | Saudi Arabia | n/a | n/a | n/a | |
| 62 | Nepal | 39.94 | 21.41 | 0.40 | | n/a | Senegal | n/a | n/a | n/a | |
| 63 | Hungary | 39.65 | 21.24 | 0.39 | | n/a | Swaziland | n/a | n/a | n/a | |
| 64 | Guatemala (2010) | 39.25 | 21.01 | 0.38 | | n/a | Tanzania, United Rep. | n/a | n/a | n/a | |
| 65 | Mexico | 37.40 | 19.95 | 0.37 | | n/a | TFYR of Macedonia | n/a | n/a | n/a | |
| 66 | Mauritius | 35.29 | 18.74 | 0.36 | | n/a | Togo | n/a | n/a | n/a | |
| 67 | Japan | 33.79 | 17.88 | 0.35 | ○ | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 68 | Colombia | 31.96 | 16.82 | 0.34 | | n/a | Tunisia | n/a | n/a | n/a | |
| 69 | Uzbekistan | 31.09 | 16.32 | 0.33 | | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | South Africa | 30.51 | 15.99 | 0.32 | | | | | | | |
| 71 | Norway | 29.98 | 15.69 | 0.31 | ○ | | | | | | |
| 72 | Thailand | 28.91 | 15.07 | 0.30 | | | | | | | |

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; International Monetary Fund *World Economic Outlook Database*, 2015 (PPP\$ GDP)

NOTE: ● indicates a strength; ○ a weakness

7.1.2

Madrid System trademark applications by country of origin

Number of international trademark applications issued through the Madrid system by country of origin (per billion PPP\$ GDP) | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|--|
| 1 | Cyprus | 7.55 | 100.00 | 0.94 | ● | n/a | Barbados | n/a | n/a | n/a | |
| 1 | Iceland | 8.59 | 100.00 | 0.94 | ● | n/a | Bhutan | n/a | n/a | n/a | |
| 1 | Luxembourg | 6.81 | 100.00 | 0.94 | ● | n/a | Bolivia, Plurinational St. | n/a | n/a | n/a | |
| 1 | Moldova, Rep. | 4.23 | 100.00 | 0.94 | ● | n/a | Botswana | n/a | n/a | n/a | |
| 1 | Switzerland | 6.65 | 100.00 | 0.94 | ● | n/a | Brazil | n/a | n/a | n/a | |
| 6 | Slovenia | 3.12 | 73.77 | 0.93 | ● | n/a | Burkina Faso | n/a | n/a | n/a | |
| 7 | Austria | 2.53 | 59.67 | 0.91 | ● | n/a | Burundi | n/a | n/a | n/a | |
| 8 | Latvia | 2.35 | 55.33 | 0.90 | ● | n/a | Cabo Verde | n/a | n/a | n/a | |
| 9 | Estonia | 2.30 | 54.31 | 0.88 | | n/a | Cambodia | n/a | n/a | n/a | |
| 10 | Denmark | 2.22 | 52.47 | 0.87 | | n/a | Cameroon | n/a | n/a | n/a | |
| 11 | Bulgaria | 2.18 | 51.35 | 0.85 | ● | n/a | Canada | n/a | n/a | n/a | |
| 12 | New Zealand | 2.14 | 50.48 | 0.84 | | n/a | Chile | n/a | n/a | n/a | |
| 13 | Croatia | 1.81 | 42.63 | 0.82 | ● | n/a | Costa Rica | n/a | n/a | n/a | |
| 14 | Serbia | 1.78 | 41.97 | 0.81 | ● | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 15 | Netherlands | 1.76 | 41.39 | 0.79 | | n/a | Dominican Republic | n/a | n/a | n/a | |
| 16 | Germany | 1.75 | 41.21 | 0.78 | | n/a | Ecuador | n/a | n/a | n/a | |
| 17 | Finland | 1.64 | 38.71 | 0.76 | | n/a | El Salvador | n/a | n/a | n/a | |
| 18 | Belgium | 1.62 | 38.08 | 0.75 | | n/a | Ethiopia | n/a | n/a | n/a | |
| 19 | Sweden | 1.56 | 36.75 | 0.73 | | n/a | Fiji | n/a | n/a | n/a | |
| 20 | Montenegro | 1.50 | 35.24 | 0.72 | | n/a | Gambia | n/a | n/a | n/a | |
| 21 | France | 1.47 | 34.71 | 0.70 | | n/a | Guatemala | n/a | n/a | n/a | |
| 22 | Lithuania | 1.47 | 34.62 | 0.69 | | n/a | Guinea | n/a | n/a | n/a | |
| 23 | Australia | 1.42 | 33.46 | 0.67 | | n/a | Guyana | n/a | n/a | n/a | |
| 24 | Italy | 1.29 | 30.34 | 0.66 | | n/a | Honduras | n/a | n/a | n/a | |
| 25 | Hungary | 1.18 | 27.80 | 0.64 | | n/a | Hong Kong (China) | n/a | n/a | n/a | |
| 26 | Ukraine | 1.17 | 27.42 | 0.63 | | n/a | India | n/a | n/a | n/a | |
| 27 | United Kingdom | 1.16 | 27.20 | 0.61 | ○ | n/a | Indonesia | n/a | n/a | n/a | |
| 28 | Belarus | 1.12 | 26.41 | 0.60 | | n/a | Jamaica | n/a | n/a | n/a | |
| 29 | Armenia | 1.11 | 26.16 | 0.58 | | n/a | Jordan | n/a | n/a | n/a | |
| 30 | Israel | 1.03 | 24.18 | 0.57 | | n/a | Kuwait | n/a | n/a | n/a | |
| 31 | Czech Republic | 1.00 | 23.62 | 0.55 | | n/a | Lebanon | n/a | n/a | n/a | |
| 32 | Norway | 0.95 | 22.27 | 0.54 | ○ | n/a | Lesotho | n/a | n/a | n/a | |
| 33 | Portugal | 0.90 | 21.04 | 0.52 | | n/a | Malawi | n/a | n/a | n/a | |
| 34 | Turkey | 0.86 | 20.16 | 0.51 | | n/a | Malaysia | n/a | n/a | n/a | |
| 35 | Ireland | 0.82 | 19.37 | 0.49 | ○ | n/a | Mali | n/a | n/a | n/a | |
| 36 | Spain | 0.81 | 19.13 | 0.48 | ○ | n/a | Malta | n/a | n/a | n/a | |
| 37 | Slovakia | 0.81 | 19.08 | 0.46 | | n/a | Mauritius | n/a | n/a | n/a | |
| 38 | TFYR of Macedonia | 0.62 | 14.42 | 0.45 | | n/a | Mexico | n/a | n/a | n/a | |
| 39 | Georgia | 0.58 | 13.69 | 0.43 | | n/a | Myanmar | n/a | n/a | n/a | |
| 40 | Singapore | 0.53 | 12.35 | 0.42 | ○ | n/a | Namibia | n/a | n/a | n/a | |
| 41 | Bosnia and Herzegovina | 0.53 | 12.29 | 0.40 | | n/a | Nepal | n/a | n/a | n/a | |
| 42 | Japan | 0.44 | 10.22 | 0.39 | ○ | n/a | Nicaragua | n/a | n/a | n/a | |
| 43 | Poland | 0.42 | 9.83 | 0.37 | | n/a | Niger | n/a | n/a | n/a | |
| 44 | Korea, Rep. | 0.39 | 9.07 | 0.36 | ○ | n/a | Nigeria | n/a | n/a | n/a | |
| 45 | Greece | 0.39 | 9.02 | 0.34 | | n/a | Oman | n/a | n/a | n/a | |
| 46 | United States of America | 0.38 | 8.82 | 0.33 | ○ | n/a | Pakistan | n/a | n/a | n/a | |
| 47 | Russian Federation | 0.36 | 8.33 | 0.31 | | n/a | Panama | n/a | n/a | n/a | |
| 48 | Morocco | 0.32 | 7.36 | 0.30 | | n/a | Paraguay | n/a | n/a | n/a | |
| 49 | Azerbaijan | 0.21 | 4.87 | 0.28 | | n/a | Peru | n/a | n/a | n/a | |
| 50 | Albania | 0.19 | 4.36 | 0.27 | | n/a | Qatar | n/a | n/a | n/a | |
| 51 | Romania | 0.19 | 4.32 | 0.25 | ○ | n/a | Rwanda | n/a | n/a | n/a | |
| 52 | Kyrgyzstan | 0.16 | 3.57 | 0.24 | | n/a | Saudi Arabia | n/a | n/a | n/a | |
| 53 | Viet Nam | 0.13 | 3.01 | 0.22 | | n/a | Senegal | n/a | n/a | n/a | |
| 54 | China | 0.13 | 2.85 | 0.21 | | n/a | Seychelles | n/a | n/a | n/a | |
| 55 | Kazakhstan | 0.12 | 2.69 | 0.19 | | n/a | South Africa | n/a | n/a | n/a | |
| 56 | Colombia | 0.07 | 1.56 | 0.18 | ○ | n/a | Sri Lanka | n/a | n/a | n/a | |
| 57 | Philippines | 0.07 | 1.47 | 0.16 | | n/a | Swaziland | n/a | n/a | n/a | |
| 58 | Mozambique | 0.06 | 1.39 | 0.15 | | n/a | Tanzania, United Rep. | n/a | n/a | n/a | |
| 59 | Madagascar | 0.06 | 1.26 | 0.13 | | n/a | Thailand | n/a | n/a | n/a | |
| 60 | Sudan | 0.05 | 1.05 | 0.12 | | n/a | Togo | n/a | n/a | n/a | |
| 61 | Tajikistan | 0.04 | 0.92 | 0.10 | | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 62 | Mongolia | 0.03 | 0.54 | 0.09 | ○ | n/a | Tunisia | n/a | n/a | n/a | |
| 63 | Egypt | 0.02 | 0.44 | 0.07 | ○ | n/a | Uganda | n/a | n/a | n/a | |
| 64 | Kenya | 0.02 | 0.40 | 0.06 | ○ | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 65 | Iran, Islamic Rep. | 0.02 | 0.34 | 0.04 | ○ | n/a | Uruguay | n/a | n/a | n/a | |
| 66 | Ghana | 0.02 | 0.30 | 0.03 | ○ | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 67 | Uzbekistan | 0.02 | 0.28 | 0.01 | ○ | n/a | Yemen | n/a | n/a | n/a | |
| 68 | Algeria (2013) | 0.01 | 0.00 | 0.00 | ○ | n/a | Zambia | n/a | n/a | n/a | |
| n/a | Angola | n/a | n/a | n/a | | n/a | Zimbabwe | n/a | n/a | n/a | |
| n/a | Argentina | n/a | n/a | n/a | | | | | | | |
| n/a | Bahrain | n/a | n/a | n/a | | | | | | | |
| n/a | Bangladesh | n/a | n/a | n/a | | | | | | | |

SOURCE: World Intellectual Property Organization, WIPO Statistics Database; International Monetary Fund World Economic Outlook Database, 2015 (PPP\$ GDP)
NOTE: ● indicates a strength; ○ a weakness

7.1.3

ICTs and business model creation

Average answer to the survey question: In your country, to what extent do ICTs enable new business models? [1 = not at all; 7 = to a great extent] | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Finland | 5.85 | 80.80 | 1.00 | ● | 73 | Brazil | 4.24 | 54.05 | 0.45 | |
| 2 | United Arab Emirates | 5.74 | 79.05 | 0.99 | ● | 74 | Peru | 4.24 | 53.98 | 0.45 | |
| 3 | Estonia | 5.72 | 78.58 | 0.98 | ● | 75 | Montenegro | 4.23 | 53.83 | 0.44 | |
| 4 | Qatar | 5.64 | 77.39 | 0.98 | ● | 76 | Barbados | 4.21 | 53.49 | 0.43 | |
| 5 | Netherlands | 5.60 | 76.63 | 0.97 | ● | 77 | Cambodia | 4.19 | 53.15 | 0.42 | |
| 6 | Sweden | 5.57 | 76.09 | 0.96 | ● | 78 | Cameroon | 4.18 | 53.06 | 0.42 | ● |
| 7 | Luxembourg | 5.57 | 76.09 | 0.95 | | 79 | Gambia | 4.16 | 52.70 | 0.41 | |
| 8 | United Kingdom | 5.54 | 75.67 | 0.95 | | 80 | Slovakia | 4.15 | 52.44 | 0.40 | |
| 9 | Singapore | 5.54 | 75.63 | 0.94 | | 81 | Mongolia | 4.13 | 52.22 | 0.39 | |
| 10 | Malaysia | 5.50 | 75.04 | 0.93 | ● | 82 | Paraguay | 4.13 | 52.09 | 0.39 | |
| 11 | Norway | 5.50 | 74.93 | 0.92 | | 83 | Romania | 4.11 | 51.76 | 0.38 | |
| 12 | Korea, Rep. | 5.47 | 74.58 | 0.92 | | 84 | India | 4.10 | 51.73 | 0.37 | |
| 13 | Switzerland | 5.44 | 74.02 | 0.91 | | 85 | Morocco | 4.08 | 51.35 | 0.36 | |
| 14 | Japan | 5.39 | 73.14 | 0.90 | | 86 | Jamaica | 4.07 | 51.24 | 0.36 | |
| 15 | New Zealand | 5.37 | 72.80 | 0.89 | | 87 | Tajikistan | 4.07 | 51.23 | 0.35 | |
| 16 | Ireland | 5.34 | 72.39 | 0.89 | | 88 | Namibia | 4.07 | 51.17 | 0.34 | |
| 17 | Portugal | 5.30 | 71.72 | 0.88 | ● | 89 | Bulgaria | 4.06 | 50.99 | 0.33 | |
| 18 | United States of America | 5.27 | 71.12 | 0.87 | | 90 | Russian Federation | 4.02 | 50.39 | 0.33 | |
| 19 | Germany | 5.16 | 69.34 | 0.86 | | 91 | Pakistan | 4.02 | 50.30 | 0.32 | |
| 20 | Canada | 5.14 | 68.93 | 0.86 | | 92 | Uganda | 4.01 | 50.21 | 0.31 | |
| 21 | Israel | 5.09 | 68.12 | 0.85 | | 93 | Ghana | 4.00 | 50.05 | 0.30 | |
| 22 | Iceland | 5.09 | 68.12 | 1.1462 | ● | 94 | Guyana | 3.99 | 49.76 | 0.30 | |
| 23 | Belgium | 5.08 | 68.00 | 0.83 | | 95 | Poland | 3.96 | 49.38 | 0.29 | ○ |
| 24 | Hong Kong (China) | 5.04 | 67.28 | 0.83 | | 96 | Italy | 3.95 | 49.23 | 0.28 | ○ |
| 25 | Spain | 5.03 | 67.16 | 0.82 | | 97 | Côte d'Ivoire | 3.95 | 49.21 | 0.27 | |
| 26 | Lithuania | 5.01 | 66.88 | 0.81 | | 98 | Georgia | 3.93 | 48.89 | 0.27 | |
| 27 | Rwanda | 5.00 | 66.74 | 0.80 | ● | 99 | Bolivia, Plurinational St. | 3.86 | 47.67 | 0.26 | |
| 28 | Chile | 4.99 | 66.44 | 0.80 | | 100 | Seychelles | 3.85 | 47.56 | 0.25 | |
| 29 | Saudi Arabia | 4.95 | 65.90 | 0.79 | ● | 101 | Madagascar | 3.84 | 47.32 | 0.24 | |
| 30 | France | 4.93 | 65.46 | 0.78 | | 102 | Zimbabwe | 3.83 | 47.14 | 0.23 | |
| 31 | Austria | 4.93 | 65.42 | 0.77 | | 103 | Tunisia | 3.82 | 46.96 | 0.23 | |
| 32 | Indonesia | 4.92 | 65.32 | 0.77 | ● | 104 | Egypt | 3.77 | 46.12 | 0.22 | |
| 33 | Panama | 4.87 | 64.54 | 0.76 | | 105 | Iran, Islamic Rep. | 3.76 | 46.02 | 0.21 | |
| 34 | Australia | 4.86 | 64.32 | 0.75 | | 106 | Serbia | 3.76 | 45.97 | 0.20 | ○ |
| 35 | Malta | 4.85 | 64.21 | 0.74 | | 107 | Argentina | 3.75 | 45.89 | 0.20 | |
| 36 | Bahrain | 4.85 | 64.18 | 0.73 | | 108 | Ukraine | 3.75 | 45.86 | 0.19 | ○ |
| 37 | Kenya | 4.84 | 63.93 | 0.73 | ● | 109 | Bangladesh | 3.74 | 45.72 | 0.18 | |
| 38 | Guatemala | 4.80 | 63.36 | 0.72 | ● | 110 | Tanzania, United Rep. | 3.74 | 45.68 | 0.17 | |
| 39 | Jordan | 4.79 | 63.25 | 0.71 | ● | 111 | Bhutan | 3.72 | 45.40 | 0.17 | |
| 40 | Azerbaijan | 4.79 | 63.16 | 0.70 | ● | 112 | Moldova, Rep. | 3.71 | 45.17 | 0.16 | ○ |
| 41 | Costa Rica | 4.73 | 62.21 | 0.70 | | 113 | Trinidad and Tobago | 3.68 | 44.59 | 0.15 | |
| 42 | Turkey | 4.72 | 62.08 | 0.69 | | 114 | Botswana | 3.65 | 44.25 | 0.14 | |
| 43 | Denmark | 4.70 | 61.73 | 0.68 | | 115 | Mozambique | 3.65 | 44.12 | 0.14 | |
| 44 | Thailand | 4.67 | 61.20 | 0.67 | | 116 | Kyrgyzstan | 3.64 | 43.95 | 0.13 | |
| 45 | Czech Republic | 4.65 | 60.87 | 0.67 | | 117 | Greece | 3.61 | 43.54 | 0.12 | ○ |
| 46 | Uruguay | 4.65 | 60.84 | 0.66 | | 118 | Malawi | 3.55 | 42.55 | 0.11 | |
| 47 | China | 4.64 | 60.60 | 0.65 | | 119 | Albania | 3.41 | 40.15 | 0.11 | ○ |
| 48 | Philippines | 4.63 | 60.47 | 0.64 | | 120 | Nepal | 3.36 | 39.32 | 0.10 | |
| 49 | Colombia | 4.61 | 60.18 | 0.64 | | 121 | Ethiopia | 3.35 | 39.12 | 0.09 | |
| 50 | TFYR of Macedonia | 4.61 | 60.09 | 0.63 | | 122 | Kuwait | 3.34 | 38.96 | 0.08 | ○ |
| 51 | Senegal | 4.60 | 59.94 | 0.62 | ● | 123 | Swaziland | 3.33 | 38.91 | 0.08 | ○ |
| 52 | Viet Nam | 4.56 | 59.39 | 0.61 | | 124 | Angola | 3.33 | 38.83 | 0.07 | |
| 53 | Dominican Republic | 4.55 | 59.23 | 0.61 | ● | 125 | Lesotho | 3.30 | 38.32 | 0.06 | ○ |
| 54 | Armenia | 4.55 | 59.22 | 0.60 | | 126 | Venezuela, Bolivarian Rep. | 3.29 | 38.16 | 0.05 | |
| 55 | Mali | 4.55 | 59.10 | 0.59 | ● | 127 | Lebanon | 3.26 | 37.67 | 0.05 | ○ |
| 56 | South Africa | 4.54 | 58.96 | 0.58 | | 128 | Nicaragua | 3.22 | 37.03 | 0.04 | ○ |
| 57 | Mauritius | 4.53 | 58.86 | 0.58 | | 129 | Guinea | 3.15 | 35.86 | 0.03 | |
| 58 | Oman | 4.52 | 58.68 | 0.57 | | 130 | Myanmar | 3.07 | 34.48 | 0.02 | |
| 59 | Latvia | 4.52 | 58.58 | 0.56 | | 131 | Algeria | 3.07 | 34.46 | 0.02 | ○ |
| 60 | Hungary | 4.51 | 58.43 | 0.55 | | 132 | Burundi | 2.74 | 28.98 | 0.01 | ○ |
| 61 | Sri Lanka | 4.50 | 58.35 | 0.55 | | 133 | Yemen | 2.71 | 28.53 | 0.00 | ○ |
| 62 | Croatia | 4.47 | 57.90 | 0.54 | | n/a | Belarus | n/a | n/a | n/a | |
| 63 | El Salvador | 4.46 | 57.63 | 0.53 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 64 | Slovenia | 4.44 | 57.26 | 0.52 | | n/a | Ecuador | n/a | n/a | n/a | |
| 65 | Mexico | 4.41 | 56.91 | 0.52 | | n/a | Fiji | n/a | n/a | n/a | |
| 66 | Cyprus | 4.41 | 56.80 | 0.51 | | n/a | Niger | n/a | n/a | n/a | |
| 67 | Honduras | 4.40 | 56.69 | 0.50 | | n/a | Sudan | n/a | n/a | n/a | |
| 68 | Cabo Verde | 4.38 | 56.41 | 0.49 | | n/a | Togo | n/a | n/a | n/a | |
| 69 | Nigeria | 4.35 | 55.83 | 0.48 | ● | n/a | Uzbekistan | n/a | n/a | n/a | |
| 70 | Zambia | 4.34 | 55.71 | 0.48 | | | | | | | |
| 71 | Burkina Faso | 4.30 | 54.99 | 0.47 | ● | | | | | | |
| 72 | Kazakhstan | 4.26 | 54.37 | 0.46 | | | | | | | |

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015

NOTE: ● indicates a strength; ○ a weakness

7.1.4 ICTs and organizational model creation

Average answer to the survey question: In your country, to what extent do ICTs enable new organizational models (e.g. virtual teams, remote working, telecommuting) within businesses? [1 = not at all; 7 = to a great extent] | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Finland | 5.78 | 79.66 | 1.00 | ● | 73 | Hungary | 4.06 | 51.02 | 0.45 | |
| 2 | Estonia | 5.71 | 78.43 | 0.99 | ● | 74 | Brazil | 4.05 | 50.82 | 0.45 | |
| 3 | Norway | 5.50 | 75.08 | 0.98 | ● | 75 | Guyana | 4.04 | 50.68 | 0.44 | |
| 4 | Malaysia | 5.49 | 74.87 | 0.98 | ● | 76 | Russian Federation | 4.02 | 50.33 | 0.43 | |
| 5 | United Arab Emirates | 5.49 | 74.82 | 0.97 | ● | 77 | Cabo Verde | 3.98 | 49.71 | 0.42 | |
| 6 | Netherlands | 5.47 | 74.53 | 0.96 | ● | 78 | Zambia | 3.95 | 49.18 | 0.42 | |
| 7 | Qatar | 5.47 | 74.43 | 0.95 | ● | 79 | Cameroon | 3.95 | 49.15 | 0.41 | |
| 8 | United Kingdom | 5.46 | 74.32 | 0.95 | | 80 | Gambia | 3.94 | 49.02 | 0.40 | |
| 9 | United States of America | 5.44 | 74.04 | 0.94 | | 81 | Tajikistan | 3.93 | 48.91 | 0.39 | |
| 10 | Sweden | 5.40 | 73.40 | 0.93 | | 82 | Montenegro | 3.93 | 48.88 | 0.39 | |
| 11 | Singapore | 5.33 | 72.23 | 0.92 | | 83 | Côte d'Ivoire | 3.92 | 48.63 | 0.38 | |
| 12 | Canada | 5.25 | 70.80 | 0.92 | | 84 | Romania | 3.91 | 48.46 | 0.37 | |
| 13 | Ireland | 5.22 | 70.41 | 0.91 | | 85 | Nigeria | 3.89 | 48.21 | 0.36 | |
| 14 | Iceland | 5.17 | 69.56 | 0.90 | | 86 | India | 3.89 | 48.10 | 0.36 | |
| 15 | New Zealand | 5.17 | 69.48 | 0.89 | | 87 | Paraguay | 3.88 | 48.06 | 0.35 | |
| 16 | Luxembourg | 5.16 | 69.33 | 0.89 | | 88 | Bulgaria | 3.88 | 48.01 | 0.34 | |
| 17 | Australia | 5.16 | 69.27 | 0.88 | | 89 | Poland | 3.86 | 47.71 | 0.33 | |
| 18 | Portugal | 5.12 | 68.63 | 0.87 | | 90 | Namibia | 3.86 | 47.61 | 0.33 | |
| 19 | Korea, Rep. | 5.06 | 67.72 | 0.86 | | 91 | Trinidad and Tobago | 3.84 | 47.37 | 0.32 | |
| 20 | Hong Kong (China) | 5.06 | 67.59 | 0.86 | | 92 | Bolivia, Plurinational St. | 3.83 | 47.16 | 0.31 | |
| 21 | Germany | 4.99 | 66.55 | 0.85 | | 93 | Egypt | 3.83 | 47.09 | 0.30 | |
| 22 | Lithuania | 4.98 | 66.35 | 0.84 | | 94 | Argentina | 3.82 | 47.08 | 0.30 | |
| 23 | Belgium | 4.97 | 66.16 | 0.83 | | 95 | Madagascar | 3.82 | 46.97 | 0.29 | |
| 24 | Saudi Arabia | 4.85 | 64.09 | 0.83 | ● | 96 | Uganda | 3.78 | 46.25 | 0.28 | |
| 25 | Switzerland | 4.84 | 64.02 | 0.82 | | 97 | Morocco | 3.67 | 44.55 | 0.27 | |
| 26 | Azerbaijan | 4.75 | 62.51 | 0.81 | ● | 98 | Ukraine | 3.66 | 44.40 | 0.27 | |
| 27 | Israel | 4.75 | 62.44 | 0.80 | | 99 | Tanzania, United Rep. | 3.65 | 44.17 | 0.26 | |
| 28 | Guatemala | 4.73 | 62.22 | 0.80 | ● | 100 | Mongolia | 3.64 | 43.97 | 0.25 | |
| 29 | Jordan | 4.72 | 62.01 | 0.79 | ● | 101 | Pakistan | 3.60 | 43.27 | 0.24 | |
| 30 | Bahrain | 4.69 | 61.55 | 0.78 | | 102 | Tunisia | 3.59 | 43.22 | 0.23 | |
| 31 | Denmark | 4.69 | 61.54 | 0.77 | | 103 | Moldova, Rep. | 3.59 | 43.14 | 0.23 | ○ |
| 32 | China | 4.68 | 61.41 | 0.77 | | 104 | Georgia | 3.58 | 43.06 | 0.22 | |
| 33 | Indonesia | 4.68 | 61.31 | 0.76 | ● | 105 | Seychelles | 3.58 | 42.93 | 0.21 | ○ |
| 34 | Spain | 4.66 | 60.95 | 0.75 | | 106 | Serbia | 3.56 | 42.61 | 0.20 | ○ |
| 35 | Latvia | 4.65 | 60.79 | 0.74 | | 107 | Bangladesh | 3.55 | 42.54 | 0.20 | |
| 36 | Costa Rica | 4.65 | 60.78 | 0.73 | | 108 | Iran, Islamic Rep. | 3.55 | 42.49 | 0.19 | |
| 37 | Japan | 4.64 | 60.59 | 0.73 | | 109 | Ghana | 3.53 | 42.19 | 0.18 | |
| 38 | Philippines | 4.62 | 60.25 | 0.72 | ● | 110 | Burkina Faso | 3.51 | 41.84 | 0.17 | |
| 39 | Malta | 4.61 | 60.21 | 0.71 | | 111 | Malawi | 3.50 | 41.63 | 0.17 | |
| 40 | Chile | 4.59 | 59.88 | 0.70 | | 112 | Bhutan | 3.49 | 41.44 | 0.16 | |
| 41 | Panama | 4.59 | 59.85 | 0.70 | | 113 | Zimbabwe | 3.45 | 40.87 | 0.15 | |
| 42 | Czech Republic | 4.58 | 59.73 | 0.69 | | 114 | Venezuela, Bolivarian Rep. | 3.45 | 40.86 | 0.14 | |
| 43 | Uruguay | 4.58 | 59.68 | 0.68 | | 115 | Italy | 3.43 | 40.49 | 0.14 | ○ |
| 44 | Armenia | 4.56 | 59.27 | 0.67 | | 116 | Greece | 3.42 | 40.40 | 0.13 | ○ |
| 45 | Rwanda | 4.53 | 58.78 | 0.67 | ● | 117 | Kyrgyzstan | 3.38 | 39.63 | 0.12 | |
| 46 | Austria | 4.51 | 58.51 | 0.66 | | 118 | Kuwait | 3.38 | 39.58 | 0.11 | ○ |
| 47 | Australia | 4.51 | 58.48 | 0.65 | | 119 | Mozambique | 3.36 | 39.38 | 0.11 | |
| 48 | Dominican Republic | 4.48 | 58.00 | 0.64 | ● | 120 | Nepal | 3.34 | 38.96 | 0.10 | |
| 49 | Sri Lanka | 4.47 | 57.79 | 0.64 | ● | 121 | Botswana | 3.33 | 38.77 | 0.09 | ○ |
| 50 | Croatia | 4.47 | 57.77 | 0.63 | | 122 | Nicaragua | 3.30 | 38.32 | 0.08 | |
| 51 | Honduras | 4.46 | 57.68 | 0.62 | ● | 123 | Swaziland | 3.27 | 37.84 | 0.08 | ○ |
| 52 | Colombia | 4.45 | 57.57 | 0.61 | | 124 | Ethiopia | 3.16 | 36.06 | 0.07 | |
| 53 | Mauritius | 4.41 | 56.86 | 0.61 | | 125 | Algeria | 3.11 | 35.24 | 0.06 | |
| 54 | Slovenia | 4.40 | 56.66 | 0.60 | | 126 | Albania | 3.05 | 34.22 | 0.05 | ○ |
| 55 | Kenya | 4.38 | 56.33 | 0.59 | | 127 | Lesotho | 2.97 | 32.83 | 0.05 | ○ |
| 56 | Turkey | 4.37 | 56.22 | 0.58 | | 128 | Yemen | 2.92 | 32.07 | 0.04 | |
| 57 | South Africa | 4.35 | 55.84 | 0.58 | | 129 | Myanmar | 2.89 | 31.54 | 0.03 | |
| 58 | Cambodia | 4.31 | 55.18 | 0.57 | ● | 130 | Lebanon | 2.86 | 31.08 | 0.02 | ○ |
| 59 | El Salvador | 4.30 | 55.00 | 0.56 | | 131 | Guinea | 2.71 | 28.57 | 0.02 | ○ |
| 60 | TFYR of Macedonia | 4.30 | 54.95 | 0.55 | | 132 | Angola | 2.65 | 27.58 | 0.01 | ○ |
| 61 | Mexico | 4.28 | 54.73 | 0.55 | | 133 | Burundi | 2.43 | 23.90 | 0.00 | ○ |
| 62 | Senegal | 4.20 | 53.29 | 0.54 | ● | n/a | Belarus | n/a | n/a | n/a | |
| 63 | Kazakhstan | 4.17 | 52.85 | 0.53 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 64 | Cyprus | 4.17 | 52.75 | 0.52 | | n/a | Ecuador | n/a | n/a | n/a | |
| 65 | Jamaica | 4.17 | 52.75 | 0.52 | | n/a | Fiji | n/a | n/a | n/a | |
| 66 | Thailand | 4.16 | 52.69 | 0.51 | | n/a | Niger | n/a | n/a | n/a | |
| 67 | Mali | 4.14 | 52.39 | 0.50 | | n/a | Sudan | n/a | n/a | n/a | |
| 68 | Barbados | 4.14 | 52.34 | 0.49 | | n/a | Togo | n/a | n/a | n/a | |
| 69 | Viet Nam | 4.13 | 52.18 | 0.48 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 70 | Oman | 4.13 | 52.13 | 0.48 | | | | | | | |
| 71 | Peru | 4.13 | 52.10 | 0.47 | | | | | | | |
| 72 | Slovakia | 4.09 | 51.45 | 0.46 | | | | | | | |

SOURCE: World Economic Forum, *Executive Opinion Survey 2014–2015*

NOTE: ● indicates a strength; ○ a weakness

7.2.1

Cultural and creative services exports

Cultural and creative services exports (% of total trade) | 2012

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|-------|---------------|--------------|---|------|-------------------------------|-------|---------------|--------------|---|
| 1 | Luxembourg | 5.66 | 100.00 | 0.99 | ● | 73 | Bosnia and Herzegovina (2013) | 0.01 | 0.80 | 0.16 | ○ |
| 1 | Serbia | 1.74 | 100.00 | 0.99 | ● | 74 | Mauritius (2013) | 0.01 | 0.80 | 0.15 | ○ |
| 3 | United Kingdom | 1.55 | 89.31 | 0.98 | ● | 75 | Costa Rica | 0.01 | 0.64 | 0.14 | ○ |
| 4 | Hungary | 1.53 | 87.80 | 0.97 | ● | 76 | Guatemala (2013) | 0.01 | 0.62 | 0.13 | ○ |
| 5 | Belgium | 1.38 | 79.42 | 0.95 | ● | 77 | Pakistan | 0.01 | 0.61 | 0.12 | ○ |
| 6 | Croatia | 1.37 | 78.57 | 0.94 | ● | 78 | Rwanda | 0.01 | 0.60 | 0.10 | ○ |
| 7 | Montenegro (2013) | 1.34 | 77.01 | 0.93 | ● | 79 | Venezuela, Bolivarian Rep. | 0.01 | 0.52 | 0.09 | ○ |
| 8 | Lebanon | 1.27 | 72.73 | 0.92 | ● | 80 | Mali | 0.01 | 0.46 | 0.08 | ○ |
| 9 | Latvia | 1.23 | 70.90 | 0.91 | ● | 81 | Kazakhstan (2013) | 0.01 | 0.40 | 0.07 | ○ |
| 10 | United States of America | 1.19 | 68.60 | 0.90 | ● | 82 | Ethiopia | 0.01 | 0.31 | 0.06 | ○ |
| 11 | Cameroon | 1.16 | 66.71 | 0.88 | ● | 83 | Uganda | 0.01 | 0.29 | 0.05 | ○ |
| 12 | France | 1.06 | 60.66 | 0.87 | ● | 84 | Senegal | 0.00 | 0.17 | 0.03 | ○ |
| 13 | Slovenia | 0.99 | 56.98 | 0.86 | ● | 85 | Paraguay (2013) | 0.00 | 0.17 | 0.02 | ○ |
| 14 | Poland | 0.98 | 56.06 | 0.85 | ● | 86 | Bangladesh | 0.00 | 0.12 | 0.01 | ○ |
| 15 | Argentina (2013) | 0.93 | 53.30 | 0.84 | ● | 87 | Kenya | 0.00 | 0.00 | 0.00 | ○ |
| 16 | Israel | 0.91 | 52.48 | 0.83 | ● | n/a | Angola | n/a | n/a | n/a | |
| 17 | New Zealand (2004) | 0.86 | 49.28 | 0.81 | ● | n/a | Bahrain | n/a | n/a | n/a | |
| 18 | Albania (2013) | 0.85 | 48.73 | 0.80 | ● | n/a | Barbados | n/a | n/a | n/a | |
| 19 | Russian Federation | 0.84 | 48.32 | 0.79 | ● | n/a | Bhutan | n/a | n/a | n/a | |
| 20 | Estonia | 0.84 | 48.11 | 0.78 | ● | n/a | Botswana | n/a | n/a | n/a | |
| 21 | Spain | 0.84 | 48.01 | 0.77 | ● | n/a | Burkina Faso | n/a | n/a | n/a | |
| 22 | Cyprus | 0.82 | 47.22 | 0.76 | ● | n/a | Burundi | n/a | n/a | n/a | |
| 23 | Moldova, Rep. (2013) | 0.82 | 46.92 | 0.74 | ● | n/a | Cambodia | n/a | n/a | n/a | |
| 24 | Sweden | 0.81 | 46.63 | 0.73 | ● | n/a | Chile | n/a | n/a | n/a | |
| 25 | Bulgaria | 0.78 | 44.71 | 0.72 | ● | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 26 | Austria | 0.73 | 41.87 | 0.71 | ● | n/a | Dominican Republic | n/a | n/a | n/a | |
| 27 | Romania | 0.72 | 41.42 | 0.70 | ● | n/a | Egypt | n/a | n/a | n/a | |
| 28 | Canada | 0.72 | 41.33 | 0.69 | ● | n/a | El Salvador | n/a | n/a | n/a | |
| 29 | Denmark | 0.71 | 40.92 | 0.67 | ● | n/a | Gambia | n/a | n/a | n/a | |
| 30 | TFYR of Macedonia | 0.66 | 37.76 | 0.66 | ● | n/a | Ghana | n/a | n/a | n/a | |
| 31 | Czech Republic | 0.63 | 36.39 | 0.65 | ● | n/a | Guyana | n/a | n/a | n/a | |
| 32 | Morocco | 0.58 | 33.35 | 0.64 | ● | n/a | Honduras | n/a | n/a | n/a | |
| 33 | Portugal | 0.56 | 32.25 | 0.63 | ● | n/a | Indonesia | n/a | n/a | n/a | |
| 34 | Norway | 0.56 | 31.96 | 0.62 | ● | n/a | Iran, Islamic Rep. | n/a | n/a | n/a | |
| 35 | Turkey | 0.54 | 31.20 | 0.60 | ● | n/a | Jamaica | n/a | n/a | n/a | |
| 36 | Netherlands | 0.51 | 29.45 | 0.59 | ○ | n/a | Jordan | n/a | n/a | n/a | |
| 37 | Ecuador (2013) | 0.43 | 24.84 | 0.58 | ○ | n/a | Kuwait | n/a | n/a | n/a | |
| 38 | Slovakia | 0.43 | 24.46 | 0.57 | ○ | n/a | Kyrgyzstan | n/a | n/a | n/a | |
| 39 | Germany | 0.39 | 22.56 | 0.56 | ○ | n/a | Lesotho | n/a | n/a | n/a | |
| 40 | Colombia (2013) | 0.36 | 20.51 | 0.55 | ○ | n/a | Madagascar | n/a | n/a | n/a | |
| 41 | Korea, Rep. (2013) | 0.33 | 18.97 | 0.53 | ○ | n/a | Malaysia | n/a | n/a | n/a | |
| 42 | Italy | 0.30 | 17.44 | 0.52 | ○ | n/a | Myanmar | n/a | n/a | n/a | |
| 43 | Finland | 0.29 | 16.60 | 0.51 | ○ | n/a | Namibia | n/a | n/a | n/a | |
| 44 | Lithuania | 0.29 | 16.44 | 0.50 | ○ | n/a | Nepal | n/a | n/a | n/a | |
| 45 | Brazil (2013) | 0.28 | 16.26 | 0.49 | ○ | n/a | Nicaragua | n/a | n/a | n/a | |
| 46 | Iceland | 0.26 | 15.10 | 0.48 | ○ | n/a | Niger | n/a | n/a | n/a | |
| 47 | Armenia (2013) | 0.26 | 14.94 | 0.47 | ○ | n/a | Nigeria | n/a | n/a | n/a | |
| 48 | Bolivia, Plurinational St. | 0.23 | 13.41 | 0.45 | ○ | n/a | Oman | n/a | n/a | n/a | |
| 49 | China | 0.23 | 13.12 | 0.44 | ○ | n/a | Qatar | n/a | n/a | n/a | |
| 50 | Malta | 0.22 | 12.54 | 0.43 | ○ | n/a | Saudi Arabia | n/a | n/a | n/a | |
| 51 | Ireland | 0.21 | 11.92 | 0.42 | ○ | n/a | Seychelles | n/a | n/a | n/a | |
| 52 | Algeria | 0.20 | 11.52 | 0.41 | ○ | n/a | Singapore | n/a | n/a | n/a | |
| 53 | Guinea | 0.19 | 10.95 | 0.40 | ○ | n/a | South Africa | n/a | n/a | n/a | |
| 54 | Hong Kong (China) | 0.18 | 10.17 | 0.38 | ○ | n/a | Sri Lanka | n/a | n/a | n/a | |
| 55 | Mozambique | 0.13 | 7.39 | 0.37 | ○ | n/a | Sudan | n/a | n/a | n/a | |
| 56 | Peru | 0.11 | 6.48 | 0.36 | ○ | n/a | Switzerland | n/a | n/a | n/a | |
| 57 | Panama (2013) | 0.11 | 6.28 | 0.35 | ○ | n/a | Tajikistan | n/a | n/a | n/a | |
| 58 | Georgia (2013) | 0.10 | 5.57 | 0.34 | ○ | n/a | Tanzania, United Rep. | n/a | n/a | n/a | |
| 59 | India | 0.10 | 5.47 | 0.33 | ○ | n/a | Thailand | n/a | n/a | n/a | |
| 60 | Philippines (2013) | 0.09 | 5.36 | 0.31 | ○ | n/a | Togo | n/a | n/a | n/a | |
| 61 | Australia (2013) | 0.08 | 4.61 | 0.30 | ○ | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 62 | Swaziland (2010) | 0.07 | 4.21 | 0.29 | ○ | n/a | Tunisia | n/a | n/a | n/a | |
| 63 | Greece | 0.05 | 3.07 | 0.28 | ○ | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 64 | Mongolia (2007) | 0.05 | 2.67 | 0.27 | ○ | n/a | Uruguay | n/a | n/a | n/a | |
| 65 | Ukraine (2013) | 0.05 | 2.61 | 0.26 | ○ | n/a | Uzbekistan | n/a | n/a | n/a | |
| 66 | Cabo Verde (2013) | 0.04 | 2.28 | 0.24 | ○ | n/a | Viet Nam | n/a | n/a | n/a | |
| 67 | Malawi | 0.04 | 2.26 | 0.23 | ○ | n/a | Yemen | n/a | n/a | n/a | |
| 68 | Fiji | 0.04 | 2.10 | 0.22 | ○ | n/a | Zambia | n/a | n/a | n/a | |
| 69 | Azerbaijan (2013) | 0.02 | 1.33 | 0.21 | ○ | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Mexico (2013) | 0.02 | 1.13 | 0.20 | ○ | | | | | | |
| 71 | Japan | 0.01 | 0.83 | 0.19 | ○ | | | | | | |
| 72 | Belarus (2013) | 0.01 | 0.81 | 0.17 | ○ | | | | | | |

SOURCE: World Trade Organization, *Trade in Commercial Services* database, based on the International Monetary Fund *Balance of Payments* database
NOTE: ● indicates a strength; ○ a weakness

7.2.2

National feature films produced

Number of national feature films produced (per million population 15–69 years old) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|-----------------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Azerbaijan | 26.11 | 100.00 | 0.95 | ● | 73 | Venezuela, Bolivarian Rep. | 1.02 | 3.91 | 0.31 | |
| 1 | Bahrain | 34.78 | 100.00 | 0.95 | ● | 74 | Sri Lanka | 1.01 | 3.88 | 0.30 | |
| 1 | Bhutan (2011) | 58.51 | 100.00 | 0.95 | ● | 75 | Tunisia | 1.01 | 3.87 | 0.29 | |
| 1 | Iceland | 30.10 | 100.00 | 0.95 | ● | 76 | Thailand (2010) | 0.99 | 3.78 | 0.28 | |
| 1 | Luxembourg (2011) | 42.88 | 100.00 | 0.95 | ● | 77 | Morocco | 0.97 | 3.71 | 0.27 | |
| 1 | Mauritius (2011) | 32.65 | 100.00 | 0.95 | ● | 78 | Dominican Republic (2009) | 0.94 | 3.61 | 0.26 | |
| 7 | Guyana (2011) | 22.86 | 87.53 | 0.94 | ● | 79 | Brazil | 0.91 | 3.47 | 0.25 | |
| 8 | Estonia | 19.63 | 75.18 | 0.93 | ● | 80 | Poland | 0.91 | 3.47 | 0.24 | ○ |
| 9 | Switzerland | 17.51 | 67.08 | 0.92 | | 81 | Philippines | 0.85 | 3.25 | 0.23 | |
| 10 | Denmark | 17.40 | 66.64 | 0.91 | | 82 | Guinea (2010) | 0.83 | 3.18 | 0.22 | ● |
| 11 | Slovenia | 15.15 | 58.00 | 0.90 | | 83 | Colombia | 0.79 | 3.01 | 0.21 | |
| 12 | Armenia | 13.09 | 50.13 | 0.89 | ● | 84 | Niger (2011) | 0.75 | 2.85 | 0.20 | |
| 13 | Finland | 12.73 | 48.76 | 0.88 | | 85 | Myanmar (2009) | 0.74 | 2.85 | 0.19 | |
| 14 | Nigeria (2011) | 11.16 | 42.74 | 0.88 | ● | 86 | South Africa | 0.71 | 2.70 | 0.18 | ○ |
| 15 | Israel | 10.97 | 42.02 | 0.87 | | 87 | Russian Federation | 0.68 | 2.62 | 0.17 | ○ |
| 16 | Mongolia | 10.51 | 40.25 | 0.86 | ● | 88 | Egypt | 0.61 | 2.35 | 0.16 | |
| 17 | Ireland | 10.44 | 40.00 | 0.85 | | 89 | China | 0.60 | 2.31 | 0.15 | ○ |
| 18 | Sweden | 9.11 | 34.90 | 0.84 | | 90 | Peru | 0.59 | 2.26 | 0.14 | ○ |
| 19 | Belgium | 8.97 | 34.36 | 0.83 | | 91 | Belarus | 0.57 | 2.19 | 0.13 | ○ |
| 20 | Greece | 8.75 | 33.52 | 0.82 | | 92 | Costa Rica | 0.57 | 2.19 | 0.13 | ○ |
| 21 | Croatia | 8.41 | 32.21 | 0.81 | ● | 93 | Kyrgyzstan | 0.54 | 2.07 | 0.12 | |
| 22 | TFYR of Macedonia | 8.20 | 31.41 | 0.80 | ● | 94 | Bangladesh | 0.51 | 1.97 | 0.11 | |
| 23 | Norway | 8.14 | 31.16 | 0.79 | | 95 | Indonesia (2011) | 0.51 | 1.96 | 0.10 | |
| 24 | New Zealand | 7.89 | 30.20 | 0.78 | | 96 | Honduras (2012) | 0.41 | 1.57 | 0.09 | ○ |
| 25 | Austria | 7.48 | 28.64 | 0.77 | | 97 | Panama (2010) | 0.41 | 1.57 | 0.08 | ○ |
| 26 | Hong Kong (China) | 7.43 | 28.45 | 0.76 | | 98 | Senegal | 0.39 | 1.49 | 0.07 | ○ |
| 27 | Spain | 6.87 | 26.29 | 0.75 | | 99 | Ukraine | 0.36 | 1.37 | 0.06 | ○ |
| 28 | Latvia | 6.80 | 26.04 | 0.74 | | 100 | Nicaragua (2009) | 0.28 | 1.08 | 0.05 | ○ |
| 29 | Lithuania | 6.76 | 25.87 | 0.73 | | 101 | El Salvador (2008) | 0.26 | 1.00 | 0.04 | ○ |
| 30 | Japan | 6.73 | 25.77 | 0.72 | | 102 | Pakistan (2009) | 0.26 | 0.99 | 0.03 | ○ |
| 31 | Malta | 6.24 | 23.91 | 0.71 | | 103 | Mali (2011) | 0.14 | 0.52 | 0.02 | ○ |
| 32 | France | 6.08 | 23.28 | 0.70 | | 104 | Cabo Verde | 0.00 | 0.00 | 0.00 | ○ |
| 33 | Argentina | 5.94 | 22.74 | 0.69 | | 104 | Oman (2009) | 0.00 | 0.00 | 0.00 | ○ |
| 34 | Netherlands | 5.66 | 21.69 | 0.68 | | n/a | Albania | n/a | n/a | n/a | |
| 35 | Czech Republic | 5.65 | 21.63 | 0.67 | | n/a | Algeria | n/a | n/a | n/a | |
| 36 | Korea, Rep. | 5.47 | 20.93 | 0.66 | | n/a | Angola | n/a | n/a | n/a | |
| 37 | United Kingdom | 5.43 | 20.80 | 0.65 | ○ | n/a | Barbados | n/a | n/a | n/a | |
| 38 | Slovakia | 5.29 | 20.25 | 0.64 | | n/a | Botswana | n/a | n/a | n/a | |
| 39 | Uruguay | 5.18 | 19.82 | 0.63 | | n/a | Burundi | n/a | n/a | n/a | |
| 40 | Hungary | 4.38 | 16.78 | 0.63 | | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 41 | Lebanon | 4.24 | 16.23 | 0.62 | | n/a | Ecuador | n/a | n/a | n/a | |
| 42 | Bolivia, Plurinational St. (2009) | 4.13 | 15.80 | 0.61 | ● | n/a | Ethiopia | n/a | n/a | n/a | |
| 43 | Bosnia and Herzegovina | 3.92 | 15.01 | 0.60 | | n/a | Gambia | n/a | n/a | n/a | |
| 44 | Italy | 3.89 | 14.89 | 0.59 | | n/a | Ghana | n/a | n/a | n/a | |
| 45 | Germany | 3.80 | 14.56 | 0.58 | | n/a | Jamaica | n/a | n/a | n/a | |
| 46 | Canada | 3.61 | 13.82 | 0.57 | ○ | n/a | Jordan | n/a | n/a | n/a | |
| 47 | Malaysia | 3.38 | 12.93 | 0.56 | | n/a | Kenya | n/a | n/a | n/a | |
| 48 | United States of America | 3.24 | 12.42 | 0.55 | | n/a | Kuwait | n/a | n/a | n/a | |
| 49 | Uzbekistan | 3.13 | 12.00 | 0.54 | ● | n/a | Lesotho | n/a | n/a | n/a | |
| 50 | Singapore | 3.10 | 11.86 | 0.53 | | n/a | Madagascar | n/a | n/a | n/a | |
| 51 | Kazakhstan | 3.05 | 11.67 | 0.52 | | n/a | Malawi | n/a | n/a | n/a | |
| 52 | Georgia | 2.90 | 11.10 | 0.51 | | n/a | Montenegro | n/a | n/a | n/a | |
| 53 | Bulgaria | 2.83 | 10.85 | 0.50 | | n/a | Mozambique | n/a | n/a | n/a | |
| 54 | Serbia | 2.56 | 9.80 | 0.49 | | n/a | Namibia | n/a | n/a | n/a | |
| 55 | Chile | 2.43 | 9.32 | 0.48 | | n/a | Nepal | n/a | n/a | n/a | |
| 56 | Romania | 2.30 | 8.81 | 0.47 | | n/a | Qatar | n/a | n/a | n/a | |
| 57 | Cambodia | 2.02 | 7.75 | 0.46 | | n/a | Rwanda | n/a | n/a | n/a | |
| 58 | Cameroon (2009) | 1.83 | 7.00 | 0.45 | ● | n/a | Saudi Arabia | n/a | n/a | n/a | |
| 59 | Burkina Faso | 1.78 | 6.82 | 0.44 | | n/a | Seychelles | n/a | n/a | n/a | |
| 60 | Tajikistan | 1.77 | 6.78 | 0.43 | | n/a | Sudan | n/a | n/a | n/a | |
| 61 | Fiji (2009) | 1.72 | 6.60 | 0.42 | | n/a | Swaziland | n/a | n/a | n/a | |
| 62 | Portugal | 1.71 | 6.55 | 0.41 | ○ | n/a | Tanzania, United Rep. | n/a | n/a | n/a | |
| 63 | Turkey | 1.63 | 6.25 | 0.40 | | n/a | Togo | n/a | n/a | n/a | |
| 64 | Australia | 1.56 | 5.99 | 0.39 | ○ | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 65 | India (2012) | 1.55 | 5.92 | 0.38 | | n/a | Uganda | n/a | n/a | n/a | |
| 66 | Mexico | 1.53 | 5.86 | 0.38 | | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 67 | Iran, Islamic Rep. | 1.49 | 5.72 | 0.37 | | n/a | Yemen | n/a | n/a | n/a | |
| 68 | Viet Nam | 1.34 | 5.13 | 0.36 | | n/a | Zambia | n/a | n/a | n/a | |
| 69 | Guatemala (2010) | 1.26 | 4.81 | 0.35 | | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Paraguay (2009) | 1.25 | 4.81 | 0.34 | | | | | | | |
| 71 | Cyprus | 1.17 | 4.48 | 0.33 | | | | | | | |
| 72 | Moldova, Rep. | 1.14 | 4.35 | 0.32 | | | | | | | |

SOURCE: UNESCO Institute for Statistics, *UIS online database*; United Nations, *World Population Prospects: The 2012 Revision* (population data)

NOTE: ● indicates a strength; ○ a weakness

7.2.3

Global entertainment and media output

Global entertainment and media output (per thousand population 15–69 years old) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank |
|------|----------------------------|-------|---------------|--------------|---|------|-----------------------|-------|---------------|--------------|
| 1 | Norway | 3.38 | 100.00 | 1.00 | ● | n/a | Burundi | n/a | n/a | n/a |
| 2 | Switzerland | 2.67 | 78.97 | 0.98 | ● | n/a | Cabo Verde | n/a | n/a | n/a |
| 3 | Australia | 2.31 | 68.21 | 0.97 | ● | n/a | Cambodia | n/a | n/a | n/a |
| 4 | United States of America | 2.29 | 67.71 | 0.95 | | n/a | Cameroon | n/a | n/a | n/a |
| 5 | Sweden | 2.22 | 65.54 | 0.93 | | n/a | Costa Rica | n/a | n/a | n/a |
| 6 | Japan | 2.22 | 65.46 | 0.91 | | n/a | Côte d'Ivoire | n/a | n/a | n/a |
| 7 | Denmark | 2.09 | 61.53 | 0.90 | | n/a | Croatia | n/a | n/a | n/a |
| 8 | United Kingdom | 2.00 | 58.92 | 0.88 | | n/a | Cyprus | n/a | n/a | n/a |
| 9 | Austria | 1.88 | 55.41 | 0.86 | | n/a | Dominican Republic | n/a | n/a | n/a |
| 10 | Finland | 1.85 | 54.48 | 0.84 | | n/a | Ecuador | n/a | n/a | n/a |
| 11 | Germany | 1.70 | 50.06 | 0.83 | | n/a | El Salvador | n/a | n/a | n/a |
| 12 | Netherlands | 1.70 | 49.90 | 0.81 | | n/a | Estonia | n/a | n/a | n/a |
| 13 | Canada | 1.68 | 49.51 | 0.79 | | n/a | Ethiopia | n/a | n/a | n/a |
| 14 | France | 1.61 | 47.23 | 0.78 | | n/a | Fiji | n/a | n/a | n/a |
| 15 | Belgium | 1.57 | 46.16 | 0.76 | | n/a | Gambia | n/a | n/a | n/a |
| 16 | New Zealand | 1.52 | 44.59 | 0.74 | | n/a | Georgia | n/a | n/a | n/a |
| 17 | Ireland | 1.46 | 42.96 | 0.72 | | n/a | Ghana | n/a | n/a | n/a |
| 18 | Hong Kong (China) | 1.42 | 41.61 | 0.71 | | n/a | Guatemala | n/a | n/a | n/a |
| 19 | Korea, Rep. | 1.26 | 36.84 | 0.69 | | n/a | Guinea | n/a | n/a | n/a |
| 20 | Singapore | 1.26 | 36.72 | 0.67 | | n/a | Guyana | n/a | n/a | n/a |
| 21 | Qatar | 1.07 | 31.14 | 0.66 | | n/a | Honduras | n/a | n/a | n/a |
| 22 | Italy | 1.02 | 29.76 | 0.64 | | n/a | Iceland | n/a | n/a | n/a |
| 23 | Israel | 0.96 | 27.77 | 0.62 | | n/a | Iran, Islamic Rep. | n/a | n/a | n/a |
| 24 | Portugal | 0.91 | 26.30 | 0.60 | | n/a | Jamaica | n/a | n/a | n/a |
| 25 | Spain | 0.79 | 22.93 | 0.59 | | n/a | Kazakhstan | n/a | n/a | n/a |
| 26 | Kuwait | 0.69 | 19.85 | 0.57 | | n/a | Kyrgyzstan | n/a | n/a | n/a |
| 27 | Czech Republic | 0.59 | 16.97 | 0.55 | | n/a | Latvia | n/a | n/a | n/a |
| 28 | Greece | 0.55 | 15.66 | 0.53 | | n/a | Lesotho | n/a | n/a | n/a |
| 29 | Argentina | 0.53 | 15.04 | 0.52 | | n/a | Lithuania | n/a | n/a | n/a |
| 30 | United Arab Emirates | 0.50 | 14.12 | 0.50 | | n/a | Luxembourg | n/a | n/a | n/a |
| 31 | Hungary | 0.43 | 11.99 | 0.48 | | n/a | Madagascar | n/a | n/a | n/a |
| 32 | Malaysia | 0.38 | 10.66 | 0.47 | | n/a | Malawi | n/a | n/a | n/a |
| 33 | Saudi Arabia | 0.37 | 10.22 | 0.45 | | n/a | Mali | n/a | n/a | n/a |
| 34 | Poland | 0.35 | 9.73 | 0.43 | | n/a | Malta | n/a | n/a | n/a |
| 35 | South Africa | 0.35 | 9.64 | 0.41 | | n/a | Mauritius | n/a | n/a | n/a |
| 36 | Brazil | 0.34 | 9.35 | 0.40 | | n/a | Moldova, Rep. | n/a | n/a | n/a |
| 37 | Chile | 0.31 | 8.65 | 0.38 | ○ | n/a | Mongolia | n/a | n/a | n/a |
| 38 | Bahrain | 0.31 | 8.54 | 0.36 | | n/a | Montenegro | n/a | n/a | n/a |
| 39 | Mexico | 0.29 | 8.02 | 0.34 | | n/a | Mozambique | n/a | n/a | n/a |
| 40 | Oman | 0.29 | 7.82 | 0.33 | | n/a | Myanmar | n/a | n/a | n/a |
| 41 | Russian Federation | 0.26 | 7.09 | 0.31 | ○ | n/a | Namibia | n/a | n/a | n/a |
| 42 | Turkey | 0.22 | 5.94 | 0.29 | | n/a | Nepal | n/a | n/a | n/a |
| 43 | Venezuela, Bolivarian Rep. | 0.22 | 5.92 | 0.28 | | n/a | Nicaragua | n/a | n/a | n/a |
| 44 | Colombia | 0.22 | 5.70 | 0.26 | | n/a | Niger | n/a | n/a | n/a |
| 45 | Thailand | 0.19 | 5.00 | 0.24 | | n/a | Panama | n/a | n/a | n/a |
| 46 | Romania | 0.16 | 4.07 | 0.22 | ○ | n/a | Paraguay | n/a | n/a | n/a |
| 47 | China | 0.13 | 3.01 | 0.21 | | n/a | Peru | n/a | n/a | n/a |
| 48 | Lebanon | 0.12 | 2.93 | 0.19 | | n/a | Rwanda | n/a | n/a | n/a |
| 49 | Philippines | 0.09 | 2.11 | 0.17 | | n/a | Senegal | n/a | n/a | n/a |
| 50 | Indonesia | 0.08 | 1.76 | 0.16 | | n/a | Serbia | n/a | n/a | n/a |
| 51 | Algeria | 0.08 | 1.54 | 0.14 | | n/a | Seychelles | n/a | n/a | n/a |
| 52 | Jordan | 0.07 | 1.39 | 0.12 | ○ | n/a | Slovakia | n/a | n/a | n/a |
| 53 | Kenya | 0.07 | 1.32 | 0.10 | ○ | n/a | Slovenia | n/a | n/a | n/a |
| 54 | Egypt | 0.05 | 0.76 | 0.09 | ○ | n/a | Sri Lanka | n/a | n/a | n/a |
| 55 | Morocco | 0.04 | 0.61 | 0.07 | ○ | n/a | Sudan | n/a | n/a | n/a |
| 56 | Nigeria | 0.04 | 0.35 | 0.05 | | n/a | Swaziland | n/a | n/a | n/a |
| 57 | Viet Nam | 0.03 | 0.24 | 0.03 | ○ | n/a | Tajikistan | n/a | n/a | n/a |
| 58 | India | 0.03 | 0.20 | 0.02 | ○ | n/a | Tanzania, United Rep. | n/a | n/a | n/a |
| 59 | Pakistan | 0.02 | 0.00 | 0.00 | ○ | n/a | TFYR of Macedonia | n/a | n/a | n/a |
| n/a | Albania | n/a | n/a | n/a | | n/a | Togo | n/a | n/a | n/a |
| n/a | Angola | n/a | n/a | n/a | | n/a | Trinidad and Tobago | n/a | n/a | n/a |
| n/a | Armenia | n/a | n/a | n/a | | n/a | Tunisia | n/a | n/a | n/a |
| n/a | Azerbaijan | n/a | n/a | n/a | | n/a | Uganda | n/a | n/a | n/a |
| n/a | Bangladesh | n/a | n/a | n/a | | n/a | Ukraine | n/a | n/a | n/a |
| n/a | Barbados | n/a | n/a | n/a | | n/a | Uruguay | n/a | n/a | n/a |
| n/a | Belarus | n/a | n/a | n/a | | n/a | Uzbekistan | n/a | n/a | n/a |
| n/a | Bhutan | n/a | n/a | n/a | | n/a | Yemen | n/a | n/a | n/a |
| n/a | Bolivia, Plurinational St. | n/a | n/a | n/a | | n/a | Zambia | n/a | n/a | n/a |
| n/a | Bosnia and Herzegovina | n/a | n/a | n/a | | n/a | Zimbabwe | n/a | n/a | n/a |
| n/a | Botswana | n/a | n/a | n/a | | | | | | |
| n/a | Bulgaria | n/a | n/a | n/a | | | | | | |
| n/a | Burkina Faso | n/a | n/a | n/a | | | | | | |

SOURCE: PwC's Global entertainment and media outlook, 2015–2019; United Nations, World Population Prospects: The 2012 Revision (population data)

NOTE: ● indicates a strength; ○ a weakness

7.2.4 Printing and publishing output

Printing and publishing manufactures output (% of manufactures total output) | 2011

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|---------------------------------|-------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Australia (2006) | 6.11 | 100.00 | 0.96 | ● | 73 | Kyrgyzstan (2010) | 1.02 | 14.78 | 0.26 | |
| 1 | Greece (2007) | 7.12 | 100.00 | 0.96 | ● | 74 | Lithuania | 0.94 | 13.47 | 0.25 | ○ |
| 1 | Hong Kong (China) (2004) | 18.25 | 100.00 | 0.96 | ● | 75 | Indonesia | 0.92 | 13.07 | 0.24 | |
| 1 | Iceland (2006) | 6.36 | 100.00 | 0.96 | ● | 76 | Singapore | 0.90 | 12.69 | 0.23 | ○ |
| 1 | Malta (2009) | 36.18 | 100.00 | 0.96 | ● | 77 | Brazil | 0.88 | 12.47 | 0.22 | ○ |
| 6 | Panama (2005) | 5.29 | 86.29 | 0.95 | ● | 78 | Malaysia (2010) | 0.87 | 12.22 | 0.21 | ○ |
| 7 | Lebanon (2007) | 4.18 | 67.79 | 0.94 | ● | 79 | Hungary | 0.84 | 11.80 | 0.20 | ○ |
| 8 | Georgia | 3.52 | 56.61 | 0.93 | ● | 80 | Morocco | 0.84 | 11.68 | 0.19 | ○ |
| 9 | Tanzania, United Rep. (2008) | 3.41 | 54.87 | 0.92 | ● | 81 | Burundi (2010) | 0.78 | 10.78 | 0.18 | |
| 10 | Mauritius | 3.22 | 51.58 | 0.91 | ● | 82 | Tunisia (2007) | 0.72 | 9.67 | 0.16 | ○ |
| 11 | Cyprus | 3.12 | 49.99 | 0.90 | ● | 83 | Azerbaijan | 0.71 | 9.59 | 0.15 | |
| 12 | Mongolia | 2.94 | 46.96 | 0.89 | ● | 84 | India (2010) | 0.68 | 9.03 | 0.14 | |
| 13 | Ethiopia (2009) | 2.72 | 43.30 | 0.88 | ● | 85 | Kuwait | 0.65 | 8.53 | 0.13 | |
| 14 | Costa Rica | 2.69 | 42.68 | 0.87 | ● | 86 | Egypt (2010) | 0.64 | 8.46 | 0.12 | ○ |
| 15 | Peru | 2.66 | 42.23 | 0.86 | ● | 87 | Slovakia | 0.64 | 8.38 | 0.11 | ○ |
| 16 | TFYR of Macedonia | 2.62 | 41.53 | 0.85 | ● | 88 | Mexico | 0.57 | 7.22 | 0.10 | ○ |
| 17 | Colombia | 2.58 | 40.93 | 0.84 | ● | 89 | Tajikistan (2008) | 0.56 | 7.04 | 0.09 | |
| 18 | Israel (2010) | 2.55 | 40.36 | 0.82 | ● | 90 | Korea, Rep. (2010) | 0.53 | 6.47 | 0.08 | ○ |
| 19 | South Africa (2010) | 2.44 | 38.50 | 0.81 | ● | 91 | China | 0.52 | 6.37 | 0.07 | ○ |
| 20 | Moldova, Rep. | 2.38 | 37.49 | 0.80 | ● | 92 | Oman (2010) | 0.42 | 4.63 | 0.06 | ○ |
| 21 | Latvia | 2.33 | 36.74 | 0.79 | | 93 | Canada | 0.40 | 4.37 | 0.05 | ○ |
| 22 | Saudi Arabia (2009) | 2.31 | 36.45 | 0.78 | | 94 | Yemen (2009) | 0.37 | 3.94 | 0.04 | |
| 23 | Japan (2010) | 2.27 | 35.71 | 0.77 | | 95 | Philippines (2008) | 0.36 | 3.74 | 0.03 | ○ |
| 24 | Fiji (2010) | 2.25 | 35.33 | 0.76 | ● | 96 | Pakistan (2006) | 0.33 | 3.22 | 0.02 | ○ |
| 25 | United Kingdom | 2.23 | 35.03 | 0.75 | | 97 | Iran, Islamic Rep. (2010) | 0.21 | 1.19 | 0.01 | ○ |
| 26 | Estonia | 2.15 | 33.77 | 0.74 | | 98 | Gambia (2004) | 0.14 | 0.00 | 0.00 | ○ |
| 27 | Madagascar (2006) | 2.08 | 32.51 | 0.73 | ● | n/a | Albania | n/a | n/a | n/a | |
| 28 | New Zealand (2010) | 1.98 | 30.90 | 0.72 | | n/a | Angola | n/a | n/a | n/a | |
| 29 | Slovenia | 1.89 | 29.29 | 0.71 | | n/a | Argentina | n/a | n/a | n/a | |
| 30 | United States of America (2008) | 1.88 | 29.24 | 0.70 | | n/a | Barbados | n/a | n/a | n/a | |
| 31 | Sri Lanka (2010) | 1.82 | 28.14 | 0.69 | ● | n/a | Belarus | n/a | n/a | n/a | |
| 32 | Netherlands (2010) | 1.81 | 28.05 | 0.68 | | n/a | Bhutan | n/a | n/a | n/a | |
| 33 | Norway (2010) | 1.81 | 27.95 | 0.67 | | n/a | Bolivia, Plurinational St. | n/a | n/a | n/a | |
| 34 | Kenya | 1.76 | 27.12 | 0.66 | | n/a | Bosnia and Herzegovina | n/a | n/a | n/a | |
| 35 | Malawi (2010) | 1.74 | 26.78 | 0.65 | ● | n/a | Botswana | n/a | n/a | n/a | |
| 36 | Kazakhstan (2007) | 1.69 | 25.93 | 0.64 | | n/a | Burkina Faso | n/a | n/a | n/a | |
| 37 | Switzerland (2010) | 1.67 | 25.64 | 0.63 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 38 | Serbia | 1.67 | 25.61 | 0.62 | | n/a | Cambodia | n/a | n/a | n/a | |
| 39 | Nepal (2008) | 1.65 | 25.39 | 0.61 | ● | n/a | Chile | n/a | n/a | n/a | |
| 40 | Ireland (2010) | 1.60 | 24.55 | 0.60 | | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 41 | Spain | 1.58 | 24.18 | 0.59 | | n/a | Croatia | n/a | n/a | n/a | |
| 42 | Luxembourg (2009) | 1.57 | 23.97 | 0.58 | | n/a | Dominican Republic | n/a | n/a | n/a | |
| 43 | Armenia | 1.55 | 23.71 | 0.57 | | n/a | El Salvador | n/a | n/a | n/a | |
| 44 | Ecuador (2008) | 1.55 | 23.68 | 0.56 | | n/a | Ghana | n/a | n/a | n/a | |
| 45 | Austria | 1.52 | 23.09 | 0.55 | ○ | n/a | Guatemala | n/a | n/a | n/a | |
| 46 | Bangladesh (2006) | 1.50 | 22.84 | 0.54 | ● | n/a | Guinea | n/a | n/a | n/a | |
| 47 | Senegal (2010) | 1.50 | 22.79 | 0.53 | | n/a | Guyana | n/a | n/a | n/a | |
| 48 | Ukraine | 1.49 | 22.61 | 0.52 | | n/a | Honduras | n/a | n/a | n/a | |
| 49 | Jordan | 1.48 | 22.52 | 0.51 | | n/a | Jamaica | n/a | n/a | n/a | |
| 50 | Italy (2010) | 1.48 | 22.46 | 0.49 | | n/a | Lesotho | n/a | n/a | n/a | |
| 51 | Portugal | 1.46 | 22.14 | 0.48 | | n/a | Mali | n/a | n/a | n/a | |
| 52 | Paraguay (2010) | 1.43 | 21.59 | 0.47 | | n/a | Montenegro | n/a | n/a | n/a | |
| 53 | Denmark | 1.40 | 21.07 | 0.46 | ○ | n/a | Mozambique | n/a | n/a | n/a | |
| 54 | Belgium | 1.37 | 20.58 | 0.45 | ○ | n/a | Myanmar | n/a | n/a | n/a | |
| 55 | Sweden | 1.36 | 20.50 | 0.44 | ○ | n/a | Namibia | n/a | n/a | n/a | |
| 56 | France | 1.32 | 19.81 | 0.43 | ○ | n/a | Nicaragua | n/a | n/a | n/a | |
| 57 | Czech Republic (2010) | 1.31 | 19.64 | 0.42 | | n/a | Niger | n/a | n/a | n/a | |
| 58 | Cameroon (2008) | 1.28 | 19.19 | 0.41 | ● | n/a | Nigeria | n/a | n/a | n/a | |
| 59 | Viet Nam (2008) | 1.25 | 18.67 | 0.40 | | n/a | Rwanda | n/a | n/a | n/a | |
| 60 | Finland | 1.24 | 18.42 | 0.39 | ○ | n/a | Seychelles | n/a | n/a | n/a | |
| 61 | Germany | 1.21 | 17.95 | 0.38 | ○ | n/a | Sudan | n/a | n/a | n/a | |
| 62 | Algeria (2008) | 1.21 | 17.88 | 0.36 | | n/a | Swaziland | n/a | n/a | n/a | |
| 62 | Russian Federation | 1.21 | 17.88 | 0.36 | | n/a | Togo | n/a | n/a | n/a | |
| 64 | Bulgaria | 1.21 | 17.86 | 0.35 | | n/a | Uganda | n/a | n/a | n/a | |
| 65 | Uruguay (2009) | 1.19 | 17.63 | 0.34 | | n/a | United Arab Emirates | n/a | n/a | n/a | |
| 66 | Qatar (2010) | 1.18 | 17.40 | 0.33 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 67 | Thailand (2006) | 1.14 | 16.79 | 0.32 | | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 68 | Turkey (2009) | 1.14 | 16.78 | 0.31 | | n/a | Zambia | n/a | n/a | n/a | |
| 69 | Romania | 1.13 | 16.52 | 0.30 | | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Trinidad and Tobago (2006) | 1.12 | 16.36 | 0.29 | | | | | | | |
| 71 | Poland | 1.08 | 15.82 | 0.28 | ○ | | | | | | |
| 72 | Bahrain (2010) | 1.04 | 15.05 | 0.27 | | | | | | | |

SOURCE: United Nations Industrial Development Organization, *Industrial Statistics Database*, ISIC Revision 3 (INDSTAT4 2012)

NOTE: ● indicates a strength; ○ a weakness

7.2.5 Creative goods exports

Creative goods exports (% of total trade) | 2013

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|-------|---------------|--------------|---|------|-----------------------------|-------|---------------|--------------|---|
| 1 | China | 14.03 | 100.00 | 1.00 | ● | 73 | Nepal | 0.26 | 8.04 | 0.43 | ● |
| 2 | Slovakia | 10.48 | 89.87 | 0.99 | ● | 74 | Hong Kong (China) | 0.23 | 7.38 | 0.43 | ○ |
| 3 | Malaysia | 10.29 | 89.23 | 0.98 | ● | 75 | Chile | 0.23 | 7.35 | 0.42 | |
| 4 | Czech Republic | 10.06 | 88.48 | 0.98 | ● | 76 | Brazil | 0.23 | 7.17 | 0.41 | |
| 5 | Mexico | 9.84 | 87.70 | 0.97 | ● | 77 | Botswana | 0.19 | 6.11 | 0.40 | |
| 6 | Thailand | 9.26 | 85.63 | 0.96 | ● | 78 | Nigeria | 0.19 | 5.99 | 0.39 | |
| 7 | Hungary | 6.22 | 72.45 | 0.95 | ● | 79 | Bosnia and Herzegovina | 0.18 | 5.95 | 0.39 | |
| 8 | Netherlands | 5.61 | 69.17 | 0.94 | | 80 | TFYR of Macedonia | 0.18 | 5.81 | 0.38 | |
| 9 | Viet Nam | 5.05 | 65.83 | 0.94 | ● | 81 | Luxembourg | 0.18 | 5.78 | 0.37 | |
| 10 | Singapore | 5.05 | 65.83 | 0.93 | | 82 | Argentina | 0.16 | 5.34 | 0.36 | |
| 11 | Switzerland | 4.04 | 58.99 | 0.92 | | 83 | Senegal (2012) | 0.15 | 5.04 | 0.35 | |
| 12 | Poland | 3.89 | 57.92 | 0.91 | ● | 84 | Albania | 0.15 | 4.91 | 0.35 | |
| 13 | Latvia | 3.11 | 51.38 | 0.91 | ● | 85 | Montenegro | 0.14 | 4.66 | 0.34 | |
| 14 | United Kingdom | 2.83 | 48.82 | 0.90 | | 86 | Fiji | 0.13 | 4.19 | 0.33 | |
| 15 | Korea, Rep. | 2.58 | 46.28 | 0.89 | | 87 | Burundi (2010) | 0.12 | 3.95 | 0.32 | |
| 16 | Tunisia | 2.57 | 46.18 | 0.88 | ● | 88 | Saudi Arabia | 0.12 | 3.84 | 0.31 | ○ |
| 17 | Turkey | 2.56 | 46.04 | 0.87 | ● | 89 | Nicaragua | 0.11 | 3.61 | 0.31 | |
| 18 | India | 2.52 | 45.62 | 0.87 | ● | 90 | Madagascar (2012) | 0.11 | 3.56 | 0.30 | |
| 19 | Ireland | 2.44 | 44.85 | 0.86 | | 91 | Honduras (2012) | 0.09 | 3.15 | 0.29 | |
| 20 | Japan | 2.37 | 44.00 | 0.85 | | 92 | Iceland | 0.09 | 3.00 | 0.28 | ○ |
| 21 | Italy | 2.23 | 42.49 | 0.84 | | 93 | Malawi (2011) | 0.08 | 2.78 | 0.28 | |
| 22 | Indonesia | 1.91 | 38.61 | 0.83 | ● | 94 | Uruguay | 0.08 | 2.64 | 0.27 | |
| 23 | Belgium | 1.82 | 37.45 | 0.83 | | 95 | Tanzania, United Rep. | 0.07 | 2.48 | 0.26 | |
| 24 | Sweden | 1.79 | 37.02 | 0.82 | | 96 | Ghana | 0.07 | 2.42 | 0.25 | |
| 25 | Germany | 1.76 | 36.67 | 0.81 | | 97 | United Arab Emirates (2008) | 0.06 | 2.10 | 0.24 | ○ |
| 26 | Guyana | 1.69 | 35.76 | 0.80 | ● | 98 | Bangladesh (2011) | 0.06 | 2.08 | 0.24 | |
| 27 | France | 1.69 | 35.75 | 0.80 | | 99 | Moldova, Rep. | 0.06 | 2.02 | 0.23 | ○ |
| 28 | Israel | 1.68 | 35.53 | 0.79 | | 100 | Trinidad and Tobago (2010) | 0.06 | 1.95 | 0.22 | |
| 29 | United States of America | 1.66 | 35.33 | 0.78 | | 101 | Zambia (2012) | 0.06 | 1.90 | 0.21 | |
| 30 | Denmark | 1.65 | 35.13 | 0.77 | | 102 | Kyrgyzstan | 0.06 | 1.90 | 0.20 | |
| 31 | Portugal | 1.58 | 34.15 | 0.76 | | 103 | Sudan (2012) | 0.05 | 1.81 | 0.20 | |
| 32 | Romania | 1.49 | 32.87 | 0.76 | ● | 104 | Ecuador | 0.05 | 1.77 | 0.19 | |
| 33 | Lithuania | 1.46 | 32.48 | 0.75 | | 105 | Mongolia | 0.05 | 1.72 | 0.18 | |
| 34 | Austria | 1.43 | 31.97 | 0.74 | | 106 | Ethiopia | 0.05 | 1.70 | 0.17 | |
| 35 | Estonia | 1.32 | 30.28 | 0.73 | | 107 | Jamaica | 0.05 | 1.64 | 0.17 | ○ |
| 36 | Dominican Republic | 1.24 | 28.97 | 0.72 | ● | 108 | Georgia | 0.04 | 1.41 | 0.16 | ○ |
| 37 | Pakistan | 1.15 | 27.45 | 0.72 | ● | 109 | Rwanda | 0.03 | 1.10 | 0.15 | |
| 38 | Bolivia, Plurinational St. | 1.06 | 25.99 | 0.71 | ● | 110 | Uganda | 0.03 | 1.06 | 0.14 | |
| 39 | Canada | 0.99 | 24.68 | 0.70 | | 111 | Myanmar (2010) | 0.03 | 1.00 | 0.13 | |
| 40 | Malta | 0.94 | 23.72 | 0.69 | | 112 | Burkina Faso (2011) | 0.03 | 0.86 | 0.13 | |
| 41 | Spain | 0.84 | 21.80 | 0.69 | | 113 | Paraguay | 0.02 | 0.83 | 0.12 | |
| 42 | El Salvador | 0.83 | 21.58 | 0.68 | ● | 114 | Côte d'Ivoire (2012) | 0.02 | 0.76 | 0.11 | |
| 43 | Bulgaria | 0.82 | 21.34 | 0.67 | | 115 | Togo (2011) | 0.02 | 0.70 | 0.10 | |
| 44 | Mauritius | 0.79 | 20.90 | 0.66 | | 116 | Gambia | 0.02 | 0.60 | 0.09 | |
| 45 | Jordan | 0.77 | 20.45 | 0.65 | | 117 | Mozambique | 0.02 | 0.59 | 0.09 | |
| 46 | Finland | 0.73 | 19.63 | 0.65 | | 118 | Cyprus | 0.02 | 0.55 | 0.08 | ○ |
| 47 | South Africa | 0.72 | 19.41 | 0.64 | | 119 | Oman | 0.02 | 0.53 | 0.07 | ○ |
| 48 | Serbia | 0.72 | 19.38 | 0.63 | | 120 | Bhutan (2012) | 0.01 | 0.33 | 0.06 | |
| 49 | Slovenia | 0.71 | 19.16 | 0.62 | | 121 | Qatar | 0.01 | 0.29 | 0.06 | ○ |
| 50 | Lebanon (2012) | 0.69 | 18.79 | 0.61 | | 122 | Yemen | 0.01 | 0.25 | 0.05 | |
| 51 | Australia | 0.63 | 17.40 | 0.61 | | 123 | Niger (2011) | 0.01 | 0.19 | 0.04 | |
| 52 | Costa Rica | 0.60 | 16.77 | 0.60 | | 124 | Panama | 0.01 | 0.18 | 0.03 | ○ |
| 53 | Namibia | 0.57 | 16.07 | 0.59 | | 125 | Azerbaijan | 0.01 | 0.16 | 0.02 | ○ |
| 54 | Egypt | 0.57 | 16.01 | 0.58 | | 126 | Bahrain (2011) | 0.01 | 0.15 | 0.02 | ○ |
| 55 | Ukraine | 0.57 | 16.01 | 0.57 | | 127 | Mali (2012) | 0.00 | 0.13 | 0.01 | ○ |
| 56 | Greece | 0.56 | 15.86 | 0.57 | | 128 | Algeria | 0.00 | 0.00 | 0.00 | ○ |
| 57 | Iran, Islamic Rep. (2011) | 0.54 | 15.26 | 0.56 | | n/a | Angola | n/a | n/a | n/a | |
| 58 | Armenia | 0.52 | 14.99 | 0.55 | | n/a | Barbados | n/a | n/a | n/a | |
| 59 | Norway | 0.52 | 14.91 | 0.54 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 60 | Croatia | 0.47 | 13.77 | 0.54 | | n/a | Cameroon | n/a | n/a | n/a | |
| 61 | Cambodia | 0.45 | 13.14 | 0.53 | ● | n/a | Guinea | n/a | n/a | n/a | |
| 62 | Russian Federation | 0.43 | 12.72 | 0.52 | | n/a | Lesotho | n/a | n/a | n/a | |
| 63 | Guatemala | 0.40 | 11.86 | 0.51 | | n/a | Morocco | n/a | n/a | n/a | |
| 64 | Sri Lanka | 0.39 | 11.77 | 0.50 | | n/a | Philippines | n/a | n/a | n/a | |
| 65 | Belarus | 0.39 | 11.72 | 0.50 | | n/a | Seychelles | n/a | n/a | n/a | |
| 66 | Kuwait | 0.37 | 11.23 | 0.49 | | n/a | Swaziland | n/a | n/a | n/a | |
| 67 | Peru | 0.33 | 9.98 | 0.48 | | n/a | Tajikistan | n/a | n/a | n/a | |
| 68 | Zimbabwe (2012) | 0.31 | 9.59 | 0.47 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 69 | New Zealand | 0.30 | 9.40 | 0.46 | ○ | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 70 | Kazakhstan | 0.29 | 8.96 | 0.46 | | | | | | | |
| 71 | Kenya | 0.28 | 8.66 | 0.45 | | | | | | | |
| 72 | Colombia | 0.27 | 8.33 | 0.44 | | | | | | | |

SOURCE: United Nations, COMTRADE database; 2009 UNESCO Framework for Cultural Statistics; World Trade Organization, Trade in Commercial Services database

NOTE: ● indicates a strength; ○ a weakness

7.3.1

Generic top-level domains (gTLDs)

Generic top-level domains gTLDs (per thousand population 15–69 years old) | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|--------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Iceland | 100.00 | 100.00 | 0.98 | ● | 73 | Moldova, Rep. | 1.33 | 1.33 | 0.49 | |
| 1 | Luxembourg | 100.00 | 100.00 | 0.98 | ● | 74 | Viet Nam | 1.32 | 1.32 | 0.48 | |
| 1 | Malta | 46.14 | 46.14 | 0.97 | ● | 75 | Bosnia and Herzegovina | 1.31 | 1.31 | 0.47 | |
| 1 | Seychelles | 100.00 | 100.00 | 0.98 | ● | 76 | Dominican Republic | 1.31 | 1.31 | 0.46 | |
| 5 | United States of America | 100.00 | 100.00 | 0.98 | ● | 77 | El Salvador | 1.30 | 1.30 | 0.46 | |
| 6 | Canada | 41.47 | 41.47 | 0.96 | ● | 78 | Cabo Verde | 1.22 | 1.22 | 0.45 | |
| 7 | Netherlands | 41.35 | 41.35 | 0.96 | | 79 | Ecuador | 1.17 | 1.17 | 0.44 | |
| 8 | Cyprus | 36.75 | 36.75 | 0.95 | ● | 80 | Oman | 1.16 | 1.16 | 0.44 | |
| 9 | Hong Kong (China) | 36.51 | 36.51 | 0.94 | | 81 | Chile | 1.15 | 1.15 | 0.43 | |
| 10 | Australia | 35.80 | 35.80 | 0.94 | | 82 | Bhutan | 1.10 | 1.10 | 0.42 | |
| 11 | Switzerland | 34.78 | 34.78 | 0.93 | | 83 | Venezuela, Bolivarian Rep. | 1.08 | 1.08 | 0.41 | |
| 12 | United Kingdom | 33.65 | 33.65 | 0.92 | | 84 | China | 1.05 | 1.05 | 0.41 | |
| 13 | Ireland | 33.07 | 33.07 | 0.91 | | 85 | Jamaica | 1.04 | 1.04 | 0.40 | |
| 14 | Germany | 29.40 | 29.40 | 0.91 | | 86 | Iran, Islamic Rep. | 0.98 | 0.98 | 0.39 | |
| 15 | Norway | 28.90 | 28.90 | 0.90 | | 87 | Bolivia, Plurinational St. | 0.96 | 0.96 | 0.39 | |
| 16 | Panama | 25.84 | 25.84 | 0.89 | ● | 88 | Belarus | 0.94 | 0.94 | 0.38 | |
| 17 | Denmark | 25.40 | 25.40 | 0.89 | | 89 | Paraguay | 0.89 | 0.89 | 0.37 | |
| 18 | Sweden | 23.20 | 23.20 | 0.88 | | 90 | Brazil | 0.87 | 0.87 | 0.36 | |
| 19 | France | 21.57 | 21.57 | 0.87 | | 91 | Indonesia | 0.86 | 0.86 | 0.36 | |
| 20 | Austria | 20.06 | 20.06 | 0.86 | | 92 | Morocco | 0.85 | 0.85 | 0.35 | |
| 21 | New Zealand | 18.40 | 18.40 | 0.86 | | 93 | Georgia | 0.84 | 0.84 | 0.34 | |
| 22 | Finland | 15.85 | 15.85 | 0.85 | | 94 | Montenegro | 0.80 | 0.80 | 0.34 | |
| 23 | Spain | 14.68 | 14.68 | 0.84 | | 95 | Serbia | 0.71 | 0.71 | 0.33 | |
| 24 | Singapore | 14.25 | 14.25 | 0.84 | | 96 | Egypt | 0.70 | 0.70 | 0.32 | |
| 25 | Israel | 12.90 | 12.90 | 0.83 | | 97 | Guyana | 0.68 | 0.68 | 0.31 | |
| 26 | Belgium | 11.91 | 11.91 | 0.82 | | 98 | Botswana | 0.68 | 0.68 | 0.31 | |
| 27 | Italy | 11.90 | 11.90 | 0.81 | | 99 | Philippines | 0.63 | 0.63 | 0.30 | |
| 28 | Bulgaria | 11.46 | 11.46 | 0.81 | ● | 100 | Azerbaijan | 0.62 | 0.62 | 0.29 | |
| 29 | Slovenia | 11.11 | 11.11 | 0.80 | | 101 | Niger | 0.59 | 0.59 | 0.29 | |
| 30 | Portugal | 9.59 | 9.59 | 0.79 | | 102 | Senegal | 0.58 | 0.58 | 0.28 | |
| 31 | Barbados | 8.92 | 8.92 | 0.79 | | 103 | Kenya | 0.58 | 0.58 | 0.27 | |
| 32 | Czech Republic | 8.71 | 8.71 | 0.78 | | 104 | India | 0.53 | 0.53 | 0.26 | |
| 33 | Japan | 8.53 | 8.53 | 0.77 | | 105 | Cambodia | 0.41 | 0.41 | 0.26 | |
| 34 | Croatia | 7.33 | 7.33 | 0.76 | ● | 106 | Sri Lanka | 0.41 | 0.41 | 0.25 | |
| 35 | Mauritius | 6.86 | 6.86 | 0.76 | | 107 | Togo | 0.36 | 0.36 | 0.24 | |
| 36 | Turkey | 6.80 | 6.80 | 0.75 | | 108 | Ghana | 0.35 | 0.35 | 0.24 | |
| 37 | Lithuania | 6.49 | 6.49 | 0.74 | | 109 | Mongolia | 0.34 | 0.34 | 0.23 | |
| 38 | Greece | 6.35 | 6.35 | 0.74 | | 110 | Honduras | 0.34 | 0.34 | 0.22 | |
| 39 | Costa Rica | 5.91 | 5.91 | 0.73 | | 111 | Pakistan | 0.32 | 0.32 | 0.21 | |
| 40 | United Arab Emirates | 5.83 | 5.83 | 0.72 | | 112 | Swaziland | 0.30 | 0.30 | 0.21 | |
| 41 | Hungary | 5.44 | 5.44 | 0.71 | | 113 | Nigeria | 0.29 | 0.29 | 0.20 | |
| 42 | Kuwait | 5.08 | 5.08 | 0.71 | ● | 114 | Côte d'Ivoire | 0.29 | 0.29 | 0.19 | |
| 43 | Estonia | 5.00 | 5.00 | 0.70 | | 115 | Nepal | 0.26 | 0.26 | 0.19 | |
| 44 | Namibia | 4.76 | 4.76 | 0.69 | ● | 116 | Algeria | 0.25 | 0.25 | 0.18 | |
| 45 | Latvia | 4.58 | 4.58 | 0.69 | | 117 | Zimbabwe | 0.22 | 0.22 | 0.17 | |
| 46 | Korea, Rep. | 4.39 | 4.39 | 0.68 | | 118 | Yemen | 0.21 | 0.21 | 0.16 | |
| 47 | Lebanon | 4.16 | 4.16 | 0.67 | | 119 | Kazakhstan | 0.19 | 0.19 | 0.16 | ○ |
| 48 | Poland | 3.79 | 3.79 | 0.66 | | 120 | Bangladesh | 0.19 | 0.19 | 0.15 | |
| 49 | Malaysia | 3.49 | 3.49 | 0.66 | | 121 | Uganda | 0.13 | 0.13 | 0.14 | |
| 50 | Jordan | 3.49 | 3.49 | 0.65 | | 122 | Kyrgyzstan | 0.12 | 0.12 | 0.14 | |
| 51 | Uruguay | 3.44 | 3.44 | 0.64 | | 123 | Lesotho | 0.11 | 0.11 | 0.13 | |
| 52 | TFYR of Macedonia | 3.33 | 3.33 | 0.64 | | 124 | Malawi | 0.11 | 0.11 | 0.12 | |
| 53 | Albania | 3.12 | 3.12 | 0.63 | | 125 | Cameroon | 0.10 | 0.10 | 0.11 | |
| 54 | Bahrain | 3.09 | 3.09 | 0.62 | | 126 | Tanzania, United Rep. | 0.09 | 0.09 | 0.11 | |
| 55 | Thailand | 2.93 | 2.93 | 0.61 | | 127 | Mali | 0.09 | 0.09 | 0.10 | |
| 56 | Peru | 2.61 | 2.61 | 0.61 | | 128 | Rwanda | 0.08 | 0.08 | 0.09 | ○ |
| 57 | Guatemala | 2.49 | 2.49 | 0.60 | | 129 | Madagascar | 0.07 | 0.07 | 0.09 | |
| 58 | Trinidad and Tobago | 2.42 | 2.42 | 0.59 | ● | 130 | Zambia | 0.07 | 0.07 | 0.08 | |
| 59 | Romania | 2.39 | 2.39 | 0.59 | | 131 | Gambia | 0.07 | 0.07 | 0.07 | ○ |
| 60 | Ukraine | 2.33 | 2.33 | 0.58 | | 132 | Burkina Faso | 0.04 | 0.04 | 0.06 | ○ |
| 61 | Qatar | 2.25 | 2.25 | 0.57 | | 133 | Tajikistan | 0.03 | 0.03 | 0.06 | ○ |
| 62 | Saudi Arabia | 1.78 | 1.78 | 0.56 | | 134 | Guinea | 0.03 | 0.03 | 0.05 | |
| 63 | South Africa | 1.77 | 1.77 | 0.56 | | 135 | Sudan | 0.03 | 0.03 | 0.04 | |
| 64 | Russian Federation | 1.74 | 1.74 | 0.55 | | 136 | Burundi | 0.02 | 0.02 | 0.04 | |
| 65 | Argentina | 1.66 | 1.66 | 0.54 | | 137 | Mozambique | 0.02 | 0.02 | 0.03 | ○ |
| 66 | Slovakia | 1.64 | 1.64 | 0.54 | | 138 | Myanmar | 0.02 | 0.02 | 0.02 | |
| 67 | Armenia | 1.59 | 1.59 | 0.53 | | 139 | Ethiopia | 0.00 | 0.00 | 0.01 | ○ |
| 68 | Colombia | 1.57 | 1.57 | 0.52 | | 140 | Angola | 0.00 | 0.00 | 0.01 | ○ |
| 69 | Fiji | 1.54 | 1.54 | 0.51 | | 141 | Uzbekistan | 0.00 | 0.00 | 0.00 | ○ |
| 70 | Nicaragua | 1.54 | 1.54 | 0.51 | ● | | | | | | |
| 71 | Mexico | 1.43 | 1.43 | 0.50 | | | | | | | |
| 72 | Tunisia | 1.43 | 1.43 | 0.49 | | | | | | | |

SOURCE: ZookNIC Inc; United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2012 Revision* (population)

NOTE: ● indicates a strength; ○ a weakness

7.3.2

Country-code top-level domains (ccTLDs)

Country-code top-level domains ccTLDs (per thousand population 15–69 years old) | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|--------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | Denmark | 100.00 | 100.00 | 0.97 | ● | 73 | Costa Rica | 0.81 | 0.81 | 0.49 | |
| 1 | Germany | 100.00 | 100.00 | 0.97 | ● | 74 | Bahrain | 0.77 | 0.77 | 0.48 | |
| 1 | Montenegro | 100.00 | 100.00 | 0.97 | ● | 75 | Trinidad and Tobago | 0.76 | 0.76 | 0.47 | |
| 1 | Netherlands | 100.00 | 100.00 | 0.97 | ● | 76 | Albania | 0.74 | 0.74 | 0.46 | |
| 1 | Switzerland | 100.00 | 100.00 | 0.97 | ● | 77 | Barbados | 0.71 | 0.71 | 0.46 | |
| 6 | United Kingdom | 42.30 | 42.30 | 0.96 | ● | 78 | Peru | 0.71 | 0.71 | 0.45 | |
| 7 | Iceland | 38.99 | 38.99 | 0.96 | ● | 79 | Panama | 0.67 | 0.67 | 0.44 | |
| 8 | Luxembourg | 38.44 | 38.44 | 0.95 | ● | 80 | Ecuador | 0.65 | 0.65 | 0.44 | |
| 9 | Austria | 36.19 | 36.19 | 0.94 | ● | 81 | Dominican Republic | 0.63 | 0.63 | 0.43 | |
| 10 | Sweden | 35.62 | 35.62 | 0.94 | ● | 82 | Paraguay | 0.61 | 0.61 | 0.42 | |
| 11 | Belgium | 34.13 | 34.13 | 0.93 | ● | 83 | Jamaica | 0.60 | 0.60 | 0.41 | |
| 12 | New Zealand | 33.16 | 33.16 | 0.92 | ● | 84 | Azerbaijan | 0.59 | 0.59 | 0.41 | |
| 13 | Norway | 32.37 | 32.37 | 0.91 | ● | 85 | Cabo Verde | 0.44 | 0.44 | 0.40 | |
| 14 | Australia | 30.98 | 30.98 | 0.91 | ● | 86 | Nepal | 0.41 | 0.41 | 0.39 | |
| 15 | Czech Republic | 26.44 | 26.44 | 0.90 | ● | 87 | Bhutan | 0.37 | 0.37 | 0.39 | |
| 16 | Finland | 16.69 | 16.69 | 0.89 | ● | 88 | Morocco | 0.34 | 0.34 | 0.38 | |
| 17 | Argentina | 16.30 | 16.30 | 0.89 | ● | 89 | Nicaragua | 0.33 | 0.33 | 0.37 | |
| 18 | Portugal | 16.17 | 16.17 | 0.88 | ● | 90 | Saudi Arabia | 0.33 | 0.33 | 0.36 | |
| 19 | Hungary | 16.17 | 16.17 | 0.87 | ● | 91 | El Salvador | 0.32 | 0.32 | 0.36 | |
| 20 | Canada | 15.96 | 15.96 | 0.86 | ● | 92 | India | 0.32 | 0.32 | 0.35 | |
| 21 | Poland | 15.73 | 15.73 | 0.86 | ● | 93 | Kenya | 0.28 | 0.28 | 0.34 | |
| 22 | Estonia | 15.63 | 15.63 | 0.85 | ● | 94 | Guatemala | 0.28 | 0.28 | 0.34 | |
| 23 | Slovakia | 13.76 | 13.76 | 0.84 | ● | 95 | Bolivia, Plurinational St. | 0.27 | 0.27 | 0.33 | |
| 24 | Lithuania | 13.65 | 13.65 | 0.84 | ● | 96 | Swaziland | 0.27 | 0.27 | 0.32 | |
| 25 | Latvia | 13.57 | 13.57 | 0.83 | ● | 97 | Kuwait | 0.26 | 0.26 | 0.31 | |
| 26 | Slovenia | 13.50 | 13.50 | 0.82 | ● | 98 | Kyrgyzstan | 0.26 | 0.26 | 0.31 | |
| 27 | Seychelles | 11.53 | 11.53 | 0.81 | ● | 99 | Gambia | 0.25 | 0.25 | 0.30 | |
| 28 | Italy | 11.47 | 11.47 | 0.81 | ● | 100 | Honduras | 0.25 | 0.25 | 0.29 | |
| 29 | France | 11.44 | 11.44 | 0.80 | ● | 101 | Tajikistan | 0.24 | 0.24 | 0.29 | |
| 30 | Ireland | 10.79 | 10.79 | 0.79 | ● | 102 | Thailand | 0.22 | 0.22 | 0.28 | |
| 31 | Greece | 9.48 | 9.48 | 0.79 | ● | 103 | Philippines | 0.20 | 0.20 | 0.27 | |
| 32 | Spain | 9.34 | 9.34 | 0.78 | ● | 104 | Cameroon | 0.17 | 0.17 | 0.26 | |
| 33 | Colombia | 9.03 | 9.03 | 0.77 | ● | 105 | Uzbekistan | 0.17 | 0.17 | 0.26 | |
| 34 | Romania | 8.33 | 8.33 | 0.76 | ● | 106 | Lebanon | 0.17 | 0.17 | 0.25 | |
| 35 | Russian Federation | 8.17 | 8.17 | 0.76 | ● | 107 | Jordan | 0.16 | 0.16 | 0.24 | ○ |
| 36 | Israel | 8.09 | 8.09 | 0.75 | ● | 108 | Indonesia | 0.13 | 0.13 | 0.24 | |
| 37 | Singapore | 7.08 | 7.08 | 0.74 | ● | 109 | Tunisia | 0.12 | 0.12 | 0.23 | |
| 38 | Chile | 6.58 | 6.58 | 0.74 | ● | 110 | Sri Lanka | 0.10 | 0.10 | 0.22 | |
| 39 | Uruguay | 5.45 | 5.45 | 0.73 | ● | 111 | Oman | 0.09 | 0.09 | 0.21 | |
| 40 | Croatia | 5.02 | 5.02 | 0.72 | ● | 112 | Senegal | 0.08 | 0.08 | 0.21 | |
| 41 | South Africa | 4.97 | 4.97 | 0.71 | ● | 113 | Lesotho | 0.08 | 0.08 | 0.20 | |
| 42 | Hong Kong (China) | 4.60 | 4.60 | 0.71 | ● | 114 | Côte d'Ivoire | 0.07 | 0.07 | 0.19 | |
| 43 | Brazil | 4.36 | 4.36 | 0.70 | ● | 115 | Pakistan | 0.07 | 0.07 | 0.19 | |
| 44 | Korea, Rep. | 4.32 | 4.32 | 0.69 | ● | 116 | Nigeria | 0.06 | 0.06 | 0.18 | |
| 45 | Malta | 3.45 | 3.45 | 0.69 | ● | 117 | Tanzania, United Rep. | 0.06 | 0.06 | 0.17 | |
| 46 | Ukraine | 3.44 | 3.44 | 0.68 | ● | 118 | Burundi | 0.06 | 0.06 | 0.16 | |
| 47 | Belarus | 3.08 | 3.08 | 0.67 | ● | 119 | Mozambique | 0.05 | 0.05 | 0.16 | |
| 48 | Japan | 2.85 | 2.85 | 0.66 | ● | 120 | Malawi | 0.05 | 0.05 | 0.15 | |
| 49 | Cyprus | 2.70 | 2.70 | 0.66 | ● | 121 | Algeria | 0.04 | 0.04 | 0.14 | |
| 50 | United Arab Emirates | 2.55 | 2.55 | 0.65 | ● | 122 | Guinea | 0.03 | 0.03 | 0.14 | |
| 51 | Venezuela, Bolivarian Rep. | 2.31 | 2.31 | 0.64 | ● | 123 | Uganda | 0.03 | 0.03 | 0.13 | |
| 52 | Malaysia | 2.25 | 2.25 | 0.64 | ● | 124 | Cambodia | 0.03 | 0.03 | 0.12 | |
| 53 | Serbia | 2.15 | 2.15 | 0.63 | ● | 125 | Zimbabwe | 0.03 | 0.03 | 0.11 | |
| 54 | China | 1.89 | 1.89 | 0.62 | ● | 126 | Madagascar | 0.03 | 0.03 | 0.11 | |
| 55 | Kazakhstan | 1.87 | 1.87 | 0.61 | ● | 127 | Namibia | 0.03 | 0.03 | 0.10 | ○ |
| 56 | Iran, Islamic Rep. | 1.86 | 1.86 | 0.61 | ● | 128 | Rwanda | 0.02 | 0.02 | 0.09 | ○ |
| 57 | Armenia | 1.85 | 1.85 | 0.60 | ● | 129 | Burkina Faso | 0.02 | 0.02 | 0.09 | |
| 58 | Qatar | 1.75 | 1.75 | 0.59 | ● | 130 | Egypt | 0.02 | 0.02 | 0.08 | ○ |
| 59 | Moldova, Rep. | 1.69 | 1.69 | 0.59 | ● | 131 | Yemen | 0.01 | 0.01 | 0.07 | |
| 60 | Mexico | 1.54 | 1.54 | 0.58 | ● | 132 | Bangladesh | 0.01 | 0.01 | 0.06 | |
| 61 | Viet Nam | 1.49 | 1.49 | 0.57 | ● | 133 | Angola | 0.01 | 0.01 | 0.06 | |
| 62 | Mauritius | 1.42 | 1.42 | 0.56 | ● | 134 | Ethiopia | 0.00 | 0.00 | 0.05 | |
| 63 | United States of America | 1.38 | 1.38 | 0.56 | ● | 135 | Myanmar | 0.00 | 0.00 | 0.04 | |
| 64 | Turkey | 1.22 | 1.22 | 0.55 | ● | 136 | Sudan | 0.00 | 0.00 | 0.04 | |
| 65 | Bulgaria | 1.20 | 1.20 | 0.54 | ● | 137 | Niger | 0.00 | 0.00 | 0.03 | ○ |
| 66 | Georgia | 1.19 | 1.19 | 0.54 | ● | 138 | Zambia | 0.00 | 0.00 | 0.02 | ○ |
| 67 | Fiji | 1.16 | 1.16 | 0.53 | ● | 139 | Ghana | 0.00 | 0.00 | 0.01 | ○ |
| 68 | Bosnia and Herzegovina | 1.04 | 1.04 | 0.52 | ● | 140 | Mali | 0.00 | 0.00 | 0.01 | ○ |
| 69 | Guyana | 1.02 | 1.02 | 0.51 | ● | 141 | Togo | 0.00 | 0.00 | 0.00 | ○ |
| 70 | Botswana | 0.94 | 0.94 | 0.51 | ● | | | | | | |
| 71 | Mongolia | 0.88 | 0.88 | 0.50 | ● | | | | | | |
| 72 | TFYR of Macedonia | 0.81 | 0.81 | 0.49 | ● | | | | | | |

SOURCE: ZookNIC Inc; United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2012 Revision* (population)

NOTE: ● indicates a strength; ○ a weakness

7.3.3

Wikipedia monthly edits

Wikipedia monthly page edits (per million population 15–69 years old) | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|----------------------------|-----------|---------------|--------------|---|------|-----------------------------|----------|---------------|--------------|---|
| 1 | Iceland | 13,529.16 | 100.00 | 1.00 | ● | 73 | Jordan | 1,037.91 | 7.64 | 0.49 | |
| 2 | Hong Kong (China) | 11,073.54 | 81.84 | 0.99 | ● | 74 | Mauritius | 998.83 | 7.35 | 0.48 | |
| 3 | Ireland | 9,744.51 | 72.01 | 0.99 | ● | 75 | Mongolia | 984.67 | 7.24 | 0.47 | |
| 4 | United Kingdom | 9,652.35 | 71.33 | 0.98 | ● | 76 | Brazil | 971.19 | 7.14 | 0.46 | |
| 5 | Malta | 9,424.37 | 69.65 | 0.97 | ● | 77 | Thailand | 944.02 | 6.94 | 0.46 | |
| 6 | Netherlands | 9,406.73 | 69.52 | 0.96 | ● | 78 | Romania | 934.51 | 6.87 | 0.45 | |
| 7 | Finland | 8,836.02 | 65.30 | 0.96 | | 79 | El Salvador | 921.31 | 6.77 | 0.44 | |
| 8 | Israel | 7,906.33 | 58.42 | 0.95 | | 80 | Kazakhstan | 919.66 | 6.76 | 0.44 | |
| 9 | Australia | 7,868.46 | 58.14 | 0.94 | | 81 | Lebanon | 876.27 | 6.44 | 0.43 | |
| 10 | New Zealand | 7,816.31 | 57.76 | 0.94 | | 82 | Paraguay | 872.44 | 6.41 | 0.42 | |
| 11 | Estonia | 7,671.34 | 56.69 | 0.93 | ● | 83 | Moldova, Rep. | 812.65 | 5.97 | 0.41 | |
| 12 | Sweden | 7,625.05 | 56.34 | 0.92 | | 84 | Turkey | 793.91 | 5.83 | 0.41 | |
| 13 | Italy | 7,569.56 | 55.93 | 0.91 | ● | 85 | Jamaica | 779.80 | 5.73 | 0.40 | |
| 14 | Luxembourg | 7,322.33 | 54.10 | 0.91 | | 86 | Honduras | 777.82 | 5.71 | 0.39 | |
| 15 | Norway | 7,232.92 | 53.44 | 0.90 | | 87 | Guatemala | 774.87 | 5.69 | 0.39 | |
| 16 | Canada | 7,167.23 | 52.96 | 0.89 | | 88 | Nicaragua | 691.17 | 5.07 | 0.38 | |
| 17 | Belgium | 6,650.74 | 49.14 | 0.89 | | 89 | Oman | 637.37 | 4.67 | 0.37 | |
| 18 | Uruguay | 6,005.16 | 44.36 | 0.88 | ● | 90 | Paraguay, Plurinational St. | 590.48 | 4.33 | 0.36 | |
| 19 | Germany | 5,952.06 | 43.97 | 0.87 | | 91 | Sri Lanka | 536.61 | 3.93 | 0.36 | |
| 20 | Spain | 5,678.19 | 41.95 | 0.86 | | 92 | Tunisia | 499.87 | 3.66 | 0.35 | |
| 21 | Chile | 5,520.35 | 40.78 | 0.86 | ● | 93 | Seychelles | 473.18 | 3.46 | 0.34 | |
| 22 | Cyprus | 5,408.77 | 39.95 | 0.85 | | 94 | Egypt | 439.07 | 3.21 | 0.34 | |
| 23 | Denmark | 5,288.93 | 39.07 | 0.84 | | 95 | Algeria | 399.68 | 2.92 | 0.33 | |
| 24 | Montenegro | 5,218.33 | 38.55 | 0.84 | ● | 96 | Morocco | 390.44 | 2.85 | 0.32 | |
| 25 | United States of America | 5,148.43 | 38.03 | 0.83 | | 97 | Guyana | 373.44 | 2.72 | 0.31 | |
| 26 | Austria | 4,879.46 | 36.04 | 0.82 | | 98 | South Africa | 363.80 | 2.65 | 0.31 | |
| 27 | France | 4,814.47 | 35.56 | 0.81 | | 99 | Kyrgyzstan | 332.09 | 2.42 | 0.30 | |
| 28 | Bulgaria | 4,772.61 | 35.25 | 0.81 | ● | 100 | Cabo Verde | 299.78 | 2.18 | 0.29 | |
| 29 | Serbia | 4,693.03 | 34.66 | 0.80 | ● | 101 | Viet Nam | 267.66 | 1.94 | 0.29 | |
| 30 | Armenia | 4,651.34 | 34.35 | 0.79 | ● | 102 | India | 264.59 | 1.92 | 0.28 | |
| 31 | Greece | 4,568.81 | 33.74 | 0.79 | | 103 | Indonesia | 260.62 | 1.89 | 0.27 | |
| 32 | Switzerland | 4,555.61 | 33.65 | 0.78 | | 104 | Pakistan | 244.77 | 1.77 | 0.26 | |
| 33 | Korea, Rep. | 4,407.70 | 32.55 | 0.77 | | 105 | Botswana | 240.54 | 1.74 | 0.26 | |
| 34 | Bosnia and Herzegovina | 3,913.21 | 28.90 | 0.76 | ● | 106 | Namibia | 224.05 | 1.62 | 0.25 | |
| 35 | Argentina | 3,777.59 | 27.89 | 0.76 | ● | 107 | Nepal | 218.24 | 1.57 | 0.24 | |
| 36 | Lithuania | 3,619.07 | 26.72 | 0.75 | | 108 | Cambodia | 202.64 | 1.46 | 0.24 | |
| 37 | Croatia | 3,562.67 | 26.30 | 0.74 | | 109 | Bhutan | 178.93 | 1.28 | 0.23 | |
| 38 | Slovakia | 3,369.56 | 24.88 | 0.74 | | 110 | China | 149.78 | 1.07 | 0.22 | |
| 39 | Slovenia | 3,298.34 | 24.35 | 0.73 | | 111 | Bangladesh | 121.58 | 0.86 | 0.21 | |
| 40 | Japan | 3,292.10 | 24.30 | 0.72 | | 112 | Yemen | 117.46 | 0.83 | 0.21 | |
| 41 | Czech Republic | 3,275.29 | 24.18 | 0.71 | | 113 | Kenya | 107.00 | 0.75 | 0.20 | |
| 42 | Portugal | 3,156.39 | 23.30 | 0.71 | | 114 | Ghana | 101.69 | 0.71 | 0.19 | |
| 43 | TFYR of Macedonia | 3,131.69 | 23.12 | 0.70 | | 115 | Tajikistan | 97.53 | 0.68 | 0.19 | |
| 44 | Latvia | 3,087.05 | 22.79 | 0.69 | | 116 | Zimbabwe | 86.16 | 0.60 | 0.18 | |
| 45 | Hungary | 2,890.88 | 21.34 | 0.69 | | 117 | Swaziland | 64.00 | 0.43 | 0.17 | |
| 46 | Poland | 2,614.24 | 19.29 | 0.68 | | 118 | Angola | 58.50 | 0.39 | 0.16 | |
| 47 | Albania | 2,576.69 | 19.01 | 0.67 | | 119 | Senegal | 51.45 | 0.34 | 0.16 | |
| 48 | Singapore | 2,562.14 | 18.91 | 0.66 | | 120 | Uzbekistan | 49.99 | 0.33 | 0.15 | |
| 49 | Colombia | 2,259.65 | 16.67 | 0.66 | | 121 | Gambia | 49.66 | 0.33 | 0.14 | |
| 50 | Costa Rica | 2,245.22 | 16.56 | 0.65 | | 122 | Sudan | 48.87 | 0.32 | 0.14 | |
| 51 | Barbados | 2,125.34 | 15.68 | 0.64 | | 123 | Uganda | 46.51 | 0.30 | 0.13 | |
| 52 | Iran, Islamic Rep. | 2,091.36 | 15.42 | 0.64 | ● | 124 | Zambia | 44.34 | 0.29 | 0.12 | |
| 53 | Qatar | 2,058.25 | 15.18 | 0.63 | | 125 | Tanzania, United Rep. | 38.61 | 0.25 | 0.11 | |
| 54 | Peru | 1,929.56 | 14.23 | 0.62 | | 126 | Rwanda | 38.57 | 0.25 | 0.11 | |
| 55 | United Arab Emirates | 1,889.24 | 13.93 | 0.61 | | 127 | Lesotho | 37.25 | 0.24 | 0.10 | |
| 56 | Fiji | 1,885.38 | 13.90 | 0.61 | ● | 128 | Nigeria | 36.19 | 0.23 | 0.09 | |
| 57 | Belarus | 1,864.61 | 13.75 | 0.60 | | 129 | Mozambique | 27.50 | 0.16 | 0.09 | |
| 58 | Ecuador | 1,804.13 | 13.30 | 0.59 | ● | 130 | Cameroon | 27.50 | 0.16 | 0.08 | ○ |
| 59 | Azerbaijan | 1,709.38 | 12.60 | 0.59 | | 131 | Ethiopia | 23.93 | 0.14 | 0.07 | |
| 60 | Malaysia | 1,677.11 | 12.36 | 0.58 | | 132 | Côte d'Ivoire | 23.74 | 0.14 | 0.06 | ○ |
| 61 | Venezuela, Bolivarian Rep. | 1,623.93 | 11.97 | 0.57 | | 133 | Myanmar | 21.06 | 0.12 | 0.06 | |
| 62 | Georgia | 1,586.93 | 11.69 | 0.56 | | 134 | Madagascar | 16.14 | 0.08 | 0.05 | ○ |
| 63 | Russian Federation | 1,568.96 | 11.56 | 0.56 | | 135 | Malawi | 14.19 | 0.07 | 0.04 | ○ |
| 64 | Bahrain | 1,547.68 | 11.40 | 0.55 | | 136 | Togo | 13.60 | 0.06 | 0.04 | ○ |
| 65 | Mexico | 1,479.01 | 10.90 | 0.54 | | 137 | Mali | 12.71 | 0.05 | 0.03 | ○ |
| 66 | Ukraine | 1,472.06 | 10.85 | 0.54 | | 138 | Burkina Faso | 8.72 | 0.02 | 0.02 | ○ |
| 67 | Saudi Arabia | 1,469.75 | 10.83 | 0.53 | | 139 | Burundi | 7.62 | 0.02 | 0.01 | ○ |
| 68 | Kuwait | 1,452.23 | 10.70 | 0.52 | | 140 | Guinea | 5.62 | 0.00 | 0.01 | ○ |
| 69 | Panama | 1,416.52 | 10.43 | 0.51 | | 141 | Niger | 5.34 | 0.00 | 0.00 | ○ |
| 70 | Trinidad and Tobago | 1,399.14 | 10.31 | 0.51 | | | | | | | |
| 71 | Philippines | 1,298.29 | 9.56 | 0.50 | | | | | | | |
| 72 | Dominican Republic | 1,155.11 | 8.50 | 0.49 | | | | | | | |

SOURCE: Wikimedia Foundation; United Nations, *World Population Prospects: The 2012 Revision* (population)

NOTE: ● indicates a strength; ○ a weakness

7.3.4

Video uploads on YouTube

Number of video uploads on YouTube (scaled by population 15–69 years old) | 2014

| Rank | Country/Economy | Value | Score (0–100) | Percent rank | | Rank | Country/Economy | Value | Score (0–100) | Percent rank | |
|------|--------------------------|--------|---------------|--------------|---|------|----------------------------|-------|---------------|--------------|---|
| 1 | United States of America | 100.00 | 100.00 | 1.00 | ● | 73 | Uganda | 13.38 | 13.38 | 0.01 | ○ |
| 2 | Israel | 95.49 | 95.49 | 0.99 | ● | 74 | Nigeria | 0.00 | 0.00 | 0.00 | ○ |
| 3 | Netherlands | 95.34 | 95.34 | 0.97 | ● | n/a | Albania | n/a | n/a | n/a | |
| 4 | United Kingdom | 94.74 | 94.74 | 0.96 | | n/a | Angola | n/a | n/a | n/a | |
| 5 | Hong Kong (China) | 94.14 | 94.14 | 0.95 | | n/a | Armenia | n/a | n/a | n/a | |
| 6 | Canada | 93.53 | 93.53 | 0.93 | | n/a | Azerbaijan | n/a | n/a | n/a | |
| 7 | Estonia | 93.38 | 93.38 | 0.92 | ● | n/a | Bangladesh | n/a | n/a | n/a | |
| 8 | Denmark | 92.48 | 92.48 | 0.89 | | n/a | Barbados | n/a | n/a | n/a | |
| 8 | Singapore | 92.48 | 92.48 | 0.89 | | n/a | Belarus | n/a | n/a | n/a | |
| 10 | Latvia | 92.18 | 92.18 | 0.88 | ● | n/a | Bhutan | n/a | n/a | n/a | |
| 11 | Finland | 92.03 | 92.03 | 0.86 | | n/a | Bolivia, Plurinational St. | n/a | n/a | n/a | |
| 12 | Switzerland | 91.73 | 91.73 | 0.85 | | n/a | Botswana | n/a | n/a | n/a | |
| 13 | Sweden | 91.43 | 91.43 | 0.84 | | n/a | Burkina Faso | n/a | n/a | n/a | |
| 14 | Ireland | 89.77 | 89.77 | 0.82 | | n/a | Burundi | n/a | n/a | n/a | |
| 15 | New Zealand | 89.17 | 89.17 | 0.81 | | n/a | Cabo Verde | n/a | n/a | n/a | |
| 16 | Czech Republic | 89.02 | 89.02 | 0.79 | | n/a | Cambodia | n/a | n/a | n/a | |
| 17 | Australia | 88.57 | 88.57 | 0.78 | | n/a | Cameroon | n/a | n/a | n/a | |
| 18 | Norway | 87.97 | 87.97 | 0.77 | | n/a | China | n/a | n/a | n/a | |
| 19 | Spain | 87.82 | 87.82 | 0.75 | | n/a | Costa Rica | n/a | n/a | n/a | |
| 20 | Hungary | 87.07 | 87.07 | 0.74 | | n/a | Côte d'Ivoire | n/a | n/a | n/a | |
| 21 | France | 86.47 | 86.47 | 0.71 | | n/a | Cyprus | n/a | n/a | n/a | |
| 21 | Korea, Rep. | 86.47 | 86.47 | 0.71 | | n/a | Dominican Republic | n/a | n/a | n/a | |
| 23 | Belgium | 86.02 | 86.02 | 0.70 | | n/a | Ecuador | n/a | n/a | n/a | |
| 24 | Portugal | 84.96 | 84.96 | 0.68 | | n/a | El Salvador | n/a | n/a | n/a | |
| 25 | Lithuania | 84.81 | 84.81 | 0.67 | | n/a | Ethiopia | n/a | n/a | n/a | |
| 26 | Greece | 84.66 | 84.66 | 0.66 | | n/a | Fiji | n/a | n/a | n/a | |
| 27 | Germany | 83.61 | 83.61 | 0.64 | | n/a | Gambia | n/a | n/a | n/a | |
| 28 | Japan | 82.71 | 82.71 | 0.63 | | n/a | Georgia | n/a | n/a | n/a | |
| 29 | Poland | 82.41 | 82.41 | 0.62 | | n/a | Guatemala | n/a | n/a | n/a | |
| 30 | Austria | 81.80 | 81.80 | 0.60 | ○ | n/a | Guinea | n/a | n/a | n/a | |
| 31 | Argentina | 81.20 | 81.20 | 0.58 | | n/a | Guyana | n/a | n/a | n/a | |
| 31 | Slovenia | 81.20 | 81.20 | 0.58 | | n/a | Honduras | n/a | n/a | n/a | |
| 33 | Italy | 80.90 | 80.90 | 0.56 | | n/a | Iceland | n/a | n/a | n/a | |
| 34 | Chile | 80.15 | 80.15 | 0.55 | | n/a | Iran, Islamic Rep. | n/a | n/a | n/a | |
| 35 | Romania | 79.10 | 79.10 | 0.53 | | n/a | Jamaica | n/a | n/a | n/a | |
| 36 | Slovakia | 78.80 | 78.80 | 0.52 | | n/a | Kazakhstan | n/a | n/a | n/a | |
| 37 | Russian Federation | 78.65 | 78.65 | 0.49 | | n/a | Kyrgyzstan | n/a | n/a | n/a | |
| 37 | Ukraine | 78.65 | 78.65 | 0.49 | | n/a | Lesotho | n/a | n/a | n/a | |
| 39 | Saudi Arabia | 78.50 | 78.50 | 0.48 | | n/a | Luxembourg | n/a | n/a | n/a | |
| 40 | Kuwait | 78.05 | 78.05 | 0.47 | | n/a | Madagascar | n/a | n/a | n/a | |
| 41 | Bulgaria | 77.44 | 77.44 | 0.45 | | n/a | Malawi | n/a | n/a | n/a | |
| 42 | Croatia | 76.69 | 76.69 | 0.44 | | n/a | Mali | n/a | n/a | n/a | |
| 43 | Brazil | 76.24 | 76.24 | 0.42 | | n/a | Malta | n/a | n/a | n/a | |
| 44 | Bahrain | 75.94 | 75.94 | 0.40 | | n/a | Mauritius | n/a | n/a | n/a | |
| 44 | United Arab Emirates | 75.94 | 75.94 | 0.40 | | n/a | Moldova, Rep. | n/a | n/a | n/a | |
| 46 | Serbia | 74.89 | 74.89 | 0.38 | | n/a | Mongolia | n/a | n/a | n/a | |
| 47 | Morocco | 74.14 | 74.14 | 0.37 | | n/a | Mozambique | n/a | n/a | n/a | |
| 48 | Mexico | 73.68 | 73.68 | 0.33 | | n/a | Myanmar | n/a | n/a | n/a | |
| 48 | Peru | 73.68 | 73.68 | 0.33 | | n/a | Namibia | n/a | n/a | n/a | |
| 48 | TFYR of Macedonia | 73.68 | 73.68 | 0.33 | | n/a | Nepal | n/a | n/a | n/a | |
| 51 | Bosnia and Herzegovina | 73.38 | 73.38 | 0.32 | | n/a | Nicaragua | n/a | n/a | n/a | |
| 52 | Montenegro | 73.08 | 73.08 | 0.30 | ○ | n/a | Niger | n/a | n/a | n/a | |
| 53 | Qatar | 72.63 | 72.63 | 0.29 | | n/a | Pakistan | n/a | n/a | n/a | |
| 54 | Thailand | 72.48 | 72.48 | 0.27 | | n/a | Panama | n/a | n/a | n/a | |
| 55 | Colombia | 72.18 | 72.18 | 0.26 | | n/a | Paraguay | n/a | n/a | n/a | |
| 56 | Malaysia | 69.62 | 69.62 | 0.25 | ○ | n/a | Rwanda | n/a | n/a | n/a | |
| 57 | Viet Nam | 68.87 | 68.87 | 0.23 | | n/a | Seychelles | n/a | n/a | n/a | |
| 58 | Turkey | 68.57 | 68.57 | 0.22 | | n/a | Sri Lanka | n/a | n/a | n/a | |
| 59 | Lebanon | 67.07 | 67.07 | 0.21 | | n/a | Sudan | n/a | n/a | n/a | |
| 60 | Philippines | 62.86 | 62.86 | 0.19 | | n/a | Swaziland | n/a | n/a | n/a | |
| 61 | Egypt | 62.56 | 62.56 | 0.16 | | n/a | Tajikistan | n/a | n/a | n/a | |
| 61 | Jordan | 62.56 | 62.56 | 0.16 | ○ | n/a | Tanzania, United Rep. | n/a | n/a | n/a | |
| 63 | Tunisia | 58.95 | 58.95 | 0.15 | ○ | n/a | Togo | n/a | n/a | n/a | |
| 64 | Oman | 56.69 | 56.69 | 0.14 | ○ | n/a | Trinidad and Tobago | n/a | n/a | n/a | |
| 65 | Indonesia | 55.49 | 55.49 | 0.12 | | n/a | Uruguay | n/a | n/a | n/a | |
| 66 | Algeria | 48.72 | 48.72 | 0.11 | | n/a | Uzbekistan | n/a | n/a | n/a | |
| 67 | South Africa | 45.86 | 45.86 | 0.10 | ○ | n/a | Venezuela, Bolivarian Rep. | n/a | n/a | n/a | |
| 68 | India | 37.29 | 37.29 | 0.08 | ○ | n/a | Zambia | n/a | n/a | n/a | |
| 69 | Senegal | 36.84 | 36.84 | 0.07 | ○ | n/a | Zimbabwe | n/a | n/a | n/a | |
| 70 | Yemen | 36.54 | 36.54 | 0.05 | | | | | | | |
| 71 | Kenya | 29.17 | 29.17 | 0.04 | ○ | | | | | | |
| 72 | Ghana | 25.26 | 25.26 | 0.03 | ○ | | | | | | |

SOURCE: Google, parent company of YouTube; United Nations, *World Population Prospects: The 2012 Revision* (population data)

NOTE: ● indicates a strength; ○ a weakness

Appendix III

Sources and Definitions

Sources and Definitions

This appendix complements the data tables by providing, for each of the 79 indicators included in the Global Innovation Index (GII), its title, its description, its definition, and its source. For each indicator for each country/economy, the most recent value within the period 2004–14 was used. The single year given next to the description corresponds to the most frequent year for which data were available; when more than one year is considered, the period is indicated at the end of the indicator's source in parentheses.

Some indicators received special treatment in the computation. A few variables required scaling by some other indicator to be comparable across countries, through division by gross domestic product (GDP) in current US dollars, purchasing power parity GDP in international dollars (PPP\$ GDP), population, total exports, total trade, and so on. Details are provided in this appendix. The scaling factor was in each case the value corresponding to the same year of the particular indicator. In addition, 36 indicators that were assigned half weight are singled out with an 'a'. Finally, indicators for which higher scores indicate worse outcomes, commonly known as 'bads', are differentiated with a 'b' (details on the computation can be found in Appendix IV Technical Notes).

A total of 55 variables are hard data; 19 are composite indicators from international agencies, distinguished with an asterisk (*); and 5 are survey questions from the World Economic Forum's Executive Opinion Survey (EOS), singled out with a dagger (†).

1 Institutions

1.1 Political environment

1.1.1 Political stability and absence of violence/terrorism

Political stability and absence of violence/terrorism index* | 2013

Index that captures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism. Scores are standardized.

Source: World Bank, World Governance Indicators, 2013 update. (<http://info.worldbank.org/governance/wgi/index.aspx#home>)

1.1.2 Government effectiveness

Government effectiveness index* | 2013

Index that captures perceptions of the quality of public and civil services and the degree of their independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Scores are standardized.

Source: World Bank, World Governance Indicators, 2013 update. (<http://info.worldbank.org/governance/wgi/index.aspx#home>)

1.2 Regulatory environment

1.2.1 Regulatory quality

Regulatory quality index^{9a} | 2013

Index that captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private-sector development. Scores are standardized.

Source: World Bank, World Governance Indicators, 2013 update. (<http://info.worldbank.org/governance/wgi/index.aspx#home>)

1.2.2 Rule of law

Rule of law index^{9a} | 2013

Index that captures perceptions of the extent to which agents have confidence in and abide by the rules of society, in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Scores are standardized.

Source: World Bank, World Governance Indicators, 2013 update. (<http://info.worldbank.org/governance/wgi/index.aspx#home>)

1.2.3 Cost of redundancy dismissal

Sum of notice period and severance pay for redundancy dismissal (in salary weeks, averages for workers with 1, 5, and 10 years of tenure, with a minimum threshold of 8 weeks)^b | 2014

Doing Business, in its indicators on employing workers, measures flexibility in the regulation of redundancy in a manner consistent with relevant ILO conventions to strike a better balance between labour market flexibility and social protection (including unemployment protection). The redundancy cost indicator is the sum of the cost of advance notice requirements added to severance payments due when terminating a redundant worker, expressed in weeks of salary. The average value of notice requirements and severance payments applicable to a worker with 1 year of tenure, a worker with 5 years of tenure, and a worker with 10 years of tenure is used to assign the score. If the redundancy cost adds up to 8 or fewer weeks of salary, a value of 8 is assigned but the actual number of weeks is published. If the cost adds up to more than 8 weeks of salary, the score is the number of weeks. One month is recorded as 4 and 1/3 weeks. Assumptions about the worker: the worker earns a salary plus benefits equal to the economy's average wage during the entire period of his employment; has a pay period that is the most common for workers in the economy; is a lawful citizen who belongs to the same race and religion as the majority of the economy's population; resides in the economy's largest business city; and is not a member of a labour union, unless membership is mandatory. Assumptions about the business: the business is a limited liability company; it operates in the economy's largest business city; it is 100% domestically owned; it operates in the manufacturing sector; it has 60 employees; it is subject to collective bargaining agreements in economies where such agreements cover more than half the manufacturing sector and apply even to firms not party to them; and it abides by every law and regulation but does not grant workers more benefits than mandated by law, regulation, or (if applicable) collective bargaining agreement.

Note: The methodology was improved for *Doing Business 2015*, which has affected the year-on-year comparability of these indicators. Read about the changes at <http://www.doingbusiness.org/methodology/methodology-note>

Source: World Bank, *Doing Business 2015: Going Beyond Efficiency*. (<http://www.doingbusiness.org/reports/global-reports/doing-business-2015>)

1.3 Business environment

1.3.1 Ease of starting a business

Ease of starting a business (distance to frontier)* | 2014

The ranking is the simple average of the percentile rankings on the component indicators of the ease of starting a business index: procedures (number); time (days); cost to complete each procedure (% of income per capita); and paid-in minimum capital (% of income per capita). *Doing Business* records all procedures that are officially required for an entrepreneur to start up and formally operate an industrial or commercial business. These include obtaining all necessary licenses and permits and completing any required notifications, verifications, or inscriptions for the company and employees with relevant authorities. To make the data comparable across economies, *Doing Business* uses a standardized business that is a limited liability company (or its legal equivalent); operates in the economy's largest business city; is 100% domestically owned and has 5 owners (none of whom is a legal entity); has start-up capital of 10 times income per capita, paid in cash; performs general industrial or commercial activities; it is not using heavily polluting production processes; leases the commercial plant or offices and is not a proprietor of real estate; does not qualify for investment incentives or any special benefits; has at least 10 and up to 50 employees 1 month after the commencement of operations, all of them domestic nationals; has a turnover of at least 100 times income per capita, and has a company deed 10 pages long. The distance to frontier measure benchmarks economies to the frontier in regulatory practice, measuring the absolute distance to the best performance on each indicator and showing how much the regulatory environment for local entrepreneurs in each economy has changed over time in absolute terms.

Note: The methodology was improved for *Doing Business 2015*, which has affected the year-on-year comparability of these indicators. Read about the changes at <http://www.doingbusiness.org/methodology/methodology-note>

Source: World Bank, *Ease of Doing Business Index 2015, Doing Business 2015*. (<http://www.doingbusiness.org/reports/global-reports/doing-business-2015>)

1.3.2 Ease of resolving insolvency

Ease of resolving insolvency (distance to frontier)* | 2014

The ranking on the ease of resolving insolvency is based on the recovery rate (cents on the dollar). To make the data comparable across economies, several assumptions about the business and the case are used: the recovery rate is recorded as cents on the dollar recouped by creditors through reorganization, liquidation, or debt enforcement (foreclosure) proceedings. The calculation takes into account the outcome: whether the business emerges from the proceedings as a going concern or the assets are sold piecemeal. Then the costs of the proceedings are deducted (1 cent for each percentage point of the value of the debtor's estate). Finally, the value lost as a result of the time the money remains tied up in insolvency proceedings is taken into account, including the loss of value due to depreciation of furniture, etc. The recovery rate is the present value of the remaining proceeds, based on end-2013 lending rates from the International Monetary Fund's *International Financial Statistics*, supplemented with data from central banks and the Economist Intelligence Unit. If an economy had zero cases a year over the past 5 years involving a judicial reorganization, judicial liquidation, or debt enforcement procedure (foreclosure), the economy receives a 'no practice' ranking. This means that creditors are unlikely to recover their money through a formal legal process (in or out of court). The recovery rate for 'no practice' economies is zero. Indicators resolving insolvency—time (in years) and cost (% of estate), while also computed by *Doing Business*, are not taken into account for the ranking on the ease of resolving insolvency. Refer to indicator 1.3.1 for details regarding the distance to frontier measure.

Note: The methodology was improved for *Doing Business 2015*, which has affected the year-on-year comparability of these indicators. Read about the changes at <http://www.doingbusiness.org/methodology/methodology-note>

Source: World Bank, *Ease of Doing Business Index 2015*, *Doing Business 2015*. (<http://www.doingbusiness.org/reports/global-reports/doing-business-2015>)

1.3.3 Ease of paying taxes

Ease of paying taxes (distance to frontier)* | 2014

The ranking is the simple average of the percentile rankings on the component indicators of the ease of paying taxes: payments (number per year); time (hours

per year); profit tax (%); labour tax and contributions (%); other taxes (%); and total tax rate (% profit). Since 2012, a threshold calculated and adjusted on a yearly basis is applied to the total tax rate. The threshold is equivalent to the highest total tax rate among the top 15% of economies in the ranking on the total tax rate; this year the threshold is 26.1% (i.e., for all economies with a total tax rate below this threshold, the total tax rate is set at 26.1%). The threshold is not based on any underlying theory, but is intended to mitigate the effect of very low tax rates on the ranking of the ease of paying taxes. To make the data comparable across economies, several assumptions about the business and the taxes and contributions are used. The methodology benefited from discussion with members of the International Tax Dialogue and other stakeholders, which led to a refinement of the survey questions on the time to pay taxes, the collection of additional data on the labour tax wedge for further research, and the introduction of a threshold applied to the total tax rate for the purpose of calculating the ranking on the ease of paying taxes. Refer to indicator 1.3.1 for details regarding the distance to frontier measure.

Note: The methodology was improved for *Doing Business 2015*, which has affected the year-on-year comparability of these indicators. Read about the changes at <http://www.doingbusiness.org/methodology/methodology-note>

Source: World Bank, *Ease of Doing Business Index 2015*, *Doing Business 2015*. (<http://www.doingbusiness.org/reports/global-reports/doing-business-2015>)

2 Human capital and research

2.1 Education

2.1.1 Expenditure on education

Government expenditure on education (% of GDP) | 2011

Government operating expenditures in education, including wages and salaries and excluding capital investments in buildings and equipment, as a percentage of gross domestic product (GDP).

Source: UNESCO Institute for Statistics, *UIS online database (2005–13)*. (<http://stats.uis.unesco.org>)

2.1.2 Government expenditure on education per pupil, secondary

Government expenditure per pupil, secondary (% of GDP per capita) | 2011

Government spending on education divided by the total number of secondary students, as a percentage of GDP per capita. Government expenditure (current and capital) includes government spending on educational institutions (both public and private), education administration, and subsidies for private entities (students/households and other private entities).

Source: UNESCO Institute for Statistics, *UIS online database (2005–13)*. (<http://stats.uis.unesco.org>)

2.1.3 School life expectancy

School life expectancy, primary to tertiary education (years) | 2012

Total number of years of schooling that a child of a certain age can expect to receive in the future, assuming that the probability of his or her being enrolled in school at any particular age is equal to the current enrolment ratio for that age.

Source: UNESCO Institute for Statistics, *UIS online database (2004–13)*. (<http://stats.uis.unesco.org>)

2.1.4 Assessment in reading, mathematics, and science

PISA average scales in reading, mathematics, and science³ | 2012

The Organisation for Economic Co-operation and Development (OECD) Programme for International Student Assessment (PISA) develops three-yearly surveys that examine 15-year-old students' performance in reading, mathematics, and science. The scores are calculated in each year so that the mean is 500 and the standard deviation 100. The scores for China come from Shanghai; those for India from Himachal Pradesh and Tamil Nadu (average); those for the United Arab Emirates from Dubai; and those for the Bolivarian Republic of Venezuela from Miranda. These scores are those from the GII 2014 report.

Source: OECD Programme for International Student Assessment (PISA) (2010–12). (www.pisa.oecd.org/)

2.1.5 Pupil-teacher ratio, secondary

Pupil-teacher ratio, secondary^{3,b} | 2012

The number of pupils enrolled in secondary school divided by the number of secondary school teachers (regardless of their teaching assignment). Where the

data are missing for some countries, the ratios for upper-secondary are reported; if these are also missing, the ratios for lower-secondary are reported instead.

Source: UNESCO Institute for Statistics, UIS online database (2005–13). (<http://stats.uis.unesco.org>)

2.2 Tertiary education

2.2.1 Tertiary enrolment

School enrolment, tertiary (% gross)^a | 2012

The ratio of total tertiary enrolment, regardless of age, to the population of the age group that officially corresponds to the tertiary level of education. Tertiary education, whether or not to an advanced research qualification, normally requires, as a minimum condition of admission, the successful completion of education at the secondary level.

Source: UNESCO Institute for Statistics, UIS online database (2005–13). (<http://stats.uis.unesco.org>)

2.2.2 Graduates in science and engineering

Tertiary graduates in engineering, manufacturing, and construction (% of total tertiary graduates) | 2012

The share of all tertiary graduates in manufacturing, engineering, and construction over all tertiary graduates.

Source: UNESCO Institute for Statistics, UIS online database (2005–13). (<http://stats.uis.unesco.org>)

2.2.3 Tertiary inbound mobility

Tertiary inbound mobility ratio (%)^a | 2012

The number of students from abroad studying in a given country, as a percentage of the total tertiary enrolment in that country.

Source: UNESCO Institute for Statistics, UIS online database (2005–13). (<http://stats.uis.unesco.org>)

2.3 Research and development (R&D)

2.3.1 Researchers

Researchers, full-time equivalence (FTE) (per million population) | 2013

Researchers per million population, full-time equivalence. Researchers in R&D are professionals engaged in the conception or creation of new knowledge, products, processes, methods, or systems and in the management of the projects concerned. Postgraduate PhD students (ISCED97 level 6) engaged in R&D are included.

Source: UNESCO Institute for Statistics, UIS online database (2005–13). (<http://stats.uis.unesco.org>)

2.3.2 Gross expenditure on R&D (GERD)

GERD: Gross expenditure on R&D (% of GDP) | 2013

Total domestic intramural expenditure on R&D during a given period as a percentage of GDP. Intramural R&D expenditure is all expenditure for R&D performed within a statistical unit or sector of the economy during a specific period, whatever the source of funds.

Source: UNESCO Institute for Statistics, UIS online database (2005–13). (<http://stats.uis.unesco.org>)

2.3.3 QS university ranking average score of top 3 universities

Average score of the top 3 universities at the QS world university ranking* | 2014

Average score of the top three universities per country. If fewer than three universities are listed in the QS ranking of the global top 700 universities, the sum of the scores of the listed universities is divided by three, thus implying a score of zero for the non-listed universities.

Source: QS Quacquarelli Symonds Ltd, QS World University Ranking 2014/2015, Top Universities. (<http://www.topuniversities.com/university-rankings/world-university-rankings/2014>)

3.1.2 ICT use

ICT use index* | 2013

The ICT use index is a composite index that weights three ICT indicators (33% each): (1) Percentage of individuals using the Internet; (2) Fixed (wired)-broadband Internet subscriptions per 100 inhabitants; (3) Active mobile-broadband subscriptions per 100 inhabitants. It is the second sub-index in ITU's ICT Development Index (IDI).

Source: International Telecommunication Union, *Measuring the Information Society 2014, ICT Development Index 2014*. (<http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2014.aspx>)

3.1.3 Government's online service

Government's online service index* | 2014

To arrive at a set of Online Service Index values, research teams assessed each country's national website, including the national central portal, e-services portal, and e-participation portal as well as the websites of the related ministries of education, labour, social services, health, finance, and environment, as applicable. In addition to being assessed for content and features, the national sites were tested for a minimal level of web content accessibility as described in the *Web Content Accessibility Guidelines* of the World Wide Web Consortium. The survey covers four stages of government's online service development, with points assigned for (1) an emerging presence, providing limited and basic information; (2) an enhanced presence, providing greater public policy and governance sources of information, such as policies, laws and regulation, downloadable databases, etc.; (3) a transactional presence, allowing two-way interactions between government and citizens (G2C and C2G), including paying taxes and applying for ID cards, birth certificates, passports, license renewals, etc.; and (4) a connected presence, characterized by G2G, G2C, and C2G interactions; participatory deliberative policy- and decision-making. A citizen-centric approach was followed. It is the first of three components of the E-Government Development Index (EGDI) of the United Nations Public Administration Network (UNPAN), together with components on telecommunication infrastructure and human capital.

Note: The precise meaning of these values varies from one edition of the Survey to the next as understanding of the potential of e-government changes and the underlying technology evolves. Read about the methodology

3 Infrastructure

3.1 Information and communication technologies (ICTs)

3.1.1 ICT access

ICT access index* | 2013

The ICT access index is a composite index that weights five ICT indicators (20% each): (1) Fixed telephone lines per 100 inhabitants; (2) Mobile cellular telephone subscriptions per 100 inhabitants; (3) International Internet bandwidth (bit/s) per Internet user; (4) Percentage of households with a computer; and (5) Percentage of households with Internet access. It is the first sub-index in ITU's ICT Development Index (IDI).

Source: International Telecommunication Union, *Measuring the Information Society 2014, ICT Development Index 2014*. (<http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2014.aspx>)

at <http://unpan3.un.org/egovkb/en-us/About/Methodology>

Source: United Nations Public Administration Network, e-Government Survey 2014. (<http://unpan3.un.org/egovkb/Reports/UN-E-Government-Survey-2014>)

3.1.4 Online e-participation E-Participation Index* | 2014

The United Nations E-Participation Index is based on the survey used for the UN Online Service Index. The survey was expanded with questions emphasizing quality in the connected presence stage of e-government. These questions focus on the use of the Internet to facilitate the provision of information by governments to citizens ('e-information sharing'), interaction with stakeholders ('e-consultation'), and engagement in decision-making processes ('e-decision making'). A country's E-Participation Index value reflects how useful these features are and the extent to which they have been deployed by the government compared with all other countries. The purpose of this measure is to offer insight into how different countries are using online tools to promote interaction between citizens and government, as well as among citizens, for the benefit of all. The index ranges from 0 to 1, with 1 showing greater e-participation.

Note: The precise meaning of these values varies from one edition of the Survey to the next as understanding of the potential of e-government changes and the underlying technology evolves. Read about the methodology at <http://unpan3.un.org/egovkb/en-us/About/Methodology>

Source: United Nations Public Administration Network, e-Government Survey 2014. (<http://unpan3.un.org/egovkb/Reports/UN-E-Government-Survey-2014>)

3.2 General infrastructure

3.2.1 Electricity output

Electricity output (kWh per capita)^a | 2012

Electricity production, measured at the terminals of all alternator sets in a station. In addition to hydropower, coal, oil, gas, and nuclear power generation, this indicator covers generation by geothermal, solar, wind, and tide and wave energy, as well as that from combustible renewables and waste. Production includes the output of electricity plants that are designed to produce electricity only as well as that of combined heat and power plants. Electricity output in kWh is scaled by population.

Source: International Energy Agency, World Energy Balances online data service (2012–13). (<http://www.iea.org/stats/>)

3.2.2 Logistics performance

Logistics Performance Index*^a | 2014

A multidimensional assessment of logistics performance, the Logistics Performance Index (LPI) compares the trade logistics profiles of 160 countries and rates them on a scale of 1 (worst) to 5 (best). The ratings are based on 6,000 individual country assessments by nearly 1,000 international freight forwarders, who rated the eight foreign countries their company serves most frequently. The LPI's six components include: (1) the efficiency of the clearance process (speed, simplicity, and predictability of formalities) by border control agencies, including customs; (2) the quality of trade- and transport-related infrastructure (ports, railroads, roads, information technology); (3) the ease of arranging competitively priced shipments; (4) the competence and quality of logistics services (transport operators, customs brokers); (5) the ability to track and trace consignments; and (6) the frequency with which shipments reach the consignee within the scheduled or expected delivery time. Details of the survey methodology are in Arvis et al.'s *Connecting to Compete 2014: Trade Logistics in the Global Economy* (2014). Scores are averaged across all respondents.

Source: World Bank and Turku School of Economics, Logistics Performance Index 2014; Arvis et al., 2014, *Connecting to Compete 2014: Trade Logistics in the Global Economy*. (<http://lpi.worldbank.org/>)

3.2.3 Gross capital formation

Gross capital formation (% of GDP) | 2014

Ratio of total gross capital formation in current local currency to GDP in current local currency. Gross capital formation or investment is measured by the total value of the gross fixed capital formation and changes in inventories and acquisitions less disposals of valuables for a unit or sector, on the basis of the System of National Accounts (SNA) of 1993. Gross fixed capital formation consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks

of goods held by firms to meet temporary or unexpected fluctuations in production or sales and 'work in progress'. Net acquisitions of valuables are also considered capital formation.

Source: International Monetary Fund, World Economic Outlook 2014 database, April 2015 (PPP\$ GDP). (<http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/weoselgr.aspx>)

3.3 Ecological sustainability

3.3.1 GDP per unit of energy use

GDP per unit of energy use (2005 PPP\$ per kg of oil equivalent) | 2012

Purchasing power parity gross domestic product (PPP\$ GDP) per kilogram of oil equivalent of energy use. Energy use or total primary energy supply (TPES) is calculated as the production of fuels + inputs from other sources + imports – exports – international marine bunkers +/- stock changes. It includes coal, crude oil, natural gas liquids, refinery feedstocks, additives, petroleum products, gases, combustible renewables and waste, electricity, and heat. Domestic supply (also called 'energy apparent consumption') differs from final consumption in that it does not take account of distribution losses. The supply (or use) of energy commodities is converted to kilograms or tons of oil equivalent (koe, toe) using standard coefficients for each energy source.

Source: International Energy Agency, World Energy Balances online data service (2012–13). (<http://www.iea.org/stats/>)

3.3.2 Environmental performance

Environmental Performance Index* | 2014

This index ranks countries on 20 performance indicators tracked across policy categories that cover both environmental public health and ecosystem vitality. These indicators gauge how close countries are to established environmental policy goals. The index ranges from 0 to 100, with 100 indicating best performance.

Source: Yale University and Columbia University, Environmental Performance Index 2014. (<http://epi.yale.edu/>)

3.3.3 ISO 14001 environmental certificates

ISO 14001 Environmental management systems—Requirements with guidance for use: Number of certificates issued (per billion PPP\$ GDP)^a | 2013

Number of certificates of conformity to 'ISO 14001:2004 Environmental management systems: Requirements with guidance for use' issued, according to the

ISO survey. Single-site and multiple-site certificates are not distinguished. The ISO survey is published on an annual basis by the International Organization for Standardization (ISO). Only certification bodies accredited by national members of the International Accreditation Forum (<http://www.iaf.nu>) were used as sources (except for certificates in the Russian Federation, which were accredited locally). Certification of conformity with standards is not a requirement and the standards can be implemented without certification, but certification is perceived as adding value and trust. ISO is a network of the national standards institutes of 162 countries, and it is the world's largest developer of voluntary International Standards for business, government, and society, with a portfolio of more than 19,500 standards in almost every sector of economic activity and technology. ISO itself does not perform certification to its standards, does not issue certificates, and does not control certification performed independently of ISO by other organizations. The data are reported per billion PPP\$ GDP.

Source: International Organization for Standardization (ISO), *The ISO Survey of Management System Standard Certifications, 1999–2013*; International Monetary Fund, *World Economic Outlook 2014 database, April 2015 (PPP\$ GDP)*. (<http://www.iso.org>; <http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/weoselgr.aspx>)

4 Market sophistication

4.1 Credit

4.1.1 Ease of getting credit

Ease of getting credit (distance to frontier)* | 2014

The ranking is the simple average of the percentile rankings on the component indicators of the ease of getting credit index: strength of legal rights index (range 0–10); and depth of credit information index (range 0–6). *Doing Business* measures the legal rights of borrowers and lenders with respect to secured transactions through one set of indicators and the sharing of credit information through another. The first set of indicators describes how well collateral and bankruptcy laws facilitate lending. The second set measures the coverage, scope, and accessibility of credit information available through public credit registries and private credit bureaus. Although *Doing Business* compiles data on getting credit for public registry coverage (% of

adults) and for private bureau coverage (% of adults), these indicators are not included in the ranking. Refer to indicator 1.3.1 for details regarding the distance to frontier measure.

Note: The methodology was improved for *Doing Business 2015*, which has affected the year-on-year comparability of these indicators. Read about the changes at <http://www.doingbusiness.org/methodology/methodology-note>

Source: World Bank, *Ease of Doing Business Index 2015, Doing Business 2015*. (<http://www.doingbusiness.org/reports/global-reports/doing-business-2015>)

4.1.2 Domestic credit to private sector

Domestic credit to private sector (% of GDP) | 2013

Financial resources provided to the private sector, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries, these claims include credit to public enterprises.

Source: International Monetary Fund, *International Financial Statistics and data files; and World Bank and OECD GDP estimates; extracted from the World Bank's World Development Indicators database (2004–13)*. (<http://data.worldbank.org/>)

4.1.3 Microfinance institutions' gross loan portfolio

Microfinance institutions: Gross loan portfolio (% of GDP) | 2013

Combined gross loan balances per microfinance institution (current US\$), divided by GDP (current US\$) and multiplied by 100.

Source: Microfinance Information Exchange, *Mix Market database*; International Monetary Fund, *World Economic Outlook 2014 database, April 2015 (PPP\$ GDP)*. (<http://www.mixmarket.org/crossmarket-analysis-report/download>; <http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx>)

4.2 Investment

4.2.1 Ease of protecting investors

Ease of protecting investors (distance to frontier)* | 2014

The ranking is the simple average of the percentile rankings on the component indicators of the ease of protecting investors index: the extent of disclosure index (0–10); the extent of director liability index (0–10); the ease of shareholder suits index (0–10); and the strength of investor protection index (0–10). *Doing Business* measures the strength of

minority shareholder protections against directors' misuse of corporate assets for personal gain. The indicators distinguish three dimensions of investor protections: transparency of related-party transactions (extent of disclosure index), liability for self-dealing (extent of director liability index), and shareholders' ability to sue officers and directors for misconduct (ease of shareholder suits index). The data come from a survey of corporate and securities lawyers and are based on securities regulations, company laws, civil procedure codes, and court rules of evidence. Refer to indicator 1.3.1 for details regarding the distance to frontier measure.

Note: The methodology was improved for *Doing Business 2015*, which has affected the year-on-year comparability of these indicators. Read about the changes at <http://www.doingbusiness.org/methodology/methodology-note>

Source: World Bank, *Ease of Doing Business Index 2015, Doing Business 2015*. (<http://www.doingbusiness.org/reports/global-reports/doing-business-2015>)

4.2.2 Market capitalization

Market capitalization of listed companies (% of GDP)^a | 2012

Market capitalization (also known as 'market value') is the share price times the number of shares outstanding. Listed domestic companies are the domestically incorporated companies listed on the country's stock exchanges at the end of the year. Listed companies do not include investment companies, mutual funds, or other collective investment vehicles.

Source: Standard and Poor's and World Bank and OECD GDP estimates; extracted from the World Bank's World Development Indicators database (2006–12). (<http://data.worldbank.org/>)

4.2.3 Total value of stocks traded

Stocks traded, total value (% of GDP)^a | 2012

Total value of shares traded during the period. This indicator complements the market capitalization ratio by showing whether market size is matched by trading.

Source: Standard and Poor's and World Bank and OECD GDP estimates; extracted from the World Bank's World Development Indicators database (2006–12). (<http://data.worldbank.org/>)

4.2.4 Venture capital deals

Venture capital per investment location: Number of deals (per trillion PPP\$ GDP)^a | 2014

Thomson Reuters data on private equity deals, per deal, with information on the location of investment, investment company, investor firms, and funds, among other details. The series corresponds to a query on venture capital deals from 1 January 2014 to 31 December 2014, with the data collected by investment location, for a total of 19,309 deals in 73 countries in 2014. The data are reported per trillion PPP\$ GDP.

Source: Thomson Reuters, Thomson One Banker Private Equity database; International Monetary Fund, World Economic Outlook 2014 database, April 2015 (PPP\$ GDP). (<http://banker.thomsonib.com>; <http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx>)

4.3 Trade and competition

4.3.1 Applied tariff rate, weighted mean

Tariff rate, applied, weighted mean, all products (%)^{a,b} | 2012

The average of effectively applied rates weighted by the product import shares corresponding to each partner country. Data are classified using the Harmonized System of trade at the six- or eight-digit level. Tariff line data were matched to Standard International Trade Classification (SITC) revision 3 codes to define commodity groups and import weights. To the extent possible, specific rates have been converted to their ad valorem equivalent rates and have been included in the calculation of weighted mean tariffs. Effectively applied tariff rates at the six- and eight-digit product level are averaged for products in each commodity group. When the effectively applied rate is unavailable, the most-favoured nation rate is used instead. World Bank estimates use the World Integrated Trade Solution (WITS) system, based on tariff data from the UNCTAD Trade Analysis and Information System (TRAINS) database and import weights calculated using the UN Comtrade database.

Source: World Bank, based on WITS, UNCTAD TRAINS, and UN COMTRADE; extracted from the World Bank's World Development Indicators database (2005–12). (<http://data.worldbank.org/>)

4.3.2 Intensity of local competition

Average answer to the survey question: In your country, how intense is competition in the local markets? [1 = not intense at all; 7 = extremely intense][†] | 2014

Source: World Economic Forum, Executive Opinion Survey 2014–2015. (<https://wefsurvey.org>)

5.1.4 GERD financed by business enterprise

GERD: Financed by business enterprise (% of total GERD)^a | 2013

Percentage of gross expenditure on R&D financed by business enterprise.

Source: UNESCO Institute for Statistics, UIS online database (2007–14). (<http://stats.uis.unesco.org>)

5.1.5 Females employed with advanced degrees

Females employed with advanced degrees, % total employed (scaled by million population 25+ years old)^a | 2013

The percentage of females employed with advanced degrees out of total employed. The employed comprise all persons of working age who, during a specified brief period, were in one of the following categories: (1) paid employment (whether at work or with a job but not at work); or (2) self-employment (whether at work or with an enterprise but not at work). Data are disaggregated by level of education, which refers to the highest level of education completed, classified according to the International Standard Classification of Education (ISCED). With special tabulation for Canada from Statistics Canada, Table 282-0004: Labour force survey estimates (LFS), by educational attainment, sex, and age group, annual (persons unless otherwise noted).

Source: International Labour Organization, ILOSTAT Annual Indicators (2005–14) and Statistics Canada, Table 282-0004; extracted from CANSIM, the Canadian socioeconomics database from Statistics Canada, accessed 22 April 2015. (<http://www.ilo.org/ilostat/>; <http://laborsta.ilo.org/>)

5 Business sophistication

5.1 Knowledge workers

5.1.1 Employment in knowledge-intensive services

Employment in knowledge-intensive services (% of workforce) | 2013

Sum of people in categories 1 to 3 as a percentage of total people employed, according to the International Standard Classification of Occupations (ISCO). Categories included: ISCO-08: 1 Managers, 2 Professionals, and 3 Technicians and associate professionals (years 2004–14); ISCO-88: 1 Legislators, senior officials and managers, 2 Professionals, 3 Technicians and associate professionals (2004–13); ISCO-1968: 1 Professional, technical and related workers (category 0 Armed forces is excluded), 2 Administrative and managerial workers, 3 Clerical and related workers (years 2004–08).

Source: International Labour Organization ILOSTAT Database of Labour Statistics (2004–14). (<http://www.ilo.org/ilostat/>)

5.1.2 Firms offering formal training

Firms offering formal training (% of firms) | 2013

The percentage of firms offering formal training programmes for their permanent, full-time employees.

Source: International Finance Corporation and World Bank, Enterprise Surveys (2005–13). (<http://www.enterprisesurveys.org/>)

5.1.3 GERD performed by business enterprise

GERD: Performed by business enterprise (% of GDP)^a | 2013

Gross expenditure on R&D performed by business enterprise as a percentage of GDP.

Source: UNESCO Institute for Statistics, UIS online database (2004–13). (<http://stats.uis.unesco.org>)

5.2 Innovation linkages

5.2.1 University/industry research collaboration

Average answer to the survey question: In your country, to what extent do business and universities collaborate on research and development (R&D)? [1 = do not collaborate at all; 7 = collaborate extensively]^{†a} | 2014

Source: World Economic Forum, Executive Opinion Survey 2014–2015. (<https://wefsurvey.org>)

5.2.2 State of cluster development

Average answer to the survey question on the role of clusters in the economy: In your country, how widespread are well-developed and deep clusters (geographic concentrations of firms, suppliers, producers of related products and services, and specialized institutions in a particular field)? [1 = nonexistent; 7 = widespread in many fields] † | 2014

Source: World Economic Forum, Executive Opinion Survey 2014–2015. (<https://wefsurvey.org>)

5.2.3 GERD financed by abroad

GERD: Financed by abroad (% of total GERD) | 2013

Percentage of gross expenditure on R&D financed by abroad—i.e., with foreign financing.

Source: UNESCO Institute for Statistics, UIS online database (2007–14). (<http://stats.uis.unesco.org>)

5.2.4 Joint venture/strategic alliance deals

Joint ventures/strategic alliances: Number of deals, fractional counting (per trillion PPP\$ GDP)^a | 2014

Thomson Reuters data on joint ventures/strategic alliances deals, per deal, with details on the country of origin of partner firms, among others. The series corresponds to a query on joint venture/strategic alliance deals from 1 January 2014 to 31 December 2014, for a total of 1,623 deals announced in 2014, with firms headquartered in 104 participating economies. Each participating nation of each company in a deal (n countries per deal) gets, per deal, a score equivalent to $1/n$ (with the effect that all country scores add up to 1,623). The data are reported per trillion PPP\$ GDP.

Source: Thomson Reuters, Thomson One Banker Private Equity, SDC Platinum database; International Monetary Fund World Economic Outlook database, April 2015 (PPP\$ GDP) (2014). (<http://banker.thomsonib.com>); <http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx>

5.2.5 Patent families filed in at least three offices

Number of patent families filed by residents in at least three offices (per billion PPP\$ GDP)^a | 2011

A 'patent family' is defined as a set of interrelated patent applications filed in one or more countries/jurisdictions to protect the same invention. In this report, 'patent families data' refers to patent applications filed by residents in at least three IP offices; the data are scaled by PPP\$ GDP (billions). A 'patent' is a set of exclusive rights granted by law to applicants for inventions that are new, non-obvious, and commercially

applicable. It is valid for a limited period of time (generally 20 years), during which patent holders can commercially exploit their inventions on an exclusive basis. In return, applicants are obliged to disclose their inventions to the public in a manner that enables others, skilled in the art, to replicate the invention. The patent system is designed to encourage innovation by providing innovators with time-limited exclusive legal rights, thus enabling innovators to appropriate a return on their innovative activity.

Source: World Intellectual Property Organization, WIPO Statistics Database; International Monetary Fund, World Economic Outlook database, April 2015 (PPP\$ GDP) (2004–11). (<http://www.wipo.int/ipstats/>); <http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx>

5.3 Knowledge absorption

5.3.1 Royalties and license fees payments

Royalty and license fees, payments (% of total trade)^a | 2013

Royalties and license fees payments (% of total trade) according to the Extended Balance of Payments Services Classification EBOPS 2002—i.e., code 266 Royalties and license fees (including franchises and similar rights) as a percentage of total trade. 'Total trade' is defined as the sum of total imports code G100 goods and code S200CS commercial services (excluding government services) plus total exports of code G100 goods and code S200CS commercial services (excluding government services), divided by 2. According to the fifth edition of the International Monetary Fund's *Balance of Payments Manual*, the item 'Goods' covers general merchandise, goods for processing, repairs on goods, goods procured in ports by carriers, and nonmonetary gold. The 'commercial services' category is defined as being equal to 'services' minus 'government services, not included elsewhere'. Receipts are between residents and nonresidents for the authorized use of intangible, nonproduced, nonfinancial assets and proprietary rights (such as patents, copyrights, trademarks, industrial processes, and franchises) and for the use, through licensing agreements, of produced originals of prototypes (such as films and manuscripts).

Note: There has been a change in the data source from the International Monetary Fund to the Organisation for Economic Co-operation and Development, which has affected the year-on-year comparability of this indicator.

Source: World Trade Organization, *Trade in Commercial Services database*, itself based on the fifth (1993) edition of the International Monetary Fund's *Balance of Payments Manual and Balance of Payments database* (2009–13). (<http://stat.wto.org/StatisticalProgram/WSDStatProgramSeries.aspx?Language=E>); http://unstats.un.org/unsd/tradeserv/EBOPS2002_eng.pdf

5.3.2 High-tech imports

High-tech net imports (% of total trade) | 2013

High-technology imports minus re-imports (% of total trade). The list of commodities contains technical products with a high intensity of R&D, based on the Eurostat classification, itself based on SITC Rev.4 and the Organisation for Economic Co-operation and Development (OECD) definition. Commodities belong to the following sectors: aerospace; computers & office machines; electronics, telecommunications; pharmacy; scientific instruments; electrical machinery; chemistry; non-electrical machinery; and armament.

Source: United Nations, COMTRADE database; Eurostat, 'High-technology' aggregations based on SITC Rev. 4, April 2009 (2011–13). (<http://comtrade.un.org/>); http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an5.pdf)

5.3.3 Communications, computer and information services imports

Communications, computer and information services imports (% of total trade) | 2013

Communication, computer and information services imports (% of total trade) according to the Extended Balance of Payments Services Classification EBOPS 2002, including codes 245 Communications services (postal, courier services, and telecommunications services); and 262 Computer and information services, as a percentage of total trade.

Source: World Trade Organization, *Trade in Commercial Services database*, itself based on the fifth (1993) edition of the International Monetary Fund's *Balance of Payments Manual and Balance of Payments database* (2008–13). (<http://stat.wto.org/StatisticalProgram/WSDStatProgramSeries.aspx?Language=E>); http://unstats.un.org/unsd/tradeserv/EBOPS2002_eng.pdf

5.3.4 Foreign direct investment net inflows

Foreign direct investment (FDI), net inflows (% of GDP) | 2013

Net inflows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors, and is divided by GDP.

Source: International Monetary Fund, International Financial Statistics and data files, and World Bank and OECD GDP estimates; extracted from the World Bank's World Development Indicators database (2012–13). (<http://data.worldbank.org/>)

6 Knowledge and technology outputs

6.1 Knowledge creation

6.1.1 National office resident patent applications

Number of patent applications filed by residents at the national patent office (per billion PPP\$ GDP)^a | 2013

Number of patent applications filed by residents at the national patent office. Data are scaled by PPP\$ GDP (billions). 'Patent' is defined in the description of indicator 5.2.5. Patent applications by resident data are based on 'equivalent count', where applications at regional offices are equivalent to multiple applications, one in each of the states that is a member of those offices. To calculate the number of equivalent patent applications for the Eurasian Patent Office (EAPO) and the African Intellectual Property Organization (OAPI), each application is multiplied by the corresponding number of member states. For the European Patent Office (EPO) and the African Regional Intellectual Property Organization (ARIPO), each application is counted as one application abroad if the applicant does not reside in a member state or as one resident and one application abroad if the applicant resides in a member state. The equivalent applications concept is used only for reporting data by origin. A resident application refers to an application filed with the IP office of or acting for the state or jurisdiction in which the first-named applicant in the application has residence.

Source: World Intellectual Property Organization, WIPO Statistics Database; International Monetary Fund, World Economic Outlook database, April 2015 (PPP\$ GDP) (2010–13). (<http://www.wipo.int/ipstats/>; <http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx>)

6.1.2 Patent Cooperation Treaty resident applications

Number of international patent applications filed by residents at the Patent Cooperation Treaty (per billion PPP\$ GDP)^a | 2014

Number of international patent applications filed by residents under the World Intellectual Property Organization (WIPO)-administered Patent Cooperation Treaty (PCT). Data are reported for PCT member countries only, and scaled by PPP\$ GDP (billions). PCT applications are assigned to a particular country of origin according to the country of residence of the first-named applicant. The PCT system simplifies the process of multiple national patent filings by reducing the requirement to file a separate application in each jurisdiction. However, the decision of whether to grant patent rights remains in the hands of national and regional patent offices, and the patent rights remain limited to the jurisdiction of the patent-granting authority. The PCT international application process starts with the international phase, during which an international search and, possibly, a preliminary examination are performed, and concludes with the national phase, during which national and regional patent offices decide on the patentability of an invention according to national law.

Source: World Intellectual Property Organization, WIPO Statistics Database; International Monetary Fund, World Economic Outlook database, April 2015 (PPP\$ GDP) (2012–14). (<http://www.wipo.int/ipstats/>; <http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx>)

6.1.3 National office resident utility model applications

Number of utility model applications filed by residents at the national patent office (per billion PPP\$ GDP) | 2013

Number of utility model (UM) applications filed by residents at the national patent office. Resident UM data are scaled by PPP\$ GDP (billions). UM is a special form of patent right granted by a state/jurisdiction to an inventor or inventor's assignee for a fixed period of time. The terms and conditions for granting a utility model are slightly different

from those for normal patents (including a shorter term of protection and less stringent patentability requirements). The term 'utility model' can also describe what are known in certain countries as 'petty patents', 'short-term patents', or 'innovation patents'.

Source: World Intellectual Property Organization, WIPO Statistics Database; International Monetary Fund, World Economic Outlook database, April 2015 (PPP\$ GDP) (2010–13). (<http://www.wipo.int/ipstats/>; <http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx>)

6.1.4 Scientific and technical publications

Number of scientific and technical journal articles (per billion PPP\$ GDP)^a | 2014

The number of scientific and engineering articles published in the following fields: physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences. Article counts are from a set of journals covered by the Science Citation Index (SCI) and the Social Sciences Citation Index (SSCI). Articles are classified by year of publication and assigned to each country/economy on basis of the institutional address(es) listed on the article. Articles are counted on a count basis (rather than a fractional basis)—that is, for articles with collaborating institutions from multiple countries/economies, each country/economy receives credit on the basis of its participating institutions. The data are reported per trillion PPP\$ GDP.

Source: Special tabulations from Thomson Reuters, Web of Science, Science Citation Index (SCI) and Social Sciences Citation Index (SSCI); International Monetary Fund, World Economic Outlook 2014 database, April 2015 (PPP\$ GDP). (http://thomsonreuters.com/products_services/science/; <http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx>)

6.1.5 Citable documents H index

The H index is the economy's number of published articles (H) that have received at least H citations in the period 1996–2013.^a | 2013

The H index is an economy's number of published articles (H) that have received at least H citations in the period 1996–2013. It quantifies both country scientific productivity and scientific impact and is also applicable to scientists, journals, etc. The SCImago Journal & Country Rank is a portal that includes journal and economy scientific indicators developed from the information contained in the Scopus® database (Elsevier B.V.). This platform takes its name from the SCImago Journal

Rank (SJR), developed by SCImago from the algorithm Google PageRank™. The H index is tabulated from the number of citations received in subsequent years by articles published in a given year, divided by the number of articles published that year.

Source: SCImago (2007) SJR—SCImago Journal & Country Rank. Retrieved February 2014. (<http://www.scimagojr.com>)

6.2 Knowledge impact

6.2.1 Growth rate of GDP per person engaged

Growth rate of GDP per person engaged (constant 1990 PPP\$) | 2013

Growth of gross domestic product (GDP) per person engaged provides a measure of labour productivity (defined as output per unit of labour input). GDP per person employed is GDP divided by total employment in the economy. PPP\$ GDP is converted to 1990 constant international dollars using PPP rates. An international dollar has the same purchasing power over GDP that a US dollar has in the United States of America.

Source: The Conference Board Total Economy Database™ Output, Labor and Labor Productivity Country Details, 1950–2013, January 2014. (<https://www.conference-board.org/data/economydatabase/>).

6.2.2 New business density

New business density (new registrations per thousand population 15–64 years old)^a | 2012

Number of new firms, defined as firms registered in the current year of reporting, per thousand population aged 15–64 years old.

Source: World Bank, *Doing Business 2014, Entrepreneurship* (2007–12). (<http://www.doingbusiness.org/data/exploretopics/entrepreneurship>)

6.2.3 Total computer software spending

Total computer software spending (% of GDP)^a | 2013

Computer software spending includes the total value of purchased or leased packaged software such as operating systems, database systems, programming tools, utilities, and applications. It excludes expenditures for internal software development and outsourced custom software development. The data are a combination of actual figures and estimates. Data are reported as a percentage of GDP.

Source: IHS Global Insight, *Information and Communication Technology Database; International Monetary Fund, World Economic Outlook 2014 database, April 2015 (current US\$ GDP)*. (<http://www.ihsglobalinsight.com/ProductsServices/ProductDetail2370.htm>; <http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx>)

6.2.4 ISO 9001 quality certificates

ISO 9001 Quality management systems—Requirements: Number of certificates issued (per billion PPP\$ GDP)^a | 2013

Number of certificates of conformity to standard 'ISO 9001:2008 Quality management systems—Requirements' issued, according to the ISO Survey. Single-site and multiple-site certificates are not distinguished. The data are reported per billion PPP\$ GDP. Refer to indicator 3.3.3 for details.

Source: International Organization for Standardization (ISO), *The ISO Survey of Management System Standard Certifications, 1999–2012; International Monetary Fund, World Economic Outlook database, April 2015 (PPP\$ GDP)* (2013). (<http://www.iso.org>; <http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/weoselgr.aspx>)

6.2.5 High-tech and medium-high-tech output

High-tech and medium-high-tech output (% of total manufactures output)^a | 2011

High-tech and medium-high-tech output as a percentage of total manufactures output, on the basis of the Organisation for Economic Co-operation and Development (OECD) classification of Technology Intensity Definition, itself based on International Standard Industrial Classification ISIC Revision 3.

Source: United Nations Industrial Development Organization (UNIDO), *Industrial Statistics Database, 3- and 4-digit level of International Standard Industrial Classification ISIC Revision 3 (INDSTAT4 2012); OECD, Directorate for Science, Technology and Industry, Economic Analysis and Statistics Division, 'ISIC REV. 3 Technology Intensity Definition: Classification of Manufacturing Industries into Categories Based on R&D Intensities', 7 July 2011 (2004–11)*. (<http://www.unido.org/statistics.html>; <http://unstats.un.org/unsd/cr/registry/regcst.asp?cl=27>; <http://www.oecd.org/sti/ind/48350231.pdf>)

6.3 Knowledge diffusion

6.3.1 Royalties and license fees receipts

Royalty and license fees, receipts (% of total trade)^a | 2013

Royalties and license fees receipts (% of total trade) according to the Extended Balance of Payments Services Classification EBOPS 2002—i.e., code 266 Royalties and license fees (including franchises and similar rights) as a percentage of total trade. Receipts are between residents and nonresidents for the authorized use of intangible, nonproduced, nonfinancial assets and proprietary rights (such as patents, copyrights, trademarks, industrial processes, and franchises) and for the use, through licensing agreements, of produced originals of prototypes (such as films and manuscripts).

Note: There has been a change in data source from the International Monetary Fund to the Organisation for Economic Co-operation and Development, which has affected the year-on-year comparability of this indicators.

Source: World Trade Organization, *Trade in Commercial Services database, itself based on the fifth (1993) edition of the International Monetary Fund's Balance of Payments Manual and Balance of Payments database (2007–13)*. (<http://stat.wto.org/StatisticalProgram/WSDStatProgramSeries.aspx?Language=E>; http://unstats.un.org/unsd/tradeserv/EBOPS2002_eng.pdf)

6.3.2 High-tech exports

High-tech net exports (% of total trade)^a | 2013

High-technology exports minus re-exports (% of total trade). See indicator 5.3.2 for details.

Source: United Nations, COMTRADE database; Eurostat 'High-technology' aggregations based on SITC Rev. 4, April 2009 (2011–13). (<http://comtrade.un.org/>; http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an5.pdf)

6.3.3 Communications, computer and information services exports

Communications, computer and information services exports (% of total trade)^a | 2013

Communication, computer and information services exports (% of total trade) according to the Extended Balance of Payments Services Classification EBOPS 2002, including codes 245 Communications services (postal, courier services, and telecommunications services) and 262 Computer and information services, as a percentage of total trade.

Source: World Trade Organization, *Trade in Commercial Services database*, itself based on the fifth (1993) edition of the International Monetary Fund's *Balance of Payments Manual and Balance of Payments database (2006–13)*. (<http://stat.wto.org/StatisticalProgram/WSDStatProgramSeries.aspx?Language=E>; http://unstats.un.org/unsd/tradeserv/EBOPS2002_eng.pdf)

6.3.4 Foreign direct investment net outflows

Foreign direct investment (FDI), net outflows (% of GDP) | 2013

Net outflows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net outflows of investment from the reporting economy to the rest of the world and is divided by GDP.

Source: International Monetary Fund, *International Financial Statistics and data files*, and World Bank and OECD GDP estimates; extracted from the World Bank's *World Development Indicators database (2010–13)*. (<http://data.worldbank.org/>)

7 Creative outputs

7.1 Intangible assets

7.1.1 National office resident trademark applications

Number of trademark applications issued to residents by the national office (per billion PPP\$ GDP) | 2013

Number of trademark applications at the national trademark office, based on equivalent class counts. 'Class count' refers to the number of classes specified in a trademark application or registration. Data are scaled by PPP\$ GDP (billions). A 'trademark' is a distinctive sign that identifies certain goods or services as those produced or provided by a specific person or enterprise. The holder of a trademark application has the legal right to exclusive use of the mark in relation to the products or services for which it is registered. The owner can prevent unauthorized use of the trademark, or a confusingly similar mark, so as to prevent consumers and the public in general from being misled. Unlike patents, trademarks can be maintained indefinitely by paying renewal fees. The procedures for registering trademarks are governed by the rules and regulations of national and regional

IP offices. Trademark rights are limited to the jurisdiction of the authority that registers the trademark. Resident trademark registrations are based on equivalent class counts. In the international trademark system and at certain offices, an applicant can file a trademark application that specifies one or more of the 45 goods and services classes of the Nice Classification. Offices use either a single- or multi-class filing system. For example, the offices of Japan, the Republic of Korea, and the United States of America as well as many European offices have multi-class filing systems. The offices of Brazil, Mexico, and South Africa follow a single-class filing system, requiring a separate application for each class in which applicants seek trademark protection. To capture the differences in application numbers across offices, it is useful to compare their respective registration class counts. 'Equivalent registrations' refers to registrations at regional offices and are equivalent to multiple registrations, one in each of the states that is a member of those offices. To calculate the number of equivalent registrations for regional office data, each registration is multiplied by the corresponding number of member states.

Source: World Intellectual Property Organization, *WIPO Statistics Database*; International Monetary Fund, *World Economic Outlook database, April 2015 (PPP\$ GDP) (2010–13)*. (<http://www.wipo.int/ipstats/>; <http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx>)

7.1.2 Madrid System trademark applications by country of origin

Number of international trademark applications issued through the Madrid System by country of origin (per billion PPP\$ GDP)^a | 2014

Number of international trademark applications by country of origin under the WIPO-administered Madrid System. Data are reported for Madrid member countries only, and scaled by PPP\$ GDP (billions). 'Trademark' is defined in the description of indicator 7.1.1. The Madrid System for the International Registration of Marks, established under the Madrid Agreement and the Madrid Protocol and administered by WIPO, makes it possible for an applicant to register a trademark in a large number of countries by filing a single application at their national or regional IP office that is party to the System. The Madrid System simplifies the process of multinational trademark registration by reducing the requirement to file separate applications at each office. It also simplifies the subsequent management of the mark, since

it is possible to record changes or to renew the registration through a single procedural step. Registration through the Madrid System does not create an 'international' trademark, and the decision to register or refuse the trademark remains in the hands of national and/or regional office(s). Trademark rights are limited to the jurisdiction of the trademark registration office(s).

Source: World Intellectual Property Organization, *WIPO Statistics Database*; International Monetary Fund, *World Economic Outlook database, April 2015 (PPP\$ GDP) (2013–14)*. (<http://www.wipo.int/ipstats/>; <http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/download.aspx>)

7.1.3 ICTs and business model creation

Average answer to the question: In your country, to what extent do ICTs enable new business models? [1 = not at all; 7 = to a great extent][†] | 2014

Source: World Economic Forum, *Executive Opinion Survey 2013–2014*. (<https://wefsurvey.org>)

7.1.4 ICTs and organizational models creation

Average answer to the question: In your country, to what extent do ICTs enable new organizational models (e.g. virtual teams, remote working, telecommuting) within businesses? [1 = not at all; 7 = to a great extent][†] | 2014

Source: World Economic Forum, *Executive Opinion Survey 2013–2014*. (<https://wefsurvey.org>)

7.2 Creative goods and services

7.2.1 Cultural and creative services exports

Cultural and creative services exports (% of total trade)^a | 2012

Creative services exports (% of total exports) according to the Extended Balance of Payments Services Classification EBOPS 2002—that is, EBOPS code 264 Information services; code 278 Advertising, market research and public opinion polling; code 288 Audiovisual and related services; and code 897 Other, personal, cultural and recreational services as a percentage of total trade. The score for the United States of America (USA) includes the category Film and TV tape distribution in the absence of available data for code 288 Audiovisual and related services. The category Film and tape distribution is specific to the USA and does not have a code. However, these transactions have been classified by the USA under the EBOPS item 266 (Royalties and licence fees).

Source: World Trade Organization, *Trade in Commercial Services database*, itself based on the fifth (1993) edition of the *International Monetary Fund's Balance of Payments Manual and Balance of Payments database (2004–13)*. (<http://stat.wto.org/StatisticalProgram/WSDStatProgramSeries.aspx?Language=E>; http://unstats.un.org/unsd/tradeserv/EBOPS2002_eng.pdf)

7.2.2 National feature films produced

Number of national feature films produced (per million population 15–69 years old)^a | 2013

A film with a running time of 60 minutes or longer. It includes works of fiction, animation, and documentaries. It is intended for commercial exhibition in cinemas. Feature films produced exclusively for television broadcasting, as well as news-reels and advertising films, are excluded. Data are reported per million population 15–69 years old. For Cambodia and Cameroon, this indicator covers only feature films in video format; for Slovenia, feature films with a running time of 75 minutes or longer.

Source: UNESCO Institute for Statistics, *UIS online database*; United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2012 Revision (population data) (2008–13)*. (<http://stats.uis.unesco.org>; <http://esa.un.org/unpd/wpp/Excel-Data/population.htm>)

7.2.3 Global entertainment and media output

Global entertainment and media output (per thousand population 15–69 years old)^a | 2013

The Global entertainment and media outlook (the Outlook) provides global analysis for consumer and advertising spend with like-for-like, five-year historical and forecast data across 13 industry segments in 59 countries. The Outlook allows one to compare and contrast regional growth rates and consumer and advertising spend. The segments covered by the Outlook are: TV subscriptions and license fees; TV advertising; Internet access; radio; out-of-home advertising; video games; filmed entertainment; newspaper publishing; consumer magazine publishing; business-to-business markets; Internet advertising; and consumer and educational book publishing and music. The score and rankings for the Global Media Expenditures for the 59 countries considered in this report are based on advertising and consumer digital and non-digital data in US\$ millions at average 2012 exchange rates for the year 2012. These results are reported normalized per thousand population, 15–69 years old, for the year 2013. The figures for Algeria, Bahrain, Egypt, Jordan,

Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, and United Arab Emirates were estimated from a total corresponding to Middle East and North Africa (MENA) countries using a breakdown of total GDP (current US\$) for the above-mentioned countries to define referential percentages.

Source: The source of the data for the base of these calculations was derived from PwC's *Global entertainment and media outlook, 2013–2017*; United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2012 Revision (population data)*. (<http://www.pwc.com/outlook>; <http://stats.uis.unesco.org>; <http://esa.un.org/unpd/wpp/Excel-Data/population.htm>)

7.2.4 Printing and publishing output

Printing and publishing manufactures output (% of manufactures total output) | 2011

Publishing, printing, and reproduction of recorded media output (ISIC Rev. 3 code 22) as a percentage of total manufacturing output (ISIC rev.3 code D).

Source: United Nations Industrial Development Organization, *Industrial Statistics Database; 2-digit level of International Standard Industrial Classification ISIC Revision 3 (INDSTAT4 2012) (2004–11)*. (<http://www.unido.org/statistics.html>; <http://unstats.un.org/unsd/cr/registry/regcst.asp?cl=2>)

7.2.5 Creative goods exports

Creative goods exports (% of total trade) | 2013

Total value of creative goods exports, net of re-exports (current US\$) over total trade. 'Total trade' is defined as the sum of total imports code G100 goods and code S200CS commercial services (excluding government services) plus total exports of code G100 goods and code S200CS commercial services (excluding government services), divided by 2. According to the fifth edition of the International Monetary Fund's *Balance of Payments Manual*, the category 'goods' covers general merchandise, goods for processing, repairs on goods, goods procured in ports by carriers, and non-monetary gold. The 'commercial services' category is defined as being equal to 'services' minus 'government services, not included elsewhere'.

Source: United Nations, COMTRADE database; 2009 UNESCO Framework for Cultural Statistics, Table 3, *International trade of cultural goods and services based on the 2007 Harmonised System (HS 2007)*; World Trade Organization, *Trade in Commercial Services database*, itself based on the fifth (1993) edition of the *International Monetary Fund's Balance of Payments Manual and Balance of Payments database (2008–13)*. (<http://unctadstat.unctad.org>; <http://www.uis.unesco.org/culture/Documents/framework-cultural-statistics-culture-2009-en.pdf>; <http://stat.wto.org/StatisticalProgram/WSDStatProgramSeries.aspx?Language=E>)

7.3 Online creativity

7.3.1 Generic top-level domains (gTLDs)

Generic top-level domains gTLDs (per thousand population 15–69 years old) | 2014

A generic top-level domain (gTLD) is one of the categories of top-level domains (TLDs) maintained by the Internet Assigned Numbers Authority (IANA) for use in the Internet. Generic TLDs can be unrestricted (com, info, net, and org) or restricted—that is, used on the basis of fulfilling eligibility criteria (biz, name, and pro). Of these, the statistic covers the five generic domains biz, info, org, net, and com. Generic domains .name and .pro, and sponsored domains (arpa, aero, asia, cat, coop, edu, gov, int, jobs, mil, museum, tel, travel, and xxx) are not included. Neither are country-code top-level domains (refer to indicator 7.3.2). The statistic represents the total number of registered domains (i.e., net totals by December 2014, existing domains + new registrations – expired domains). Data are collected on the basis of a 4% random sample of the total population of domains drawn from the root zone files (a complete listing of active domains) for each TLD. The geographic location of a domain is determined by the registration address for the domain name registrant that is returned from a whois query. These registration data are parsed by country and postal code and then aggregated to any number of geographic levels such as county, city, or country/economy. The original hard data were scaled by thousand population 15–69 years old. For confidentiality reasons, only normalized values are reported; while relative positions are preserved, magnitudes are not.

Source: ZookNIC Inc; United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2012 Revision (population data)*. (<http://www.zooknic.com>; <http://esa.un.org/unpd/wpp/Excel-Data/population.htm>)

7.3.2 Country-code top-level domains (ccTLDs)

Country-code top-level domains (ccTLDs) (per thousand population 15–69 years old) | 2014

A country-code top-level domain (ccTLD) is one of the categories of top-level domains (TLDs) maintained by the Internet Assigned Numbers Authority (IANA) for use in the Internet. Country-code TLDs are two-letter domains especially designated for a particular economy, country, or autonomous territory (there are 324 ccTLDs, in various alphabets/characters). The statistic represents the total number of registered domains (i.e., net totals by December 2014, existing domains + new registrations – expired domains). Data are collected from the registry responsible for each ccTLD and represent the total number of domain registrations in the ccTLD. Each ccTLD is assigned to the country with which it is associated rather than based on the registration address of the registrant. ZookNIC reports that, for the ccTLDs it covers, 85–100% of domains are registered in the same country; the only exceptions are the ccTLDs that have been licensed for commercial worldwide use. Of this year's GII sample of countries, this is the case for the ccTLDs of the following economies: Armenia am, Austria at, Belarus by, Belgium be, Canada ca, Colombia co, Denmark dk, Finland fi, Iceland is, India in, Iran ir, Italy it, Latvia lv, Mauritius mu, Moldova md, Mongolia mn, Montenegro me, Nicaragua ni, Serbia rs, Seychelles sc, Slovenia si, Spain es, and Switzerland ch (this list is based on www.wikipedia.org). Data are reported per thousand population 15–69 years old. For confidentiality reasons, only normalized values are reported; while relative positions are preserved, magnitudes are not.

Source: ZookNIC Inc; United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects: The 2012 Revision (population data). (<http://www.zooknic.com>; <http://esa.un.org/unpd/wpp/Excel-Data/population.htm>)

7.3.3 Wikipedia monthly edits

Wikipedia monthly page edits (per million population 15–69 years old) | 2014

Data extracted from Wikimedia Traffic Analysis Report, Wikipedia Page Edits per Country, Overview on the portal <http://www.wikipedia.org>. The count of monthly page edits data is based on a 1:1,000 sampled server log (squids), averages of quarterly reports. Countries are included only if the number of page edits in the period exceeds 100,000 (100 matching records in 1:1,000 sampled log). Page edits by bots are not included. Also all IP

addresses that occur more than once on a given day are discarded for that day. A few false negatives are taken for granted. Data are reported per million population 15–69 years old.

Source: Wikimedia Foundation; United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects: The 2012 Revision (population data). (<http://stats.wikimedia.org/wikimedia/squids/SquidReportsCountriesLanguagesVisitsEdits.htm>; <http://esa.un.org/unpd/wpp/Excel-Data/population.htm>)

7.3.4 Video uploads on YouTube

Number of video uploads on YouTube (scaled by population 15–69 years old)* | 2014

Total number of video uploads on YouTube, per country, scaled by population 15–69 years old. The raw data are survey based: the country of affiliation is chosen by each user on the basis of a multi-choice selection. This metric counts all video upload events by users. The following countries are reported with n/a because of total or partial service blockage: China (YouTube blocked for 2,711 days) and Iran (YouTube blocked for 2,095 days). For confidentiality reasons, only normalized values are reported; while relative positions are preserved, magnitudes are not.

Source: Google, parent company of YouTube; United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects: The 2012 Revision (population data). (<http://www.youtube.com>; <http://esa.un.org/unpd/wpp/Excel-Data/population.htm>; <http://www.comscore.com/Industries/Media>)

Appendix **IV**

Technical Notes

Technical Notes

Audit by the Joint Research Centre of the European Commission

The Joint Research Centre (JRC) of the European Commission has researched extensively on the complexity of composite indicators ranking economies' performances along policy lines. For the fifth consecutive year, the JRC has agreed to perform a thorough robustness and sensitivity analysis of the Global Innovation Index (GII) to look at some structural changes made to the list of indicators by the GII developing team (see Table 1 of Annex 2 to Chapter 1 for more details).

An earlier version of the 2015 GII model was submitted to the JRC in May 2015. The recommendations and flexibilities allowed by the JRC preliminary audit were taken into account in the final version of the GII model and are explained below as appropriate.

A final audit was performed in June on that last model, the results of which are included in Annex 3 to Chapter 1.

Composite indicators

The GII relies on seven pillars. Each pillar is divided into three sub-pillars, and each sub-pillar is composed of two to five individual indicators. Each sub-pillar score is calculated as the weighted average of its individual indicators. Each pillar score is calculated as the weighted average of its sub-pillar scores.

The notion of weights as importance coefficients was, as in the previous three years, discarded to ensure a greater statistical coherence of the model, following the recommendations of the JRC.¹

The GII includes three indices and one ratio:

1. The Innovation Input Sub-Index is the simple average of the first five pillar scores.
2. The Innovation Output Sub-Index is the simple average of the last two pillar scores.
3. The Global Innovation Index is the simple average of the Input and Output Sub-Index scores.
4. The Innovation Efficiency Ratio is the ratio of the Output Sub-Index score over the Input Sub-Index score.

Country/economy rankings are provided for indicator, sub-pillar, pillar, and index scores.

The Innovation Efficiency Ratio serves to highlight those economies that have achieved more with less as well as those that lag behind in terms of fulfilling their innovation potential. In theory, assuming that innovation results go hand in hand with innovation enablers, efficiency ratios should evolve around the number one. This measure thus allows us to complement the GII by providing an insight that should be neutral to the development stages of economies.²

Individual indicators

The model includes 79 indicators, which fall within the following three categories:

1. quantitative/objective/hard data (55 indicators),
2. composite indicators/index data (19 indicators), and
3. survey/qualitative/subjective/soft data (5 indicators).

Hard data

Hard data series (55 indicators) are drawn from a variety of public and private sources such as United Nations agencies (the United Nations Educational, Scientific and Cultural Organization, the World Intellectual Property Organization), the World Bank, PwC, Thomson Reuters, and IHS Global Insight.

Indicators are often correlated with population, gross domestic product (GDP), or some other size-related factor; they require scaling by some relevant size indicator for economy comparisons to be valid. Most indicators are either scaled at the source or do not need to be scaled; for the rest, the scaling factor was chosen to represent a fair picture of economy differences. This affected 41 indicators, which can be broadly divided into four groups:

1. Indicators 2.1.1, 2.3.2, 3.2.3, 4.1.2, 4.1.3, 4.2.2, 4.2.3, 5.1.3, 5.3.4, 6.2.3, and 6.3.4 were scaled by GDP in current US dollars.³
2. The count variables 3.3.3, 4.2.4, 5.2.4, 5.2.5, 6.1.1, 6.1.2, 6.1.3, 6.1.4, 6.2.4, 7.1.1, and 7.1.2 were scaled by GDP in purchasing power parity current international dollars (PPP\$ GDP). This choice of denominator was dictated by a willingness to appropriately account for differences in development stages; in addition, scaling these variables by population would improperly bias results to the detriment of economies with large young or large ageing populations.⁴
3. Variables 5.1.5, 6.2.2, 7.2.2, 7.2.3, 7.3.1, 7.3.2, 7.3.3, and 7.3.4 were scaled by population (population 25+ years old for 5.1.5, population 15–64 years old for 6.2.2, and population 15–69 years old for the rest).⁵
4. Sectoral indicators 5.3.1, 5.3.2, 5.3.3, 6.3.1, 6.3.2, 6.3.3, and 7.2.1 were scaled by total trade; indicators 5.3.2, 6.2.5, 6.3.2, and 7.2.4 were scaled by the total unit corresponding to the particular statistic.⁶

Indices

Composite indicators come from a series of specialized agencies and academic institutions such as the World Bank, the International Telecommunication Union (ITU), the UN Public Administration Network (UNPAN), and Yale and Columbia Universities. Statisticians discourage the use of an ‘index within an index’ on two main grounds: the distorting effect of the use of different computing methodologies and the risk of duplicating variables. The normalization procedure partially

solves for the former issue (more on this below). To avoid incurring the mistake of including a particular indicator more than once (directly and indirectly through a composite indicator), only indices with a narrow focus (19 in total) were selected.

Any remaining downside is outweighed by the gains in terms of model parsimony, acknowledgment of expert opinion, and focus on multi-dimensional phenomena that can hardly be captured by a single indicator.⁷

Survey data

Survey data are drawn from the World Economic Forum’s Executive Opinion Survey (EOS). Survey questions are drafted to capture subjective perceptions on specific topics; five EOS questions were retained to capture phenomena strongly linked to innovative activities for which hard data either do not exist or have low economy coverage.

Country/economy coverage and missing data

This year’s GII covers 141 economies, which were selected on the basis of the availability of data. Economies with a minimum indicator coverage of 48 indicators out of 79 (60%) and with scores for at least two sub-pillars per pillar were retained. These criteria were determined jointly with the JRC this year. The last record available for each economy was considered, with a cut-off at year 2004. For the sake of transparency and replicability of results, no additional effort was made to fill missing values. Missing values are indicated with ‘n/a’ and are not considered in the sub-pillar score. However, the JRC audit assessed the robustness of the GII modelling choices (i.e., no imputation of missing data, fixed predefined weights, and arithmetic

averages) by imputing missing data, applying random weights, and using geometric averages. Since 2012, on the basis of this assessment, a confidence interval is provided for each ranking in the GII as well as the Input and Output Sub-Indices (see Annex 3 to Chapter 1).

Treatment of series with outliers

Potentially problematic indicators with outliers that could polarize results and unduly bias the rankings were treated according to the rules listed below, following the recommendations of the JRC. This affected 32 out of the 55 hard data indicators.

First rule: Selection

The identification of indicators as problematic used skewness or kurtosis. The problematic indicators had either:

- an absolute value of skewness greater than 2, or
- a kurtosis greater than 3.5.⁸

Second rule: Treatment

Series with one to five outliers (29 cases) were winsorized: The values distorting the indicator distribution were assigned the next highest value, up to the level where skewness and/or kurtosis entered within the ranges specified above.⁹

For series with six or more outliers (three cases), skewness and/or kurtosis entered within the ranges specified above after multiplication by a given factor f and transformation by natural logs.¹⁰ Since only ‘goods’ were affected (i.e., indicators for which higher values indicate better outcomes, as opposed to ‘bads’), the formula used was:

$$\ln \left[\frac{(\max \times f - 1) (\text{economy value} - \min)}{\max - \min} + 1 \right]^{11}$$

where ‘min’ and ‘max’ are the minimum and maximum indicator sample values.

Normalization

The 79 indicators were then normalized into the [0, 100] range, with higher scores representing better outcomes. Normalization was made according to the min-max method, where the min and max values were given by the minimum and maximum indicator sample values respectively, except for index and survey data, for which the original series’ range of values was kept as min and max values (for example, [1, 7] for the World Economic Forum Executive Opinion Survey questions; [0, 100] for World Bank’s World Governance Indicators; [0, 10] for ITU indices, etc.). The following formula was applied:

• Goods:

$$\frac{\text{economy value} - \text{min}}{\text{max} - \text{min}} \times 100$$

• Bads:

$$\frac{\text{max} - \text{economy value}}{\text{max} - \text{min}} \times 100$$

Notes

- 1 Paruolo et al. (2013) show that a theoretical inconsistency exists between the real theoretical meaning of weights and the meaning generally attributed to them by the standard practice in constructing composite indicators that use them as importance coefficients in combination with linear aggregation rules. The approach followed in the GII this year is to assign weights of 0.5 or 1.0 to each component in a composite to ensure the highest correlations between them (i.e., indicator/sub-pillar, sub-pillar/pillar, etc.). Two sub-pillars (7.2 Creative goods and services, and 7.3 Online creativity) and 36 indicators (1.2.1, 1.2.2, 2.1.4, 2.1.5, 2.2.1, 2.2.3, 3.2.1, 3.2.2, 3.3.3, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 5.1.3, 5.1.4, 5.1.5, 5.2.1, 5.2.4, 5.2.5, 5.3.1, 6.1.1, 6.1.2, 6.1.4, 6.1.5, 6.2.2, 6.2.3, 6.2.4, 6.2.5, 6.3.1, 6.3.2, 6.3.3, 7.1.2, 7.2.1, 7.2.2, and 7.2.3) are weighted 0.5; the rest have a weight of 1.

Five indicators with Pearson correlation coefficients with their respective sub-pillar scores below 0.5 were kept in the model to ensure a conceptual coherence (as opposed to a statistical coherence) in the belief that some cyclical (as opposed to structural) dimension might be at the source of their behaviour as ‘noise’ (see also Annex 3 to Chapter 1): GERD financed by abroad (5.2.3), FDI net inflows (5.3.4), growth rate of GDP per person engaged (6.2.1), new business density (6.2.2), and printing and publishing output (7.2.4).

- 2 To account for differences in development, other composite indicators use weighting schemes differentiated by income level.
- 3 These indicators are expenditure on education (2.1.1), gross expenditure on R&D (2.3.2), gross capital formation (3.2.3), domestic credit to private sector (4.1.2), microfinance institutions’ gross loan portfolio (4.1.3), market capitalization (4.2.2), total value of stocks traded (4.2.3), GERD performed by business enterprise (5.1.3), foreign direct investment net inflows (5.3.4), total computer software spending (6.2.3), and foreign direct investment net outflows (6.3.4).
- 4 These count variables are mainly indicators that increase disproportionately with economic growth. They include: ISO 14001 environmental (3.3.3) and ISO 9001 quality (6.2.4) certificates issued; venture capital (4.2.4) and joint venture and strategic alliance (5.2.4) deals; Patent Cooperation Treaty (PCT) published patent family applications filed in at least three offices (5.2.5); resident patent applications at the national office (6.1.1) and at the PCT (6.1.2); national office resident utility model applications (6.1.3); publications in scientific and technical journals (6.1.4); national office resident trademark applications (7.1.1); and trademark applications under the Madrid System by country of origin (7.1.2).
- 5 These variables are females employed with advanced degrees (5.1.5), new business density (6.2.2), national feature films produced (7.2.2), global entertainment and media composite output (7.2.3), generic (7.3.1) and country-code (7.3.2) top-level Internet domains, Wikipedia monthly edits (7.3.3), and video uploads on YouTube (7.3.4).
- 6 Royalty and license fees payments (5.3.1); high-tech goods imports minus re-imports (5.3.2); communication, computer, information services imports (5.3.3); royalty and license fees receipts (6.3.1); high-tech goods exports minus re-exports (6.3.2); communication, computer, and information services exports (6.3.3); cultural and creative services exports (7.2.1); and creative goods exports minus re-exports (7.2.5) were scaled by total trade; high-tech and medium-high-tech output (6.2.5); and printing and publishing output (7.2.4) were scaled by total manufactures output.

- 7 For example, GII sub-pillar 3.1 Information and communication technologies (ICTs) is composed of four indices: ITU’s ICT Access and Use sub-indices and UNPAN’s Government Online Service and E-Participation Indices. The first two are components of ITU’s ICT Development Index together with an ICT skills sub-index that was not considered, as it duplicates GII pillar 2. Similarly, the Online Service Index is a component of UNPAN’s E-Government Development Index together with two indices on Telecommunication Infrastructure and Human Capital that were not considered, as they duplicate GII pillars 3 and 2, respectively. The e-Participation Index was developed separately by UNPAN in 2010.
- 8 Based on Groeneveld and Meeden (1984), which sets the criteria of absolute skewness above 1 and kurtosis above 3.5. The skewness criterion was relaxed to account for the small sample at hand (141 economies).
- 9 This distributional issue affects the following variables: 4.2.2, 4.2.4, 5.2.4, 5.3.2, 5.3.3, 6.1.5, 6.2.4, 7.1.1, and 7.2.1 (1 outlier); 3.2.1, 3.3.3, 4.2.3, and 5.3.4 (2 outliers); 1.2.3, 4.1.3, 6.1.3, 6.2.2, and 6.3.3 (3 outliers); and 2.2.3, 5.3.1, 6.1.1, 6.3.4, 7.1.2, 7.2.4, and 7.3.1 (4 outliers). The treatment criterion was relaxed last year to allow series with 5 outliers to be winsorized instead of subjected to natural log transformation. Two indicator series (7.2.2 and 7.3.2) with 5 outliers each required no further transformation once these were winsorized.
- 10 This distributional issue affects variables 7.2.5 (factor f of 1); 5.2.5 and 6.3.1 (factor f of 10)
- 11 The corresponding formula for bads is:

$$\ln \left[\frac{(\text{max} \times f - 1) \times (\text{max} - \text{economy value})}{\text{max} - \text{min}} + 1 \right]$$

These formulas achieve two things: converting all series into ‘goods’ and scaling the series to the range [1, max] so that natural logs are positive starting at 0.

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Appendix **v**

About the Authors

About the Authors

Robert D. Atkinson is the Founder and President of the Information Technology and Innovation Foundation, a Washington, DC-based policy think tank. He is also the author of *Innovation Economics: The Race for Global Advantage* (Yale, 2012) and *The Past and Future of America's Economy: Long Waves of Innovation that Power Cycles of Growth* (Edward Elgar, 2005). Before coming to ITIF, Dr Atkinson was Vice President of the Progressive Policy Institute and Director of PPI's Technology & New Economy Project. Previously he served as the first Executive Director of the Rhode Island Economic Policy Council, a public-private partnership including as members the governor, legislative leaders, and corporate and labour leaders. Dr Atkinson currently serves as Co-Chair of the White House Office of Science and Technology Policy's China-U.S. Innovation Policy Experts Group, as a member of the U.S. State Department's Advisory Committee on International Communications and Information Policy, and as a member of the U.S. Department of Commerce's National Advisory Council on Innovation and Entrepreneurship. In 2013 the *New Republic* named Dr Atkinson one of 'the three most important thinkers about innovation'. He received his Master of Urban and Regional Planning from the University of Oregon and was named a distinguished alumnus in 2014. He received his PhD in City and Regional Planning from the University of North Carolina at Chapel Hill.

Alexandra L. Bernard joined Cornell University in September 2013. She is the Project Manager of the Global Innovation Index 2015. Her previous professional experience includes working as a senior consultant in the transfer pricing international tax team at PwC in Melbourne, Australia. Prior to that she was a financial analyst for Australia and New Zealand Banking Group. She has also worked as a senior event coordinator for an Australian event management company, which involved running tour marketing campaigns, brand management activations, and social media development. She obtained her Bachelor of Commerce from Monash University in Melbourne, Australia.

Cristina Chaminade is a Full Professor in Innovation Studies at the Centre for Innovation, Research and Competence in the Learning Economy (CIRCLE) at Lund University (Sweden). Her area of expertise is in the globalization of innovation, particularly global innovation networks and innovation in emerging economies. She has actively worked on innovation in developing countries such as China, India, South Africa, Thailand, and Brazil for over 15 years. Professor Chaminade's research focuses mainly on understanding how firms, regions, and nations create and use knowledge for innovation when knowledge is globally distributed, and how policies can be designed to support innovation in a global context. She has been an advisor to international organizations such as the European Commission, UNCTAD, the OECD, and UN-ECLAC. Professor Chaminade has published in international journals, refereed books, and handbooks in the fields of innovation, development studies, and knowledge management. Currently she is coordinating two research projects dealing with the globalization of innovation: one on technology-driven investments by emerging multinationals in Europe and another on regional variety and global innovation networks, funded by Riksbanken and the Wallenberg Foundation, respectively.

Dongmin Chen is one of the Advisory Board members of the Global Innovation Index. He is Dean of the School of Innovation and Entrepreneurship and Director of the Science and Technology Development Office of Peking University. He is responsible for the university's innovation capacity development including corporate sponsor research, IP licensing, spin-offs, seed funding, and regional innovation/incubation centres. He is a Chaired Professor in the Academy for Advanced Interdisciplinary Studies of Peking University. Dr Chen is a Silicon Valley serial entrepreneur and a co-founder of two start-up companies. He is a co-inventor of the MEMS-CMOS 3D integration technology and has an IP portfolio with more than 100 international patents that have been successfully licensed to a major foundry in Asia. Dr Chen was an Adjunct Professor of the Institute of Physics, Chinese Academy of Sciences, where he served as the co-director of the Beijing National Laboratory for Condensed Matter Physics from 2004 to 2009. He was a Senior Rowland Fellow and the Head of the Nanoscale Quantum Physics Lab at Harvard University from 1989 to 2004. He has co-authored more than 70 scientific publications, and is an Associate Editor and board member of *Applied Physics Letters*.

Jibak Dasgupta is currently with the Confederation of Indian Industry (CII) as Deputy Director, heading the Innovation and Entrepreneurship Vertical in the organization. He works closely with industry and government on policy issues and the implementation of national-level programmes. He has been associated with India's National Innovation Council (NInC) and contributed to the Innovation Cluster project for the development of Indian small- and medium-sized enterprises. He represents CII in several government committees in India, such as the national committee for setting up innovation hubs under the National Council of Science Museums (NCSM) and the national committee for over-viewing tax exemptions for existing Technology Business Incubators (TBIS) under the National Science and Technology Entrepreneurship Development Board (NSTEDB). He has recently been nominated to be part of the Governing Council of Indian National Academy of Engineering (INAE) beginning in 2016. Earlier he worked for Global Innovation and Technology Alliance (GITA) in the areas of collaborative R&D and technology transfer. He also worked for a short period as a Management Consultant for quality certifications such as ISO and CMMI and has been associated with Swedish start-ups in the field of cashless micropayments. Mr Dasgupta has an MSc degree in Management and Economics of Innovation from Chalmers University of Technology, Gothenburgh, Sweden. Prior to that he completed his BE in Instrumentation Technology from Visvesvaraya Technological University, Belgaum, India, and worked for Infosys as a software professional.

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Kai Engel, Partner and Managing Director for Germany, A.T. Kearney, is the global lead partner for A.T. Kearney's Innovation and Product Creation Services Practice. He led numerous consulting projects to improve operations excellence in large corporations along the value chain. The projects focused on increasing clients' capabilities in the areas of innovation and product creation management, manufacturing efficiency as well as its manufacturing network set up, supply chain management, and supply management. He has served large global corporate clients as well as mid-sized companies and governmental organizations representing industries such as automotive, aerospace and defence, consumer goods, engineering, high tech, machinery, process, chemicals, and private equity funds. He also co-founded the European Innovation Management Academy, and, in coordination with the EU Commission, the IMP³rove platform that provides knowledge-intensive services to small- and medium-sized businesses around the globe. Dr Engel regularly chairs top executive roundtables and is a frequent speaker for business and industry conferences. He has authored several books including *Masters of Innovation* (LID Publishing, 2015), *Innovation Management*, and *Best Innovators—Successful Strategies of Innovation Leaders*, the latter two in German. Dr Engel also serves on the supervisory board of the European Innovation Management Academy (www.improve-innovation.eu) and the editorial board of *Innovation Manager* magazine and is an advisor on the World Economic Forum's 'Fostering Innovation-Driven Entrepreneurship in Europe' and 'Collaborative Innovation' initiatives. Dr Engel studied Mechanical Engineering, focusing on production and material technologies. He earned his PhD in Laser Technology and holds a degree in Business Administration. Prior to A.T. Kearney, he worked in the high-tech industry heading R&D departments and managed large and complex facility investment projects.

Rafael Escalona Reynoso has been Lead Researcher at the Global Innovation Index since October 2013. His previous professional experience includes working as Economic and Science and Technology Policy Advisor to the Senate of Mexico and as a member of the Trade and Foreign Investment Advisory Board at the office of the President of Mexico. His research experience at Cornell University includes comparative studies between Mexico and Spain on the regulatory aspects of modern biotechnology and the biosafety of genetically modified organisms (GMOs), and on the reach of intellectual property rights (IPRs) in the information technologies era. He holds a PhD in Regional Planning and a Master of Public Administration from Cornell University as well as a BA in Economics from Universidad Panamericana in Mexico.

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Innovation is firmly recognized as a central driver of economic growth and development. The Global Innovation Index (GII) aims to capture the multi-dimensional facets of innovation and provide the tools that can assist in tailoring policies to promote long-term output growth, improved productivity, and job growth. The GI helps to create an environment in which innovation factors are continually evaluated. It provides a key tool and a rich database of detailed metrics for 141 economies this year, which represent 95.1% of the world's population and 98.6% of global GDP.

Innovation-driven growth is no longer the prerogative of high-income countries alone. Developing countries increasingly craft policies to increase their innovation capacity. For this purpose, *The Global Innovation Index 2015: Effective Innovation Policies for Development* is timely and relevant. The analysis in this year's edition identifies economies that outperform on an annual basis against countries with a similar level of development, both on the general innovation level as well as on the level of particular innovation inputs or outputs. Taking advantage of the rich information produced by the GI analysis in its past editions, the outcome of effective innovation policies can be reviewed to provide more information to support the effectiveness and the degree of development these policies have on the 'innovation outperformer' countries. The chapters in this year's report focus specifically on economies identified in this way, reviewing their position in the GI rankings and determining which innovation policies have been effective, and which have not.

Launched by INSEAD in 2007, the GI project today is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations. This year the GI draws on the support and expertise of its Knowledge Partners: the Confederation of Indian Industry, du, A.T. Kearney, and the IMP³rove – European Innovation Management Academy, as well as an Advisory Board of 15 eminent international experts. For the fifth consecutive year, the Joint Research Centre (JRC) of the European Commission performed a thorough robustness and sensitivity analysis of the index.

The GI is concerned primarily with improving the journey towards a better way to measure and understand innovation and with identifying targeted policies, good practices, and other levers that can foster innovation. Written in a nontechnical language and style, the GI appeals to diverse groups including policy makers, business leaders, academics, and multiple organizations of civil society.

The full report can be downloaded at www.globalinnovationindex.org.

