The Global Innovation Index 2014: Nurturing New Sources of Growth by Developing the Human Factor in Innovation

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The global economic recovery is now more sustained and broad-based than it was when we released the Global Innovation Index (GII) last year. The challenge today is to overcome a number of remaining obstacles and to spur sustainable growth and employment throughout the world.

New sources of growth for a stronger global economy

The global economy is on a stronger footing in 2014 than it was in the years directly following the crisis. Policy makers have rather effectively addressed urgent short-term financial pressures. Considering all factors, and because of progress being made in many advanced economies, economic growth is now more balanced across emerging markets and high-income countries, and the confidence of the private sector and investors, although still fragile, is generally on the rise.

Differences remain, however, regarding the speed of recovery among high-income economies. The United States of America (USA) is leading, and Europe and Japan are also returning to positive growth. Although the growth prospects in fast-developing emerging economies remain modest by historical standards, they are still significantly positive. Although risks remain, the possibility of a major set-back to the recovery is diminished. The projections of leading economic institutions for 2015 are positive, and better than for 2014.

This generally optimistic perspective is mitigated by high unemployment and the certainty that all countries share the need to sustain the growth momentum. Indeed, potential economic output and current productivity levels are far lower than the growth trajectory that had been anticipated before the economic crisis.

The basic dilemma concerning the sources of future growth raised in last year's GII is ever more topical: On the one hand, governments feel constrained by the little room they have for fiscal stimulus and public investment while firms are still facing an uncertain economic environment. On the other hand, investment and future-oriented pro-growth policies are needed to avoid a generalized low-growth scenario and to spur employment. The importance of innovation and entrepreneurship cannot be overemphasized in this context.

Innovation expenditures: Resilient but in need of renewed attention

Over the last few years, this report and others cautioned that the economic crisis might have a lasting effect on innovation, slowing future growth levers that would be greatly needed. Governments were urged to compensate, where necessary, for shortfalls in private innovation expenditures. Stimulus packages included a number of future-oriented policies geared to innovation, such as infrastructure projects, investments in research and development (R&D), and green technologies.

This approach has borne fruit: The marked dip in business R&D spending in 2009 caused by the economic crisis was efficiently compensated for by public R&D investments and other policies (see Box 1). Government support of R&D and a renewed pick-up of business R&D ensured the healthy growth of innovation expenditure during 2010–12. Initially, advanced economies also preserved expenditures on education in the aftermath of the crisis. In terms of the global use of intellectual property (IP), the recovery has so far also been swift and broad-based. After 2009, patent applications worldwide experienced solid growth. The latest figures point to 9.2% patent filing growth in 2012, the strongest rate in nearly two decades, with China now topping the ranking of patents filed since 2011. Even if, as the GII often emphasizes, innovation cannot be reduced to investments in R&D and patents, these are encouraging signs.

Yet the fact that innovation expenditures will continue to grow cannot be taken for granted.

First, as of 2013, a fall in the growth of public R&D support

Box 1: Global R&D spending: Strong post-crisis recovery between 2010 and 2012; growth slowing since

Research and development (R&D) expenditures of firms dropped significantly in 2009 as a result of the economic crisis. This dip was efficiently mitigated by the public R&D investments that were taken by many economies in the following three years.

The recovery of business R&D spending in 2010 was quick, reaching 3% growth at the global level,[1] and, although the data are still incomplete, 4.5% in 2011.[2] In high-income countries of the Organisation for Economic Co-operation and Development (OECD), business R&D grew by 0.6% in 2010 and 4.8% in 2011, but it slowed again in 2012, reaching only 3.6% in that year.[3] R&D spending among the top 1,000 spenders globally reached an all-time high of US$638 billion in 2013, an increase of 5.8% from the previous year—but this growth is already significantly lower than it was in 2011 and 2012.[4]

Total economy-wide R&D spending—private and public R&D combined—also overcame the dip seen in 2009, and was followed by a constant growth of over 3% in 2010 and 2011.[5] Total R&D increased in most high-income countries as well, growing by 1.3% in 2010, 4% in 2011, and a lower 3% in 2012.[6] The slower growth seen in 2012 had already been influenced by weakening public R&D expenditures in high-income countries, in particular in higher education institutions and the government sector.[7] This growth slowdown in 2012 was encountered in the majority of high-income countries in the OECD, except a few such as the United States of America (USA). In some high-income countries—such as Spain, Finland, Portugal, Canada, the United Kingdom (UK), and Italy—overall R&D spending actually declined in 2012.

For 2013 and 2014, unofficial estimates point to a further slowdown in global R&D spending growth.[8]. The main drivers of this slowdown in growth are the declining support of public R&D caused by fiscal consolidation and the end of stimulus packages coupled with the hesitant growth of company R&D expenditures.

To be sure, the majority of countries for which data are available continue to show positive R&D expenditure growth in 2013 and 2014. Yet strong R&D spending growth in 2013 and 2014 is expected to take place mostly in Asia, in particular in China, the Republic of Korea, and India. Anticipated R&D spending growth in absolute terms or as a share of GDP in top R&D spending high-income countries such as the USA and Japan, as well as the UK and other European economies, is expected to be flat or much or much reduced when compared with 2011 or 2012, the latter of which had often already seen slower growth.

In sum, business and total R&D spending are both now significantly above pre-crisis levels in some economies; in others they are below those levels, and some economies have been unaffected (see Tables 1.1 and 1.2 on facing page). A large number of Eastern European countries, other large European economies such as France and Germany, 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 fall in their R&D spending as a result of the crisis. Some economies have seen important dips in R&D spending during the crisis but also experienced an important recovery (e.g., Estonia and the Netherlands); some (e.g., Israel) have seen a more timid recovery. The USA and Singapore, for instance, have recently returned to their pre-crisis levels for combined public and private R&D. And some high-income economies, such as Spain, Finland, and Portugal, as well as the UK and Japan, continue to exhibit R&D spending below their pre-crisis levels.

Note

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

(Continued)

coupled with the continued hesitancy of company R&D expenditures seems to be leading to slower overall growth of total R&D expenditures worldwide; this is the case especially in high-income countries (see Box 1). In many advanced countries, fiscal consolidation also seems to have negatively affected public spending on education since 2010. Second, although governments have effectively included a significant number of future innovation-related growth projects in stimulus packages in 2009, support for such efforts seems to have lost momentum in some countries.

There is a distinct danger that such trends could extend across various parts of the world. If indeed future-oriented policies aimed at stimulating innovation and new sources of growth are not widely pursued, hopes for sustained global growth could be dashed.

In many respects, however, the global innovation landscape is more active and inclusive than ever: In addition to higher levels of expenditures on innovation, we also see signs that the number and geographical spread of students, researchers, and entrepreneurs are rising. If appropriately empowered, the more abundant and diverse skills and talent available worldwide to drive innovation can prove exceptionally effective.

The human factor in innovation

This year's theme, the 'Human Factor in Innovation,' explores the role of individual innovators and creators in the innovation process. This choice of theme stems from the growing interest that firms and governments have shown in identifying

Box 1: Global R&D spending: Strong post-crisis recovery between 2010 and 2012; growth slowing since *(cont'd.)*

Table 1.1: 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
Poland	100	105	111	136	202
Slovenia	100	103	124	160	185[p]
Hungary	100	118	125	138	152
Ireland	100	115	115	116	121
France	100	102	105	108	110[p]
Russian Federation	100	110	100	102	103

BERD above pre-crisis levels in 2012

	CRISIS		RECOVERY		
	2008	2009	2010	2011	2012
Estonia	100	98	129	261	227[p]
Slovakia	100	93	130	127	174
Netherlands	100	93	98	127	134[p]
Czech Republic	100	96	104	119	131[p]
Belgium	100	97	105	115	114[p]
Germany	100	97	100	107	108
Austria	100	96	101	103	107[p]
Israel	100	96	96	102	105
Romania	100	102	94	98	104
Norway	100	98	95	100	104
United States of America	100	96	94	97	103[p]
Italy	100	99	101	102	101[p]

BERD below pre-crisis levels in 2012

	CRISIS		RECOVERY		
	2008	2009	2010	2011	2012
United Kingdom	100	96	96	102	98[p]
Denmark	100	104	97	95	95[p]
Canada	100	98	92	92	91[p]
Sweden	100	89	86	89	89
Portugal	100	100	96	92	88[p]
Spain	100	94	93	91	88
Finland	100	94	93	95	85
Luxembourg	100	97	77	77	77

Source: OECD MSTI, January 2014; data used: Business enterprise expenditure on R&D (BERD) at constant 2005 PPP$, Index = 2008.

Note: p = provisional data.

Table 1.2: Gross domestic expenditure on R&D (GERD): Crisis and recovery compared

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

	CRISIS		RECOVERY		
	2008	2009	2010	2011	2012
China	100	126	144	165	192
Poland	100	113	128	140	168
Slovenia	100	103	118	140	155[p]
Republic of Korea	100	106	119	133	146
Czech Republic	100	100	106	126	143[p]
Hungary	100	108	110	116	122
Chile	100	108	116	n/a	n/a
Argentina	100	114	130	148	n/a
Turkey	100	111	121	134	n/a
Belgium	100	100	106	114	115[p]
Ireland	100	109	108	109	113
Germany	100	100	103	110	111
Russian Federation	100	111	104	105	111
France	100	104	104	106	107[p]
Denmark	100	105	101	101	101[p]

GERD above pre-crisis levels in 2012

	CRISIS		RECOVERY		
	2008	2009	2010	2011	2012
Estonia	100	95	111	179	171[p]
Netherlands	100	99	103	113	119[p]
Austria	100	98	103	104	108[p]
Israel	100	96	96	100	103
Slovakia	100	97	132	147	181
Norway	100	101	99	102	105
United States of America	100	99	99	101	105[p]
Singapore	100	83	88	101	n/a

GERD below pre-crisis levels in 2012

	CRISIS		RECOVERY		
	2008	2009	2010	2011	2012
Italy	100	99	101	100	99[p]
Sweden	100	93	93	95	97
Japan	100	91	93	96	97
United Kingdom	100	99	98	99	96[p]
Canada	100	100	97	96	94[p]
Portugal	100	106	105	99	94[p]
Finland	100	97	100	100	92
Spain	100	99	99	96	91
Romania	100	76	73	82	80
Luxembourg	100	99	89	n/a	n/a

Source: OECD MSTI, January 2014, data used: Gross domestic expenditure on R&D (GERD) at constant 2005 PPP$, Index = 2008.

Note: p = provisional data.

and energizing innovative individuals and teams. To point out relevant strategies and policies in this regard, it is important to learn more about what happens at the intersection of people, technology, financing, policy, and institutions. The need to gather more knowledge of, and a better understanding of, the role that the human factor—along with technology and capital—plays in innovation is critical. Statistically and analytically capturing this contribution and nurturing it through adequate education, training, and motivation in schools, universities, businesses, civil society, and the government itself is a challenge. The rich collection of chapters presented in this report provides a glimpse of how and which of these human aspects are affecting the innovation performance of nations globally.

Undoubtedly human capital plays a central role in the inception, the implementation, and the inter-organizational, national, and international diffusion of innovation. As outlined in Chapter 2 by Martin Schaaper and Chapter 3 by Richard Scott and Stéphan Vincent-Lancrin, improving skills is one of the most important ways to raise innovation, productivity, and economic growth and to improve social welfare and equality.

Indeed, modern growth theory treats human capital formation as a central element and driver of the technical and innovative progress necessary for growth as the economic literature demonstrates. Becker (1964) was one of the first economic and social theorists to recognize human capital as a set of skills that increase the productivity of the worker within firms and—ultimately—the overall production process of nations.[1] Although its role in production processes may be difficult to outline, human capital can be thought of as the stock of knowledge or skills positively impacting economic output. Expanding on this notion, Nelson and Phelps suggest that 'educated people make good innovators';[2] thus education speeds the process of technological diffusion. Lucas distinguishes between two sources of human capital accumulation: education and experience (learning-by-doing).[3] Aghion and Howitt attest that differences in growth between nations and regions can be attributed in great part to differences in the levels of human capital and to their capacity to retain, attract, and expand these endogenously.[4] Nelson and Phelps and the Schumpeterian growth literature describe economic growth as being driven by the stock of human capital, which in turn affects a country's ability to innovate or catch-up with more advanced and innovation-efficient economies. Current research and practical case studies at the national and regional level continue to empirically test and validate these new growth theories.

According to the OECD's *Oslo Manual:*

> the most significant innovation capability is the knowledge accumulated by the firm, which is mainly embedded in human resources, but also in procedures, routines and other characteristics of the firm. Innovation capabilities, as well as technological capabilities, are the result of learning processes, which are conscious and purposeful, costly and time-consuming, non-linear and path-dependent and cumulative.[5]

Innovations, therefore, emerge from the complex thinking, acting, and interacting of people going about their everyday work under certain framework conditions. In this context, it is particularly important that the traditional technology and product-oriented perspective on innovation evolves into a more holistic one in which the key role of people and their working conditions is acknowledged.[6] Moreover, there is also a demand side to innovation. As expressed in Chapter 5 by Leonid Gokhberg and Valentina Poliakova, successful innovations rely also on the various actors in society—for example, consumers, the government, and others—that will ultimately be the recipients and users of these innovations. Thus the human factor in innovation does not stop at the supply side but reaches far into how innovations are received, accepted, and diffused.

Globalization has altered the mobility of people across geographic and cultural boundaries, and thus has also contributed to promote these paradigm shifts. As underlined by Lanvin and Evans,

> Today's economy benefits from being global and mobile. … Mobility has been redefined. Ideas, know-how, and innovative and entrepreneurial people routinely cross borders and generate value locally and globally; projects involve people collaborating across different continents, all of whom are living outside their respective countries of birth. The engine of this global and mobile world is talent.[7]

Yet, as pointed out in Chapter 6, contributed by Ahmad Bin Byat and Osman Sultan, a key imperative going forward in the development of this mobile talent is also to advance in it the deep technical skills that are required for disruptive innovations.

While cross-border mobility and willingness to relocate abroad are possible with lower immigration and emigration barriers, nations—like corporations—now have to compete for talent. Inter-country and regional economic and demographic differences also stimulate labour flows; so do comparative gaps in real wage rates and differences in labour force age profiles.[8] On the other hand, many barriers still exist; these limit the ways in which migrations by workers could benefit both their

countries of origin and their countries of destination.[9] Yet mobility of talent remains critical for learning, adapting, and innovating within any regional systems of innovation.

Economists have made important progress in better understanding the causes and consequences of skilled-worker migrations. Recent research has shown that close to 75% of migrant inventors from low- and middle-income countries reside in the USA. China and India clearly stand out as the two largest middle-income countries of origin, followed by Russia, Turkey, Iran, Romania, and Mexico.[10] Chapter 8 of this report, by Nour-Eddine Boukharouaa and co-authors, introduces the particular case of the Moroccan Diaspora, which is mainly located in France (32%), Spain (20%), Italy (12%), and other European countries, Arab countries (6%), the USA and Canada (together 3%), and some African and Asian countries. At the same time, countries are busily at work reversing the so-called brain drain and keen to help emerging economies to retain, involve, or attract talent, sometimes by simply involving their skilled diaspora abroad.

These diaspora networks, however, have changed the way in which highly skilled mobility is understood and examined by economists and policy makers.[11] They have altered the traditional brain drain migration outflow into a brain gain skills circulation by turning the loss of human resources into a remote-although-accessible asset of expanded networks.[12] This shifted the traditional emphasis on embedded knowledge of potential returnees (a human capital approach) to a connectionist approach where social capital, including technical and institutional links, is crucial. These diaspora networks are then perceived by firms and governments as the latest bridge institutions connecting developing economy insiders, with their risk-mitigating knowledge and connections, to outsiders in command of technical know-how and investment capital—all essential elements of innovation.[13]

Nonetheless, reverse migration trends are beginning to intensify.[14] Many countries are luring returnee immigrants as a group of highly trained and qualified people with valuable managerial experience and entrepreneurial skills who simultaneously possess local market knowledge and access to networks in the host country.[15] Chapter 7 of this report, by David Walwyn and Sibusiso Sibisi, explores in more detail some of the elements behind the capacity to attract and support higher levels of 'extraordinary' talent drawn from the example of South Africa. Such elements include, among other factors, adequate levels of funding, state-of-the-art facilities, international migration, strong local networks and clustering, as well as the 'Sanger factor'—the idea that success breeds success.

There is strong evidence of the positive impact of diasporas on portfolio investments and foreign direct investment (FDI).[16] Moreover, supported by government policies and economic liberalization, dynamic reverse migration can convert brain drain into an inward talent flow.[17] But today's reality is that only a remarkably small number of countries have actually ignited return migration or successfully implicated their diaspora in innovation activities or the crafting of innovation policies at home.

Understanding in more detail the human aspects behind innovation is essential for the design of policies that help promote the virtuous cycles that lead towards higher economic development and richer innovation-prone environments locally.

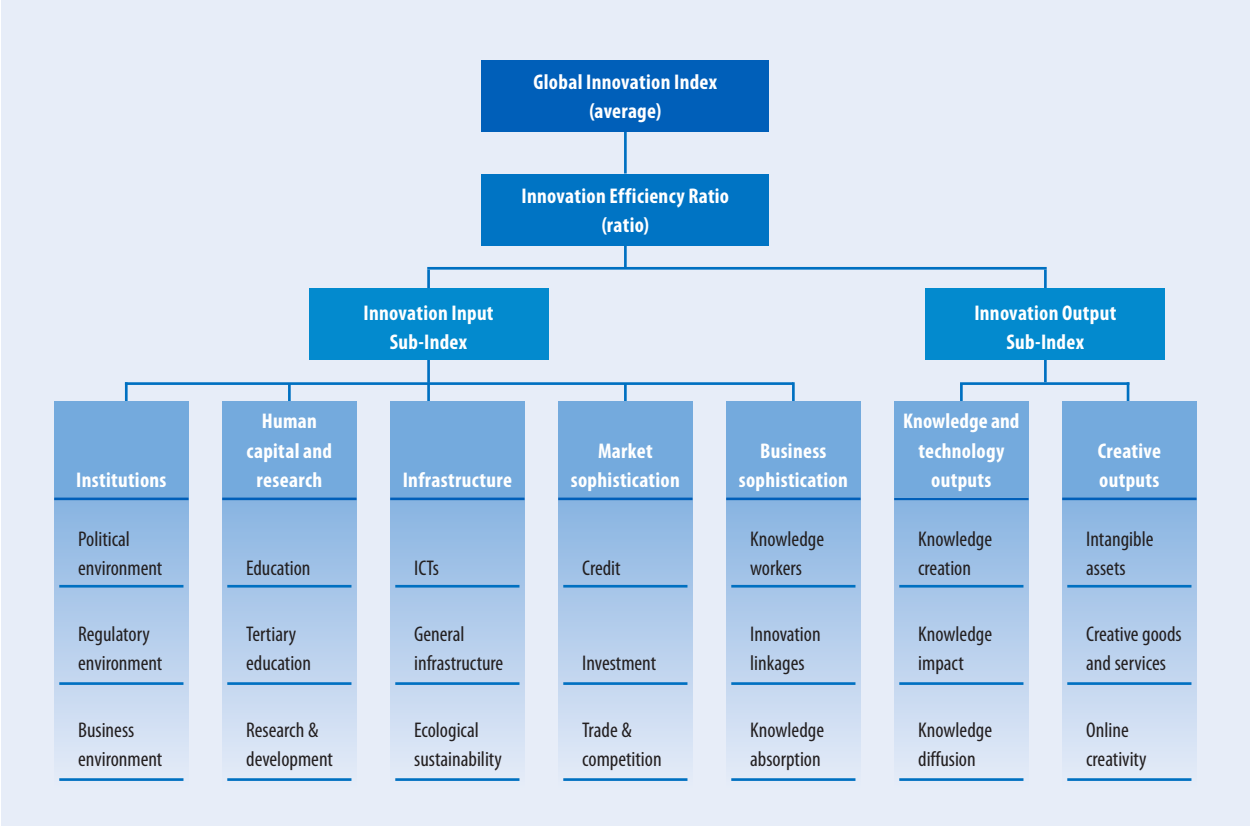
The GII conceptual framework

As in previous years, the GII relies on two sub-indices—the Innovation Input Sub-Index and the Innovation Output Sub-Index—each built around pillars. Four overall measures are calculated: the GII, the Input and Output Sub-Indices, and the Innovation Efficiency Ratio (Figure 1).

- **The Innovation Input Sub-Index:** Five input pillars 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:** Innovation outputs are the results of innovative activities within the economy. There are two output pillars: (6) Knowledge and technology outputs and (7) Creative outputs.
- **The overall GII score** is the simple average of the Input and Output Sub-Indices.
- **The Innovation Efficiency Ratio** is the ratio of the Output Sub-Index over 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 and each sub-pillar is composed of individual indicators, for a total of 81 indicators. Further details on the GII framework and the indicators used are provided in Annex 1. This year the GII model includes 143 economies, representing 92.9% of the world's population

Figure 1: Framework of the Global Innovation Index 2014



and 98.3% of the world's GDP (in current US dollars).

Global Innovation Index 2014: Main findings

The 143 economies and 81 indicators presented in the GII 2014 cover a range of themes, presenting us with a rich dataset to analyse global innovation trends. However, it is important to note that the GII model has evolved over the last editions. Each year the variables included in the GII computation are reviewed and updated to provide the best snapshot of global innovation (more details of these changes to the framework are provided in Annex 2). Thus care needs to be exercised when analysing year-on-year changes in GII ranks.

Stability at the top

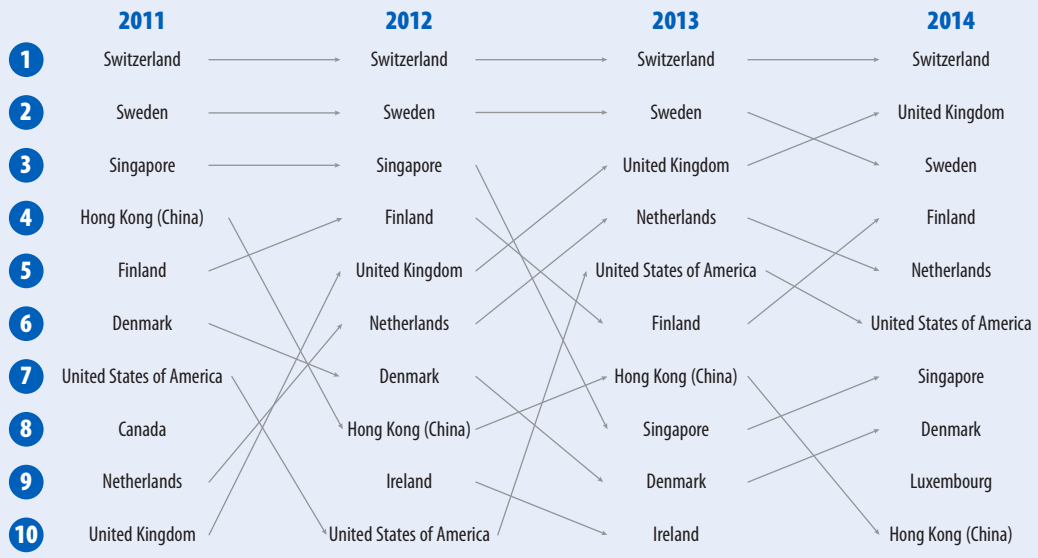
As expected, there is relative stability in the top 10: Switzerland leads again in 2014, the United Kingdom (UK) takes the second spot, and Finland makes it into the top 5. The USA (6th) declines by one spot this year.

Except for one change, the top 10 ranked economies in the GII 2014 remain the same as in 2013. Luxembourg (ranked 12th in 2013) enters the top 10 at 9th position, pushing Ireland just over to 11th position in 2014 (down from rank 10 in 2013). The top 10 economies in 2014 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. Finland
5. Netherlands
6. United States of America (USA)
7. Singapore
8. Denmark
9. Luxembourg
10. Hong Kong (China)

At first glance, these economies from around the world appear to have high income as a common factor explaining their dominance. However, several other high-income economies rank lower and struggle to break into the top tier. The answer lies in the GII model, which reflects the fact that innovation is a multi-faceted phenomenon with several input drivers and different output results. These innovation leaders are remarkable in consistently scoring high on most dimensions of the GII model. For example, top-ranked Switzerland secures a spot among the top 25 in

Figure 2: Movement in the top 10 of the GII



all pillars and sub-pillars with only four exceptions. Leadership from both business and government is essential for innovation excellence, and with the right approach, even a large economy such as the USA can be among the top innovators.

Other high-income countries inching towards the top tier performers include the Republic of Korea (21st in 2012, 18th in 2013, 16th in 2014) and Japan (25th in 2012, 22nd in 2013, 21st in 2014); both economies can attribute their ascent to improved rankings on the Output Sub-Index. Consequently they are closing the gap between Inputs and Outputs and improving their Innovation Efficiency Ratios.

Global innovation divides persist

The GII 2014 confirms the continued existence of global innovation divides (Box 2). Despite the increased globalization of R&D, the literature has noted that the actual production of high-quality scientific research papers over the last three decades is spiky and geographically concentrated in only a few centres of excellence.[18] The world's leading cities for the production of scientific papers at the highest levels have remained essentially the same for the past three decades.[19] The GII takes a more holistic view of innovation, which includes several factors other than R&D spending and scientific publications, but GII findings show that even with such a broader view, sharp divides in innovation results remain widespread—across and within income groups and geographical regions.

The three top-ranked lower-middle-income and low-income countries are, respectively, the Republic of Moldova (43rd in 2014; 45th in 2013), Mongolia (56th; 72nd), and Ukraine (63rd; 71st); and Kenya (85th; 99th), Uganda (91st; 89th), and Rwanda (102nd; 112th). The average GII score (on a scale of 100) for high-income countries is 48.83 (50.11 in 2013) as compared with 29.53 (29.83) and 25.62 (26.43) for low-middle-income and low-income countries, respectively. The average GII scores for Northern America (58.11) and Europe (47.23) are significantly higher than those for other regions such as Northern Africa and Western Asia (35.73) and Latin America and the Caribbean (32.85). Innovation divides also exist within and between world regions. Europe shows significant differences in ranks and GII scores across nations—examples are Finland (ranked 4th; score of 60.67), Spain (27th; 49.27), and Portugal (32nd; 45.63).

Although some limited movement has been seen across divides (see Box 2 for a more detailed analysis), the changes are slow and innovation divides are likely to persist. While less-developed nations continue to progress, they are often unable to keep pace with improvements being made by more wealthy nations. The

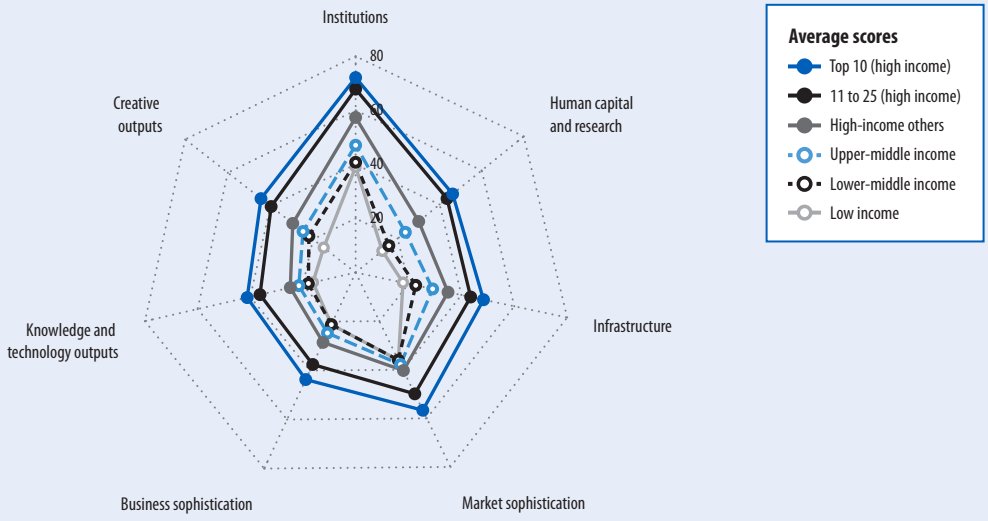
Box 2: The innovation divide persists

A persistent trait of the GII rankings has been the stability identified at the top (see Box 2 of Chapter 1 in the GII 2013). In 2014, Switzerland remains the indisputable leader for the fourth consecutive year. Among the top 10 and top 25, rankings have changed but the list of economies remains unaltered. Once again, all top 25 are exclusively high-income economies. The sole change in the top 10 this year is Luxembourg (9th) moving in and Ireland (11th) moving out. The fact that, at least since the GII began four years ago, the top 25 economies have all shared the characteristic of high income suggests the presence of an innovation divide, where the leaders remain uncontested and most major ranking moves occur only in lower tiers.

There is a clear distance between the top ranked economies and their followers. Figure 2.1 shows the average scores for three tiers of high-income economies (top 10, 15 through 25, and the remaining high-income economies), and the upper- and lower-middle-income and low-income economies. The top 10 economies exhibit clear strengths over the second tier high-income economies in all areas, and particularly the three areas where the divide between these two tiers has increased since 2013: Infrastructure (information and communication technologies, general infrastructure, and ecological sustainability), Business sophistication (knowledge workers, innovation linkages, and knowledge absorption), and Creative outputs (Intangible assets, creative goods and services, and online creativity).

The widest divide among all groups is between the second tier and the third tier in high-income economy groups. Although the third tier appears to be performing marginally better in Infrastructure, Market sophistication, and Creative outputs, the divide is mostly attributable to a worse performance from the second tier. The divide between the third tier high-income group and the upper-middle-income group remains nearly unchanged in all pillars. The gap between high-income and middle-income performances is the largest in Institutions (20.62 points) and Human capital and research (17.22 points). However, the divide between these two continues to narrow in Market (10.94 points), Business sophistication (12.10 points), and Knowledge and technology outputs (12.63 points). Although the individual pillar scores for economies in either of these income groups are virtually indistinguishable, the group of upper-middle-income countries has not yet been able to move closer to the group of top 25 innovators. The only two non–high-income economies that have

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



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

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Box 2: The innovation divide persists *(cont'd.)*

managed to do so are China (29th) and Malaysia (33rd).

Between the lower-income groups the divide remains much less apparent. The lower-middle and low-income economies perform almost identically in four out of the seven pillars: Institutions, (2.12 points), Market (0.03 points) and Business sophistication (0.02 points), and Knowledge and technology outputs (2.14 points). This does not mean that economies at the lower levels of income are not making substantial changes in rank. On the contrary, the largest combined number of economies that changed their GII ranking this year—a total of 52—are found at these income levels. This is because the scores of many of these economies are very similar, especially for those countries in positions 76 to 100 (a span of 3.83 points) and 101 to 125 (4.13 points), which suggests that small improvements to low-income economies' scores can have considerable impacts on their respective rankings.

When ranking regions from highest to lowest based on average GII score, the order is as follows: Northern America (58.11), Europe (47.23), South East Asia and Oceania (41.72), Northern Africa and Western Asia (35.73), Latin America and the Caribbean (32.85), Central and Southern Asia (27.48), and Sub-Saharan Africa (27.45).[1] The regional innovation divide between nations is largest between Northern America and Europe (10.88 points) and smallest between Central and Southern Asia and Sub-Saharan Africa (0.03). The gap between the other nations is, on average, around 4.94 points.

When comparing average scores on the pillar level, the innovation divide between regions is the largest in the Human capital and research pillar (with a span of 41.04 points between Northern America and Sub-Saharan Africa), and the smallest in the Creative outputs pillar (with a span of 26.04 points between Northern America and Central and Southern Asia). The gap between the first and second strongest performing regions (Northern America and Europe, respectively) is the largest in Market sophistication (25.40) and narrows significantly in Creative outputs (3.55).

Note

1 The regional groups are based on the United Nations classification.

benefits of legacy investments in human capital and the institutional context are difficult to replicate rapidly. For example, investments in the educational infrastructure in many low-income countries may take years to show results in terms of skilled graduates and even more time to yield tangible innovative outputs. This raises the pressure and the need for nations on the wrong side of the divide to accelerate their progress in driving innovation. Across the globe, however, some positive news is starting to register on that front, as discussed next.

Sub-Saharan Africa: A region of innovation learners

Sub-Saharan Africa now has more countries that are innovation learners. Over 2013, five African economies—Burkina Faso, Gambia, Malawi, Mozambique, and Rwanda—became part of the group of economies defined as 'innovation learners' (economies that perform at least 10% higher than expected for their level of GDP; see Box 4 for more details), and the Sub-Saharan African region now makes up nearly 50% of the innovation learner economies. These five economies demonstrate rising levels of innovation, particularly in the areas of human capital and research (collectively improving in their ranking on this pillar by 71 places) and market sophistication (collectively improving by 148 places). By and large, Sub-Saharan Africa has seen the most significant improvement of all regions in the GII rankings, with Côte d'Ivoire showing the biggest improvement (20 places) and Mauritius taking the leading regional position (40th, an improvement of 13 places from 53rd in 2013.).

Many Sub-Saharan African countries are fostering innovation through the implementation of various initiatives and programmes. For example, the government of Rwanda launched the Rwanda Innovation Endowment Fund (RIEF) to fund R&D to foster innovative areas such as agriculture, manufacturing, ICTs, and energy, in partnership with the United Nations Economic Commission for Africa (UNECA) and One UN Rwanda.[20] In other examples, Gambia has grown its ICT infrastructure and innovative services through various initiatives, and Gambia's Ministry of Trade, Industry, Regional Integration and Employment has also launched an innovation grant as part of the Social Development Fund in order to commercialize local projects.[21] Regional examples of projects that foster innovation include the Children and Community Initiative for Development (CAID) and the Africa Youth Panel (AYP), which

have rolled out a range of capacity building initiatives for youth in the Sub-Saharan Africa. Although a direct link between these programs and the GII rankings is not formally demonstrated here, these policy initiatives show commitment to innovation at the right policy levels.

The BRICS economies: Trajectories may be diverging

In prior editions of the GII,[22] we posited the inherent innovation challenge for middle-income economies, including the BRICS countries. We described how middle-income economies need to adopt a comprehensive knowledge-based growth strategy to integrate their efforts along the different dimensions of the GII framework and sustain a high level of innovation success.

Among the BRICS (Brazil, Russia, India, China, and South Africa), four improved their positions (Brazil by three places to reach the 61st rank, the Russian Federation by 13 places to reach 49th, China by six places to reach 29th, and South Africa by five places to reach 53rd). India, on the other hand, has continued to slip by a further 10 places, dropping to 76th position this year. The progress of China and the Russian Federation in the rankings is among the most notable of all countries; China's ranking is now comparable to that of many high-income economies.

Most of the BRICS economies are also showing other signs of progress. All of them, with the exception of South Africa, qualify as 'efficient innovators' this year, meaning that they have innovation efficiency scores (calculated as total innovation outputs over total innovation inputs) greater than or equal to the average (0.74). When a subset of GII indicators related to the quality of innovation is considered,[23] three BRICS economies (China, Brazil, and India) top the group of middle-income countries.

Alone among the BRICS, China seems on track to enter the top 25 in the GII. China ranks 2nd in innovation efficiency in 2014 on a global basis and is improving steadily along many dimensions of the GII. The country enjoys an impressive 2nd position in the Knowledge and technology outputs pillar and shows decent improvements in the Creative outputs pillar, ranking 1st in Creative goods exports. However, there is room for significant improvement in the Institutions pillar.

While all of the other BRICS economies have their own strengths and weaknesses, they are not yet showing the kind of accelerated and holistic improvements that are necessary to propel them into the top ranks of the GII. India, in particular, faces various challenges, education being one of the most acute. As pointed out in Chapter 4 by Naushad Forbes, 'Higher education has grown very rapidly in India over the last 30 years.' He explains that such rapid growth, concentrated in private rather than public institutions and focused on only a few professional fields, has given the rise to four crucial challenges: the need to (1) ensure quality, (2) build graduate education and research universities, (3) provide equity of access, and (4) build excellent liberal arts universities. Addressing these aspects may allow India to re-align its trajectory with the rest of the BRICS. If India does not start to focus on these challenges and on improving its innovation output, the country is likely continue to drop in the rankings and become less innovation efficient.

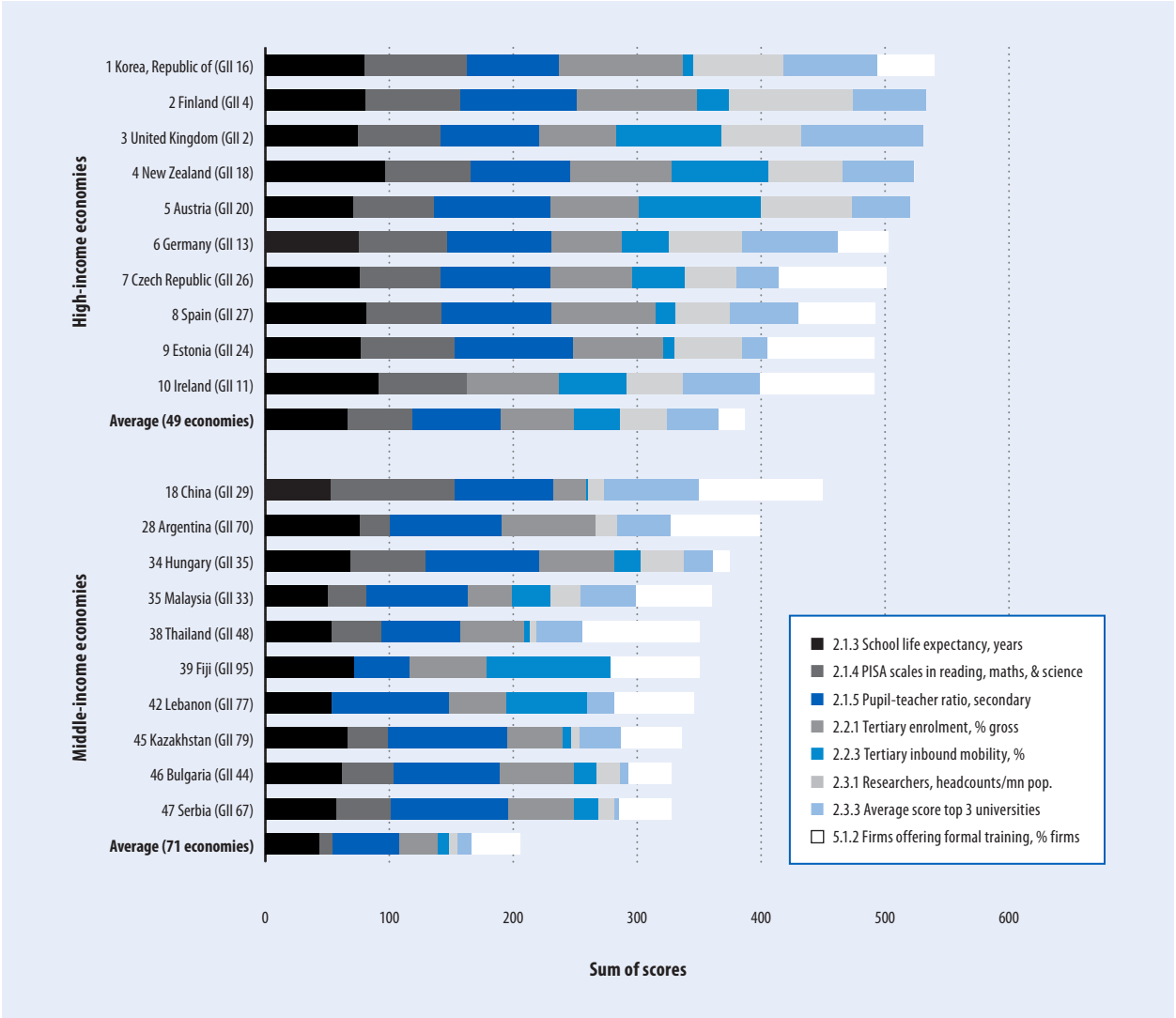
The human factor: The essential spark to innovation

Attempting to measure the entire spectrum of human factors behind innovation would be an impossible task. However, the GII framework offers a number of indicators that provide valuable evidence of the human factor (see Figure 3), such as school life expectancy (2.1.3); PISA scales in reading, mathematics, and science (2.1.4); pupil-teacher ratio (2.1.5); tertiary enrolment (2.2.1); tertiary inbound mobility (2.2.3), researchers (2.3.1); average score of the top 3 universities (2.3.3); and firms offering formal training (5.1.2).

According to the sum of their scores on this subset of indicators, the bottom 10 economies by income group include mostly underperforming economies (economies performing at levels below expected according to their level of development) in addition to economies performing only on par with expectations. However, the number of the economies classified as underperformers decreases as the income group moves from high to low income. For example, 7 out the 10 poorest performing high-income economies are underperformers, 4 out of the bottom 10 middle-income economies are underperformers, and 2 out of the bottom 10 low-income economies are underperformers. This indicates that higher-income economies are more reliant on the human factor to improve innovation performance.

The top performers within the high-income economies for the above subset of human factor–related variables are the Republic of Korea, Finland, and the UK. China takes the top position among the middle-income countries.

Figure 3: Education as a human aspect of innovation: Top 10 high- and top 10 middle-income economies



Notes: Numbers to the left of the economy name are the rank of education as a human aspect of innovation. Numbers in parentheses to the right of the economy name are the overall GII 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.

Discussion of results: The world's top innovators

The following section describes and analyses the salient features of the GII 2014 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 2014 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 2014 edition are Switzerland, the UK, Sweden, Finland, the Netherlands, the USA, Singapore, Denmark, Luxembourg, and Hong Kong (China). Nine of these economies were already in the GII top 10 in 2013; Ireland, which was in the top 10 in 2013, dropped to 11th place this year, and Luxembourg climbed up into the top 10 from 12th position in 2013.

Switzerland maintains its 2011, 2012, and 2013 position as number 1 in the GII, as well as its 2012 and 2013 1st place position in the Innovation Output Sub-Index and in Knowledge and technology outputs and its 2nd place in Creative outputs. It achieves a spot among the top 25 in all pillars and sub-pillars with only four exceptions: sub-pillars Education (where it ranks 52nd); Knowledge absorption (47th), Business environment (32nd),

Table 1: Global Innovation Index rankings

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank	Efficiency Ratio	Rank	Median: 0.74
Switzerland	64.78	**1**	HI	**1**	EUR	**1**	0.95	6	
United Kingdom	62.37	2	HI	2	EUR	2	0.83	29	
Sweden	62.29	3	HI	3	EUR	3	0.85	22	
Finland	60.67	4	HI	4	EUR	4	0.80	41	
Netherlands	60.59	5	HI	5	EUR	5	0.91	12	
United States of America	60.09	6	HI	6	NAC	**1**	0.77	57	
Singapore	59.24	7	HI	7	SEAO	**1**	0.61	110	
Denmark	57.52	8	HI	8	EUR	6	0.76	61	
Luxembourg	56.86	9	HI	9	EUR	7	0.93	9	
Hong Kong (China)	56.82	10	HI	10	SEAO	2	0.66	99	
Ireland	56.67	11	HI	11	EUR	8	0.79	47	
Canada	56.13	12	HI	12	NAC	2	0.69	86	
Germany	56.02	13	HI	13	EUR	9	0.86	19	
Norway	55.59	14	HI	14	EUR	10	0.78	51	
Israel	55.46	15	HI	15	NAWA	**1**	0.79	42	
Korea, Republic of	55.27	16	HI	16	SEAO	3	0.78	54	
Australia	55.01	17	HI	17	SEAO	4	0.70	81	
New Zealand	54.52	18	HI	18	SEAO	5	0.75	66	
Iceland	54.05	19	HI	19	EUR	11	0.90	13	
Austria	53.41	20	HI	20	EUR	12	0.74	69	
Japan	52.41	21	HI	21	SEAO	6	0.69	88	
France	52.18	22	HI	22	EUR	13	0.75	64	
Belgium	51.69	23	HI	23	EUR	14	0.78	55	
Estonia	51.54	24	HI	24	EUR	15	0.81	34	
Malta	50.44	25	HI	25	EUR	16	0.99	3	
Czech Republic	50.22	26	HI	26	EUR	17	0.87	18	
Spain	49.27	27	HI	27	EUR	18	0.76	60	
Slovenia	47.23	28	HI	28	EUR	19	0.78	53	
China	46.57	29	UM	**1**	SEAO	7	1.03	2	
Cyprus	45.82	30	HI	29	NAWA	2	0.77	56	
Italy	45.65	31	HI	30	EUR	20	0.78	52	
Portugal	45.63	32	HI	31	EUR	21	0.74	73	
Malaysia	45.60	33	UM	2	SEAO	8	0.74	72	
Latvia	44.81	34	HI	32	EUR	22	0.82	32	
Hungary	44.61	35	UM	3	EUR	23	0.90	15	
United Arab Emirates	43.25	36	HI	33	NAWA	3	0.54	127	
Slovakia	41.89	37	HI	34	EUR	24	0.79	45	
Saudi Arabia	41.61	38	HI	35	NAWA	4	0.74	70	
Lithuania	41.00	39	HI	36	EUR	25	0.68	89	
Mauritius	40.94	40	UM	4	SSF	**1**	0.75	65	
Barbados	40.78	41	HI	37	LCN	**1**	0.69	87	
Croatia	40.75	42	HI	38	EUR	26	0.81	36	
Moldova, Republic of	40.74	43	LM	**1**	EUR	27	1.07	1	
Bulgaria	40.74	44	UM	5	EUR	28	0.84	25	
Poland	40.64	45	HI	39	EUR	29	0.72	76	
Chile	40.64	46	HI	40	LCN	2	0.68	92	
Qatar	40.31	47	HI	41	NAWA	5	0.60	114	
Thailand	39.28	48	UM	6	SEAO	9	0.76	62	
Russian Federation	39.14	49	HI	42	EUR	30	0.79	49	
Greece	38.95	50	HI	43	EUR	31	0.70	85	
Seychelles	38.56	51	UM	7	SSF	2	0.74	74	
Panama	38.30	52	UM	8	LCN	3	0.85	20	
South Africa	38.25	53	UM	9	SSF	3	0.68	93	
Turkey	38.20	54	UM	10	NAWA	6	0.93	11	
Romania	38.08	55	UM	11	EUR	32	0.84	24	
Mongolia	37.52	56	LM	2	SEAO	10	0.68	94	
Costa Rica	37.30	57	UM	12	LCN	4	0.81	38	
Belarus	37.10	58	UM	13	EUR	33	0.83	27	
Montenegro	37.01	59	UM	14	EUR	34	0.62	106	
TFYR of Macedonia	36.93	60	UM	15	EUR	35	0.70	82	
Brazil	36.29	61	UM	16	LCN	5	0.74	71	
Bahrain	36.26	62	HI	44	NAWA	7	0.60	117	
Ukraine	36.26	63	LM	3	EUR	36	0.90	14	
Jordan	36.21	64	UM	17	NAWA	8	0.80	40	
Armenia	36.06	65	LM	4	NAWA	9	0.83	28	
Mexico	36.02	66	UM	18	LCN	6	0.71	79	
Serbia	35.89	67	UM	19	EUR	37	0.79	46	
Colombia	35.50	68	UM	20	LCN	7	0.63	102	
Kuwait	35.19	69	HI	45	NAWA	10	0.78	50	
Argentina	35.13	70	UM	21	LCN	8	0.79	43	
Viet Nam	34.89	71	LM	5	SEAO	11	0.95	5	
Uruguay	34.76	72	HI	46	LCN	9	0.73	75	

Table 1: Global Innovation Index rankings *(continued)*

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank	Efficiency Ratio	Rank	Median: 0.74
Peru	34.73	73	UM	22	LCN	10	0.62	107	
Georgia	34.53	74	LM	6	NAWA	11	0.68	90	
Oman	33.87	75	HI	47	NAWA	12	0.58	121	
India	33.70	76	LM	7	CSA	**1**	0.82	31	
Lebanon	33.60	77	UM	23	NAWA	13	0.59	119	
Tunisia	32.94	78	UM	24	NAWA	14	0.66	98	
Kazakhstan	32.75	79	UM	25	CSA	2	0.59	118	
Guyana	32.48	80	LM	8	LCN	11	0.74	68	
Bosnia and Herzegovina	32.43	81	UM	26	EUR	38	0.65	101	
Jamaica	32.41	82	UM	27	LCN	12	0.65	100	
Dominican Republic	32.29	83	UM	28	LCN	13	0.85	21	
Morocco	32.24	84	LM	9	NAWA	15	0.70	83	
Kenya	31.85	85	LI	**1**	SSF	4	0.84	26	
Bhutan	31.83	86	LM	10	CSA	3	0.60	112	
Indonesia	31.81	87	LM	11	SEAO	12	0.96	4	
Brunei Darussalam	31.67	88	HI	48	SEAO	13	0.43	139	
Paraguay	31.59	89	LM	12	LCN	14	0.75	63	
Trinidad and Tobago	31.56	90	HI	49	LCN	15	0.63	103	
Uganda	31.14	91	LI	2	SSF	5	0.71	77	
Botswana	30.87	92	UM	29	SSF	6	0.50	133	
Guatemala	30.75	93	LM	13	LCN	16	0.68	95	
Albania	30.47	94	UM	30	EUR	39	0.50	131	
Fiji	30.39	95	UM	31	SEAO	14	0.34	141	
Ghana	30.26	96	LM	14	SSF	7	0.81	37	
Cabo Verde	30.09	97	LM	15	SSF	8	0.55	126	
Senegal	30.06	98	LM	16	SSF	9	0.85	23	
Egypt	30.03	99	LM	17	NAWA	16	0.76	59	
Philippines	29.87	100	LM	18	SEAO	15	0.81	35	
Azerbaijan	29.60	101	UM	32	NAWA	17	0.58	120	
Rwanda	29.31	102	LI	3	SSF	10	0.46	137	
El Salvador	29.08	103	LM	19	LCN	17	0.60	116	
Gambia	29.03	104	LI	4	SSF	11	0.76	58	
Sri Lanka	28.98	105	LM	20	CSA	4	0.87	17	
Cambodia	28.66	106	LI	5	SEAO	16	0.74	67	
Mozambique	28.52	107	LI	6	SSF	12	0.57	124	
Namibia	28.47	108	UM	33	SSF	13	0.55	125	
Burkina Faso	28.18	109	LI	7	SSF	14	0.71	78	
Nigeria	27.79	110	LM	21	SSF	15	0.94	8	
Bolivia, Plurinational State of	27.76	111	LM	22	LCN	18	0.70	84	
Kyrgyzstan	27.75	112	LI	8	CSA	5	0.46	136	
Malawi	27.61	113	LI	9	SSF	16	0.67	96	
Cameroon	27.52	114	LM	23	SSF	17	0.80	39	
Ecuador	27.50	115	UM	34	LCN	19	0.63	104	
Côte d'Ivoire	27.02	116	LM	24	SSF	18	0.93	10	
Lesotho	27.01	117	LM	25	SSF	19	0.40	140	
Honduras	26.73	118	LM	26	LCN	20	0.53	128	
Mali	26.18	119	LI	10	SSF	20	0.83	30	
Iran, Islamic Republic of	26.14	120	UM	35	CSA	6	0.57	122	
Zambia	25.76	121	LM	27	SSF	21	0.79	44	
Venezuela, Bolivarian Republic of	25.66	122	UM	36	LCN	21	0.95	7	
Tanzania, United Republic of	25.60	123	LI	11	SSF	22	0.60	113	
Madagascar	25.50	124	LI	12	SSF	23	0.62	105	
Nicaragua	25.47	125	LM	28	LCN	22	0.53	129	
Ethiopia	25.36	126	LI	13	SSF	24	0.67	97	
Swaziland	25.33	127	LM	29	SSF	25	0.57	123	
Uzbekistan	25.20	128	LM	30	CSA	7	0.61	108	
Bangladesh	24.35	129	LI	14	CSA	8	0.68	91	
Zimbabwe	24.31	130	LI	15	SSF	26	0.79	48	
Niger	24.27	131	LI	16	SSF	27	0.50	132	
Benin	24.21	132	LI	17	SSF	28	0.60	115	
Algeria	24.20	133	UM	37	NAWA	18	0.53	130	
Pakistan	24.00	134	LM	31	CSA	9	0.89	16	
Angola	23.82	135	UM	38	SSF	29	0.82	33	
Nepal	23.79	136	LI	18	CSA	10	0.49	134	
Tajikistan	23.73	137	LI	19	CSA	11	0.45	138	
Burundi	22.43	138	LI	20	SSF	30	0.46	135	
Guinea	20.25	139	LI	21	SSF	31	0.61	109	
Myanmar	19.64	140	LI	22	SEAO	17	0.71	80	
Yemen	19.53	141	LM	32	NAWA	19	0.60	111	
Togo	17.65	142	LI	23	SSF	32	0.25	142	
Sudan	12.66	143	LM	33	SSF	33	0.09	143	

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: 40.29
Singapore	73.60	**1**	HI	**1**	SEAO	**1**	
Hong Kong (China)	68.57	2	HI	2	SEAO	2	
United Kingdom	68.21	3	HI	3	EUR	**1**	
United States of America	67.92	4	HI	4	NAC	**1**	
Finland	67.53	5	HI	5	EUR	2	
Sweden	67.46	6	HI	6	EUR	3	
Switzerland	66.44	7	HI	7	EUR	4	
Canada	66.27	8	HI	8	NAC	2	
Denmark	65.52	9	HI	9	EUR	5	
Australia	64.57	10	HI	10	SEAO	3	
Netherlands	63.46	11	HI	11	EUR	6	
Ireland	63.31	12	HI	12	EUR	7	
New Zealand	62.47	13	HI	13	SEAO	4	
Norway	62.37	14	HI	14	EUR	8	
Japan	62.21	15	HI	15	SEAO	5	
Korea, Republic of	62.17	16	HI	16	SEAO	6	
Israel	61.80	17	HI	17	NAWA	**1**	
Austria	61.33	18	HI	18	EUR	9	
Germany	60.31	19	HI	19	EUR	10	
France	59.51	20	HI	20	EUR	11	
Luxembourg	58.78	21	HI	21	EUR	12	
Belgium	58.23	22	HI	22	EUR	13	
Estonia	56.81	23	HI	23	EUR	14	
Iceland	56.77	24	HI	24	EUR	15	
United Arab Emirates	56.23	25	HI	25	NAWA	2	
Spain	55.94	26	HI	26	EUR	16	
Czech Republic	53.59	27	HI	27	EUR	17	
Slovenia	53.07	28	HI	28	EUR	18	
Portugal	52.56	29	HI	29	EUR	19	
Malaysia	52.46	30	UM	**1**	SEAO	7	
Cyprus	51.73	31	HI	30	NAWA	3	
Italy	51.21	32	HI	31	EUR	20	
Malta	50.57	33	HI	32	EUR	21	
Qatar	50.38	34	HI	33	NAWA	4	
Latvia	49.21	35	HI	34	EUR	22	
Lithuania	48.73	36	HI	35	EUR	23	
Chile	48.44	37	HI	36	LCN	**1**	
Barbados	48.32	38	HI	37	LCN	2	
Saudi Arabia	47.85	39	HI	38	NAWA	5	
Poland	47.31	40	HI	39	EUR	24	
Hungary	47.04	41	UM	2	EUR	25	
Mauritius	46.89	42	UM	3	SSF	**1**	
Slovakia	46.75	43	HI	40	EUR	26	
Greece	45.94	44	HI	41	EUR	27	
China	45.79	45	UM	4	SEAO	8	
Montenegro	45.61	46	UM	5	EUR	28	
South Africa	45.60	47	UM	6	SSF	2	
Bahrain	45.45	48	HI	42	NAWA	6	
Fiji	45.21	49	UM	7	SEAO	9	
Croatia	45.10	50	HI	43	EUR	29	
Mongolia	44.76	51	LM	**1**	SEAO	10	
Thailand	44.75	52	UM	8	SEAO	11	
Seychelles	44.45	53	UM	9	SSF	3	
Bulgaria	44.34	54	UM	10	EUR	30	
Brunei Darussalam	44.30	55	HI	44	SEAO	12	
Russian Federation	43.77	56	HI	45	EUR	31	
TFYR of Macedonia	43.45	57	UM	11	EUR	32	
Colombia	43.45	58	UM	12	LCN	3	
Oman	42.82	59	HI	46	NAWA	7	
Peru	42.82	60	UM	13	LCN	4	
Lebanon	42.22	61	UM	14	NAWA	8	
Mexico	42.19	62	UM	15	LCN	5	
Brazil	41.74	63	UM	16	LCN	6	
Panama	41.40	64	UM	17	LCN	7	
Romania	41.36	65	UM	18	EUR	33	
Costa Rica	41.30	66	UM	19	LCN	8	
Botswana	41.20	67	UM	20	SSF	4	
Georgia	41.10	68	LM	2	NAWA	9	
Kazakhstan	41.10	69	UM	21	CSA	**1**	
Belarus	40.51	70	UM	22	EUR	34	
Albania	40.51	71	UM	23	EUR	35	
Jordan	40.29	72	UM	24	NAWA	10	

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

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank	Median: 40.29
Uruguay	40.26	73	HI	47	LCN	9	
Rwanda	40.19	74	LI	**1**	SSF	5	
Serbia	40.06	75	UM	25	EUR	36	
Bhutan	39.76	76	LM	3	CSA	2	
Tunisia	39.75	77	UM	26	NAWA	11	
Turkey	39.66	78	UM	27	NAWA	12	
Kuwait	39.44	79	HI	48	NAWA	13	
Moldova, Republic of	39.42	80	LM	4	EUR	37	
Armenia	39.39	81	LM	5	NAWA	14	
Bosnia and Herzegovina	39.36	82	UM	28	EUR	38	
Argentina	39.18	83	UM	29	LCN	10	
Jamaica	39.17	84	UM	30	LCN	11	
Cabo Verde	38.89	85	LM	6	SSF	6	
Trinidad and Tobago	38.64	86	HI	49	LCN	12	
Lesotho	38.58	87	LM	7	SSF	7	
Ukraine	38.15	88	LM	8	EUR	39	
Morocco	37.99	89	LM	9	NAWA	15	
Kyrgyzstan	37.92	90	LI	2	CSA	3	
Azerbaijan	37.35	91	UM	31	NAWA	16	
Guyana	37.28	92	LM	10	LCN	13	
India	36.97	93	LM	11	CSA	4	
Guatemala	36.69	94	LM	12	LCN	14	
Namibia	36.67	95	UM	32	SSF	8	
Mozambique	36.42	96	LI	3	SSF	9	
El Salvador	36.42	97	LM	13	LCN	15	
Uganda	36.32	98	LI	4	SSF	10	
Paraguay	36.01	99	LM	14	LCN	16	
Viet Nam	35.75	100	LM	15	SEAO	13	
Dominican Republic	34.95	101	UM	33	LCN	17	
Honduras	34.84	102	LM	16	LCN	18	
Kenya	34.69	103	LI	5	SSF	11	
Egypt	34.05	104	LM	17	NAWA	17	
Ecuador	33.71	105	UM	34	LCN	19	
Ghana	33.50	106	LM	18	SSF	12	
Iran, Islamic Republic of	33.24	107	UM	35	CSA	5	
Nicaragua	33.22	108	LM	19	LCN	20	
Malawi	32.97	109	LI	6	SSF	13	
Philippines	32.93	110	LM	20	SEAO	14	
Gambia	32.92	111	LI	7	SSF	14	
Burkina Faso	32.87	112	LI	8	SSF	15	
Cambodia	32.85	113	LI	9	SEAO	15	
Tajikistan	32.82	114	LI	10	CSA	6	
Bolivia, Plurinational State of	32.74	115	LM	21	LCN	21	
Senegal	32.56	116	LM	22	SSF	16	
Indonesia	32.42	117	LM	23	SEAO	16	
Niger	32.35	118	LI	11	SSF	17	
Swaziland	32.21	119	LM	24	SSF	18	
Tanzania, United Republic of	31.98	120	LI	12	SSF	19	
Nepal	31.83	121	LI	13	CSA	7	
Algeria	31.65	122	UM	36	NAWA	18	
Madagascar	31.41	123	LI	14	SSF	20	
Uzbekistan	31.26	124	LM	25	CSA	8	
Sri Lanka	30.92	125	LM	26	CSA	9	
Burundi	30.63	126	LI	15	SSF	21	
Cameroon	30.59	127	LM	27	SSF	22	
Ethiopia	30.36	128	LI	16	SSF	23	
Benin	30.28	129	LI	17	SSF	24	
Bangladesh	29.00	130	LI	18	CSA	10	
Zambia	28.74	131	LM	28	SSF	25	
Mali	28.65	132	LI	19	SSF	26	
Nigeria	28.63	133	LM	29	SSF	27	
Togo	28.31	134	LI	20	SSF	28	
Côte d'Ivoire	28.01	135	LM	30	SSF	29	
Zimbabwe	27.18	136	LI	21	SSF	30	
Venezuela, Bolivarian Republic of	26.32	137	UM	37	LCN	22	
Angola	26.21	138	UM	38	SSF	31	
Pakistan	25.44	139	LM	31	CSA	11	
Guinea	25.14	140	LI	22	SSF	32	
Yemen	24.36	141	LM	32	NAWA	19	
Sudan	23.20	142	LM	33	SSF	33	
Myanmar	23.03	143	LI	23	SEAO	17	

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: 29.27
Switzerland	63.11	**1**	HI	**1**	EUR	**1**	
Netherlands	57.73	2	HI	2	EUR	2	
Sweden	57.13	3	HI	3	EUR	3	
United Kingdom	56.52	4	HI	4	EUR	4	
Luxembourg	54.94	5	HI	5	EUR	5	
Finland	53.82	6	HI	6	EUR	6	
United States of America	52.27	7	HI	7	NAC	**1**	
Germany	51.74	8	HI	8	EUR	7	
Iceland	51.33	9	HI	9	EUR	8	
Malta	50.31	10	HI	10	EUR	9	
Ireland	50.04	11	HI	11	EUR	10	
Denmark	49.52	12	HI	12	EUR	11	
Israel	49.11	13	HI	13	NAWA	**1**	
Norway	48.82	14	HI	14	EUR	12	
Korea, Republic of	48.37	15	HI	15	SEAO	**1**	
China	47.35	16	UM	**1**	SEAO	2	
Czech Republic	46.85	17	HI	16	EUR	13	
New Zealand	46.57	18	HI	17	SEAO	3	
Estonia	46.27	19	HI	18	EUR	14	
Canada	45.99	20	HI	19	NAC	2	
Austria	45.49	21	HI	20	EUR	15	
Australia	45.46	22	HI	21	SEAO	4	
Belgium	45.15	23	HI	22	EUR	16	
Hong Kong (China)	45.08	24	HI	23	SEAO	5	
Singapore	44.88	25	HI	24	SEAO	6	
France	44.85	26	HI	25	EUR	17	
Japan	42.61	27	HI	26	SEAO	7	
Spain	42.60	28	HI	27	EUR	18	
Hungary	42.18	29	UM	2	EUR	19	
Moldova, Republic of	42.06	30	LM	**1**	EUR	20	
Slovenia	41.38	31	HI	28	EUR	21	
Latvia	40.41	32	HI	29	EUR	22	
Italy	40.09	33	HI	30	EUR	23	
Cyprus	39.92	34	HI	31	NAWA	2	
Malaysia	38.74	35	UM	3	SEAO	8	
Portugal	38.70	36	HI	32	EUR	24	
Bulgaria	37.13	37	UM	4	EUR	25	
Slovakia	37.02	38	HI	33	EUR	26	
Turkey	36.74	39	UM	5	NAWA	3	
Croatia	36.40	40	HI	34	EUR	27	
Saudi Arabia	35.37	41	HI	35	NAWA	4	
Panama	35.20	42	UM	6	LCN	**1**	
Mauritius	34.99	43	UM	7	SSF	**1**	
Romania	34.80	44	UM	8	EUR	28	
Russian Federation	34.50	45	HI	36	EUR	29	
Ukraine	34.37	46	LM	2	EUR	30	
Viet Nam	34.02	47	LM	3	SEAO	9	
Poland	33.98	48	HI	37	EUR	31	
Thailand	33.81	49	UM	9	SEAO	10	
Belarus	33.68	50	UM	10	EUR	32	
Costa Rica	33.31	51	UM	11	LCN	2	
Lithuania	33.27	52	HI	38	EUR	33	
Barbados	33.24	53	HI	39	LCN	3	
Chile	32.84	54	HI	40	LCN	4	
Armenia	32.73	55	LM	4	NAWA	5	
Seychelles	32.68	56	UM	12	SSF	2	
Jordan	32.13	57	UM	13	NAWA	6	
Greece	31.95	58	HI	41	EUR	34	
Serbia	31.73	59	UM	14	EUR	35	
Indonesia	31.20	60	LM	5	SEAO	11	
Argentina	31.07	61	UM	15	LCN	5	
Kuwait	30.94	62	HI	42	NAWA	7	
South Africa	30.90	63	UM	16	SSF	3	
Brazil	30.84	64	UM	17	LCN	6	
India	30.42	65	LM	6	CSA	**1**	
TFYR of Macedonia	30.42	66	UM	18	EUR	36	
Mongolia	30.28	67	LM	7	SEAO	12	
United Arab Emirates	30.27	68	HI	43	NAWA	8	
Qatar	30.24	69	HI	44	NAWA	9	
Mexico	29.86	70	UM	19	LCN	7	
Dominican Republic	29.64	71	UM	20	LCN	8	
Uruguay	29.27	72	HI	45	LCN	9	

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

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank	Median: 29.27
Kenya	29.01	73	LI	1	SSF	4	
Montenegro	28.41	74	UM	21	EUR	37	
Georgia	27.95	75	LM	8	NAWA	10	
Guyana	27.67	76	LM	9	LCN	10	
Colombia	27.55	77	UM	22	LCN	11	
Senegal	27.55	78	LM	10	SSF	5	
Paraguay	27.18	79	LM	11	LCN	12	
Bahrain	27.08	80	HI	46	NAWA	11	
Sri Lanka	27.04	81	LM	12	CSA	2	
Ghana	27.03	82	LM	13	SSF	6	
Nigeria	26.95	83	LM	14	SSF	7	
Philippines	26.80	84	LM	15	SEAO	13	
Peru	26.65	85	UM	23	LCN	13	
Morocco	26.49	86	LM	16	NAWA	12	
Tunisia	26.14	87	UM	24	NAWA	13	
Côte d'Ivoire	26.04	88	LM	17	SSF	8	
Egypt	26.01	89	LM	18	NAWA	14	
Uganda	25.96	90	LI	2	SSF	9	
Jamaica	25.65	91	UM	25	LCN	14	
Bosnia and Herzegovina	25.51	92	UM	26	EUR	38	
Gambia	25.15	93	LI	3	SSF	10	
Venezuela, Bolivarian Republic of	24.99	94	UM	27	LCN	15	
Lebanon	24.98	95	UM	28	NAWA	15	
Oman	24.92	96	HI	47	NAWA	16	
Guatemala	24.82	97	LM	19	LCN	16	
Trinidad and Tobago	24.49	98	HI	48	LCN	17	
Cambodia	24.46	99	LI	4	SEAO	14	
Cameroon	24.46	100	LM	20	SSF	11	
Kazakhstan	24.40	101	UM	29	CSA	3	
Bhutan	23.89	102	LM	21	CSA	4	
Mali	23.71	103	LI	5	SSF	12	
Burkina Faso	23.49	104	LI	6	SSF	13	
Zambia	22.79	105	LM	22	SSF	14	
Bolivia, Plurinational State of	22.78	106	LM	23	LCN	18	
Pakistan	22.57	107	LM	24	CSA	5	
Malawi	22.25	108	LI	7	SSF	15	
Azerbaijan	21.84	109	UM	30	NAWA	17	
El Salvador	21.73	110	LM	25	LCN	19	
Zimbabwe	21.45	111	LI	8	SSF	16	
Angola	21.44	112	UM	31	SSF	17	
Ecuador	21.28	113	UM	32	LCN	20	
Cabo Verde	21.28	114	LM	26	SSF	18	
Mozambique	20.61	115	LI	9	SSF	19	
Botswana	20.54	116	UM	33	SSF	20	
Albania	20.43	117	UM	34	EUR	39	
Ethiopia	20.35	118	LI	10	SSF	21	
Namibia	20.28	119	UM	35	SSF	22	
Bangladesh	19.70	120	LI	11	CSA	6	
Madagascar	19.58	121	LI	12	SSF	23	
Tanzania, United Republic of	19.21	122	LI	13	SSF	24	
Uzbekistan	19.14	123	LM	27	CSA	7	
Brunei Darussalam	19.04	124	HI	49	SEAO	15	
Iran, Islamic Republic of	19.04	125	UM	36	CSA	8	
Honduras	18.62	126	LM	28	LCN	21	
Swaziland	18.45	127	LM	29	SSF	25	
Rwanda	18.43	128	LI	14	SSF	26	
Benin	18.13	129	LI	15	SSF	27	
Nicaragua	17.72	130	LM	30	LCN	22	
Kyrgyzstan	17.58	131	LI	16	CSA	9	
Algeria	16.74	132	UM	37	NAWA	18	
Myanmar	16.25	133	LI	17	SEAO	16	
Niger	16.20	134	LI	18	SSF	28	
Nepal	15.74	135	LI	19	CSA	10	
Fiji	15.56	136	UM	38	SEAO	17	
Lesotho	15.45	137	LM	31	SSF	29	
Guinea	15.35	138	LI	20	SSF	30	
Yemen	14.70	139	LM	32	NAWA	19	
Tajikistan	14.65	140	LI	21	CSA	11	
Burundi	14.23	141	LI	22	SSF	31	
Togo	6.98	142	LI	23	SSF	32	
Sudan	2.11	143	LM	33	SSF	33	

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.

and General infrastructure (29th). A knowledge-based economy of 8.0 million people with one of the highest GDP per capita in the world (PPP$46,430.1), its high Innovation Efficiency Ratio (6th highest of all economies in the index, and 1st among the GII top 10) allows Switzerland to translate its robust innovation capabilities into high-level innovation outputs. In addition, Switzerland is one of the five economies at the efficient frontier (see Annex 3).

The runner-up, the **United Kingdom** (UK) has gradually improved its ranking over time, from 3rd place in 2013 (up from 5th in 2012 and 10th in 2011), and comes 3rd in inputs and 4th in outputs. The UK places within the top 25 in all pillars and sub-pillars with only three exceptions: sub-pillars General infrastructure (60th), Intangible assets (40th), and Knowledge absorption (29th). With roughly six times the population of Sweden and eight times that of Switzerland, these results are commendable. Relative weaknesses are in the growth of its labour productivity (102nd) and the level of gross capital formation over GDP (132nd). Other indicators pointed out as weaknesses in the 2013 findings have since shown improvement, including its level of FDI net inflows (improving significantly this year, by 37 positions) and market access conditions to foreign markets for non-agricultural exports (improving by five positions), a result of the country's economic recovery. In addition, the UK is one of the five economies at the efficient frontier.

Sweden occupies 3rd place in 2014 (down from the runner-up position it held for the last four years), although it continues to lead among the Nordic countries. It ranks 3rd in outputs, and its drop to 6th place in inputs this year is the main reason for its fall to 3rd position. Sweden does particularly well in the sub-pillar Research and development: its number of researchers (6th), gross expenditure on R&D (4th), and average score of the top 3 QS university rankings (14th) are all good showings. It also ranks 3rd in Knowledge and technology outputs because of its high number of PCT resident patent applications (5th) and royalties and license fee receipts (7th). In addition, Sweden is one of the five economies at the efficient frontier.

Finland is ranked 4th in the GII this year (6th in 2013), 5th in the Input Sub-Index, and 6th in the Output Sub-Index. It achieves positions among the top 25 in all pillars (1st place in Institutions and Human capital and researchers), 16 out of 21 sub-pillars (1st place in Political environment), and 56 out of the 79 indicators with available data. Its weakest showing is in Market sophistication, which, although still respectable, is slowly declining at 22nd position. At the indicator level, Finland achieves 1st place in government effectiveness; press freedom; the number of researchers; communications, computer and information services exports; ICTs and business model creation; and ICTs and organizational model creation. Some of its major weaknesses (measured in percent ranks to take account of missing values) are in gross capital formation (102nd), the growth rate of GDP per person employed (87th), FDI inflows (121st), and intensity of local competition (83rd). In addition, Finland is one of the five economies at the efficient frontier.

The Netherlands is ranked 5th, down from 4th in 2013, yet still higher than in previous years. Similar to 2013, it ranks 2nd in outputs, yet 11th in inputs (down slightly from 10th in 2013), and drastically improves its innovation efficiency by 14 positions to 12th (2nd after Switzerland among the GII top 10). The country achieves leading positions (within the top 25) on all pillars, 16 of the 21 sub-pillars, and 55 out of 78 indicators with data, including 1st place in online e-participation and 2nd place in both press freedom and country-code top-level domains. Its major weakness are in Tertiary education (although progress was made again this year—the Netherlands ranks 59th, up from 61st in 2013) and in General infrastructure (48th, down from 29th in 2013).

The United States of America (USA) is ranked 6th, down from 5th in 2013, and leads the rankings in Northern America, coming in 4th in inputs and 7th in outputs. The USA occupies 1st place in the Market sophistication sub-pillar and has leading positions (within the top 25) for all pillars and in 16 of the 21 sub-pillars, ranking 1st in Investment. It is also 1st out of 11 of the 77 indicators with data, including cost of redundancy dismissal, government's online service, total value of stocks traded, venture capital deals, number of GMAT test takers, domestic resident patent applications, citable documents H index, computer software spending, royalty and license fee receipts, generic top-level domains, and video uploads on YouTube. Some areas of concern persist, however. In Tertiary education, where it ranks 41st, the USA continues to be the victim of its own success: the high level of its academic institutions leads to a 3rd position in tertiary enrolment, but to relatively low levels of student exchange with the rest of the world (where the USA ranks 49th). The level of tertiary graduates in science and engineering is also low (84th), although it has seen improvements in its weaker

areas, including Ecological sustainability (58th, up from 74th in 2013) and Intangible assets (72nd, up from 86th in 2013).

Singapore is ranked 7th, up one position from 2013, and is one of the five economies at the efficient frontier as well as the leading economy in Asia. It shows strength across the board in the Input Sub-Index, where it takes 1st place: Business sophistication (1st), Human capital and research (2nd), Infrastructure (2nd), Market sophistication (4th), and Institutions (6th). But it ranks only 25th in the Output Sub-Index, a result of its 13th place in Knowledge and technology outputs and 33rd place in Creative outputs. As a result, Singapore has the lowest efficiency ratio of the top 10 (110th—albeit an improvement from 121st in 2013). And Singapore has the lowest efficiency ratio of the top 10. Singapore has a leading position (within the top 25) in 6 out of 7 pillars (including 1st in Business sophistication) and 16 out of 21 sub-pillars, ranking 1st in 3 of them: Regulatory environment, Business environment, and Knowledge absorption. Singapore performs less well in government expenditure on education (111th), communications, computer and information services exports (96th), domestic resident trademark applications (82nd), and printing and publishing output (73rd).

Denmark is ranked 8th, up one position from 9th place in 2013. The strength of this country of 5.6 million people lies in its solid performance in both the Input Sub-Index (at 9th place) and the Output Sub-Index (12th). It achieves a leading position (within the top 25) in all pillars and in 13 out of 21 sub-pillars, with strengths in the cost of redundancy dismissal (1st), domestic credit to private sector (2nd), government effectiveness (3rd), government expenditure on education (3rd), the number of researchers (3rd), the number of scientific and technical articles (3rd), and country-code top-level domains (3rd). Denmark experience several steep drops in 2014, resulting in the country's main weaknesses: its FDI net inflows (128th, 61st in 2013), GERD financed by abroad (53rd, 41st in 2013), high-tech imports less re-imports (70th, 37th in 2013), and printing and publishing manufactures (44th, 9th in 2013).

Luxembourg is ranked 9th in 2014 (up three places from 2013), the first time it has made its way into the top 10, with a strong performance in outputs (5th) and innovation efficiency (9th). Its pillar rankings of 2nd in Business sophistication (7th in 2013) and 16th in Knowledge and technology outputs (43rd in 2013) played a major role in achieving its place in the top 10. Its biggest strengths lie in the Creative outputs pillar, where it ranks 1st in four indicators: Madrid system trademark applications, cultural and creative services exports, national feature films produced, and generic top-level domains. Luxembourg's weaknesses remain in the cost of redundancy dismissal, tertiary enrolment, average QS university ranking top 3, ease of getting credit, ease of protecting investors, total value of stocks traded, market access to foreign markets for non-agricultural exports, high-tech imports less re-imports, growth rate of GDP per worker, and high- and medium-high-tech manufactures.

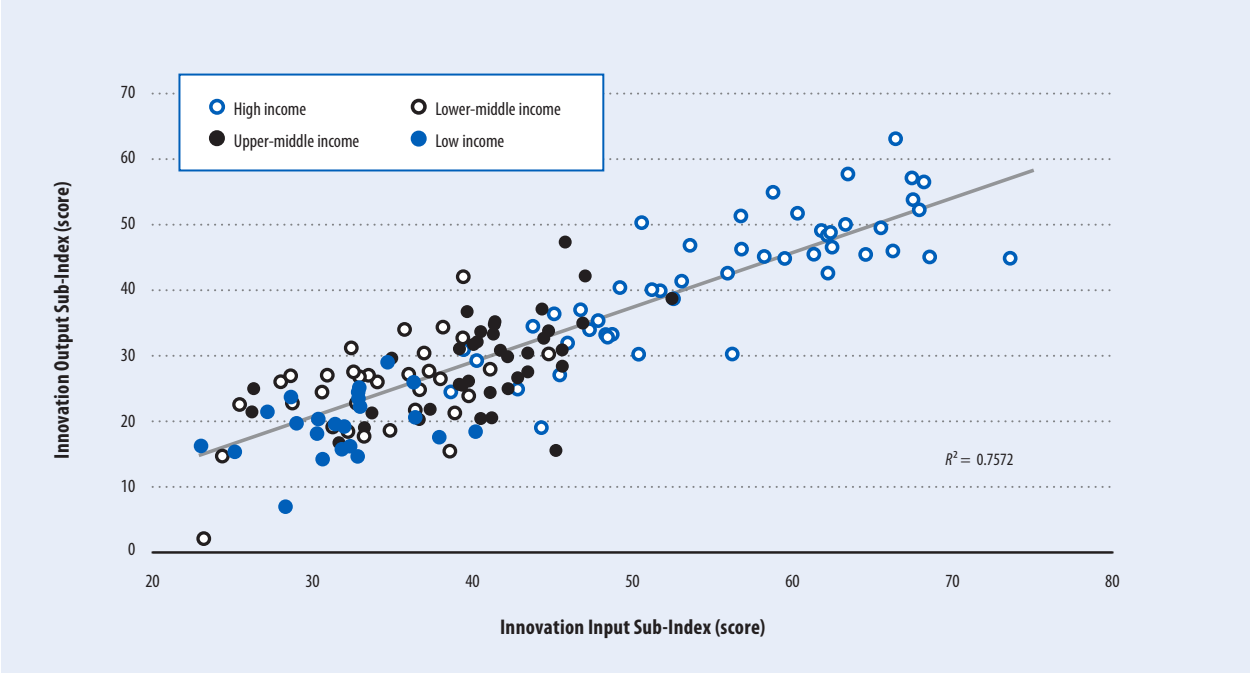
Hong Kong (China) is ranked 10th this year, down three positions from 7th in 2013 and losing the lead among Asian economies to Singapore. With a population of 7.2 million and a GDP per capita of PPP$52,722.0, its major leverage comes from the Input Sub-Index, where it ranks 2nd after Singapore. The economy takes 1st place in Infrastructure, 3rd in Market sophistication (coming after the USA and the UK), and includes top positions in the Ecological sustainability, Credit, and Knowledge absorption sub-pillars. On the input side, its relative weakness is in Human capital and research (although still a very good 23rd position). Its less good showing in the Output Sub-Index, where it ranks 24th (down from 15th in 2013), is the result of a worsening position in the key Knowledge and technology outputs pillar (45th this year); this is, however, compensated for by a 6th place in Creative outputs. At the indicator level, Hong Kong (China) achieves 1st place in 10 indicators. Its major weaknesses are in the Knowledge diffusion sub-pillar (80th), with poor performances in high-tech exports less re-exports (101st) and communication, computer and information services exports (103rd). Other areas of concern are the Education sub-pillar (57th), with weaknesses in government expenditure on education (97th), government expenditure per pupil in secondary education (70th), and pupil-teacher ratio in secondary education (75th).

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, Hong Kong (China), the UK, the USA, Finland, Sweden, Switzerland, Canada, Demark, and Australia. Canada and Australia are the only economies in this group that are not also in the GII top 10.

Canada is ranked 12th, down from 11th in 2013. It ranks 8th

Figure 4: Innovation Output Sub-Index vs. Innovation Input Sub-Index



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

overall in the Input Sub-Index, with top 10 rankings on the Institutions pillar (7th)—linked to its strong performance (2nd) in the Business environment sub-pillar—and the Market sophistication pillar (5th), the result of a robust performance in the Investment (4th) and Trade and competition (5th) sub-pillars.

Australia is ranked 17th, up two positions from 19th in 2013. It ranks 10th overall in the Input Sub-Index, with top 10 rankings on three pillars: Human capital and research (7th), Infrastructure (7th), and Market sophistication (10th). Its strengths are in the Tertiary education (7th), Research and development (8th), ICTs (9th), General infrastructure (9th), and Trade and competition (1st) sub-pillars. The effects of the government's new venture capital grants are evident in the improvement of the number of venture capital deals entered into, an indicator that shows an improvement of three places (from 26th to 23rd place). The results within the Creative goods and services sub-pillar are mixed, with two strengths and two weaknesses. Australia's weak variables include cultural and creative services exports (52nd) and national feature films produced (49th); the country's strengths include global entertainment and media output (3rd) as well as printing and publishing output (5th).

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 (Figure 4).

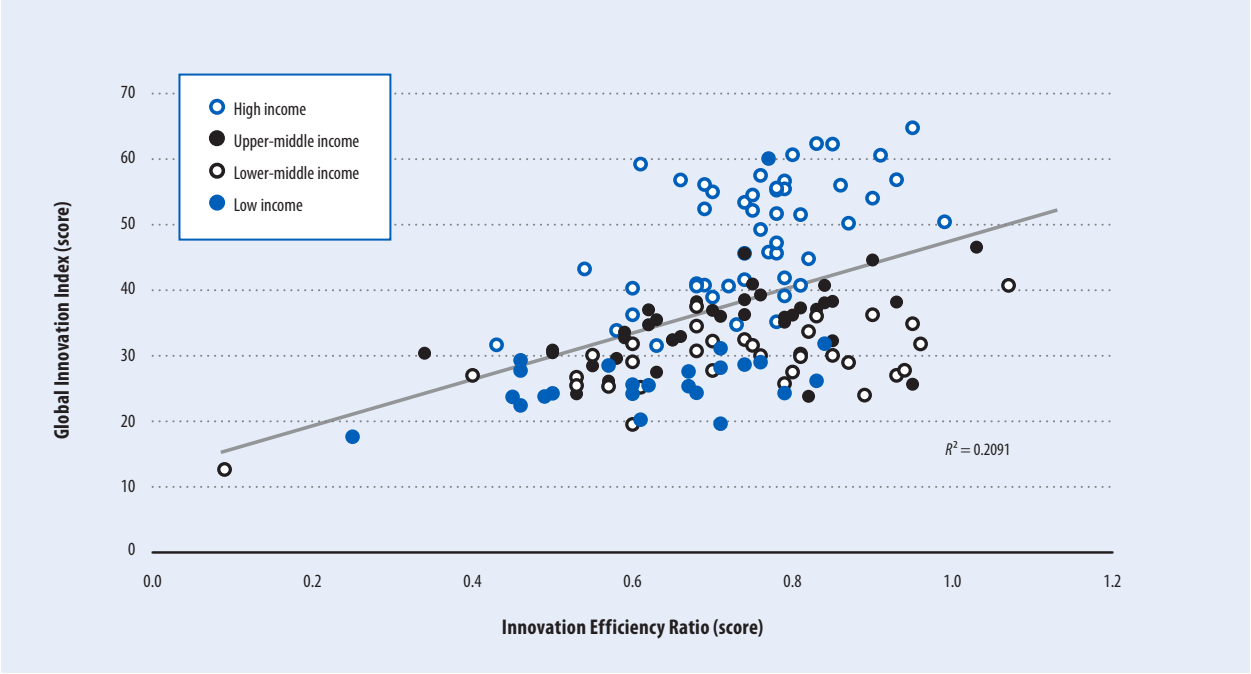
The top 10 countries in the Innovation Output Sub-Index are Switzerland, the Netherlands, Sweden, the UK, Luxembourg, Finland, the USA, Germany, Iceland, and Malta. The USA enters the list this year (ranked 12th in 2013), while Israel (among the top 10 in 2013) drops to 13th place. Seven of these countries are in the GII top 10; their profiles are discussed there.

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 (45 in total)				
1	**Switzerland (1)**	Singapore (1)	**Switzerland (1)**	Malta (3)
2	**United Kingdom (2)**	Hong Kong (China) (2)	Netherlands (2)	**Switzerland (6)**
3	**Sweden (3)**	**United Kingdom (3)**	**Sweden (3)**	Luxembourg (9)
4	**Finland (4)**	**United States of America (4)**	**United Kingdom (4)**	Netherlands (12)
5	Netherlands (5)	**Finland (5)**	Luxembourg (5)	Iceland (13)
6	**United States of America (6)**	**Sweden (6)**	**Finland (6)**	Czech Republic (18)
7	Singapore (7)	**Switzerland (7)**	**United States of America (7)**	Germany (19)
8	Denmark (8)	Canada (8)	Germany (8)	**Sweden (22)**
9	Luxembourg (9)	Denmark (9)	Iceland (9)	**United Kingdom (29)**
10	Hong Kong (China) (10)	Australia (10)	Malta (10)	Latvia (32)
Upper-middle-income economies (40 in total)				
1	**China (29)**	Malaysia (30)	**China (16)**	**China (2)**
2	Malaysia (33)	**Hungary (41)**	**Hungary (29)**	Venezuela, Bolivarian Republic of (7)
3	**Hungary (35)**	**Mauritius (42)**	Malaysia (35)	Turkey (11)
4	**Mauritius (40)**	**China (45)**	**Bulgaria (37)**	**Hungary (15)**
5	**Bulgaria (44)**	Montenegro (46)	Turkey (39)	Panama (20)
6	Thailand (48)	South Africa (47)	Panama (42)	Dominican Republic (21)
7	Seychelles (51)	Fiji (49)	**Mauritius (43)**	Romania (24)
8	Panama (52)	Thailand (52)	Romania (44)	**Bulgaria (25)**
9	South Africa (53)	Seychelles (53)	Thailand (49)	Belarus (27)
10	Turkey (54)	**Bulgaria (54)**	Belarus (50)	Angola (33)
Lower-middle-income economies (36 in total)				
1	**Moldova, Republic of (43)**	**Mongolia (51)**	**Moldova, Republic of (30)**	**Moldova, Republic of (1)**
2	**Mongolia (56)**	**Georgia (68)**	**Ukraine (46)**	Indonesia (4)
3	**Ukraine (63)**	Bhutan (76)	Viet Nam (47)	Viet Nam (5)
4	**Armenia (65)**	**Moldova, Republic of (80)**	**Armenia (55)**	Nigeria (8)
5	Viet Nam (71)	**Armenia (81)**	Indonesia (60)	Côte d'Ivoire (10)
6	**Georgia (74)**	Cabo Verde (85)	India (65)	**Ukraine (14)**
7	India (76)	Lesotho (87)	**Mongolia (67)**	Pakistan (16)
8	**Guyana (80)**	**Ukraine (88)**	**Georgia (75)**	Sri Lanka (17)
9	Morocco (84)	Morocco (89)	**Guyana (76)**	Senegal (23)
10	Bhutan (86)	**Guyana (92)**	Senegal (78)	**Armenia (28)**
Low-income economies (21 in total)				
1	**Kenya (85)**	Rwanda (74)	**Kenya (73)**	**Kenya (26)**
2	**Uganda (91)**	Kyrgyzstan (90)	**Uganda (90)**	Mali (30)
3	Rwanda (102)	**Mozambique (96)**	**Gambia (93)**	Zimbabwe (48)
4	**Gambia (104)**	**Uganda (98)**	**Cambodia (99)**	**Gambia (58)**
5	**Cambodia (106)**	**Kenya (103)**	Mali (103)	**Cambodia (67)**
6	**Mozambique (107)**	**Malawi (109)**	**Burkina Faso (104)**	**Uganda (77)**
7	**Burkina Faso (109)**	**Gambia (111)**	**Malawi (108)**	**Burkina Faso (78)**
8	Kyrgyzstan (112)	**Burkina Faso (112)**	Zimbabwe (111)	Myanmar (80)
9	**Malawi (113)**	**Cambodia (113)**	**Mozambique (115)**	Bangladesh (91)
10	Mali (119)	Tajikistan (114)	Ethiopia (118)	**Malawi (96)**

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

Figure 5: Global Innovation Index vs. Innovation Efficiency Ratio



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

Iceland is ranked 19th in the GII, down six positions from 13th in 2013. This Nordic country of 0.3 million people ranks 24th in the Input Sub-Index and 9th in the Output Sub-Index. On the output side, a 36th position in Knowledge and technology outputs is explained by some difficulty in translating good levels of patenting and scientific publications into high- and medium-high-tech output (82nd) and knowledge diffusion (120th). The main leverage on the output side comes from its 1st place in Creative outputs, where Iceland shows strengths in all sub-pillars and most indicators, particularly in online creativity (1st).

Germany is ranked 13th in the GII, up two places from its 2012 and 2013 position. As has been the case for the past three years, Germany's relative strength lies in the Output Sub-Index (8th), although it ranks a respectable 19th in the Input Sub-Index and shows a balanced profile, with pillar rankings ranging from 11th to 25th, and all sub-pillars ranking among the top 50. Germany's output strengths are attributable to its 1st place in the citable documents H index and 5th position in both domestic resident patent applications and country-code top-level domains.

Malta is ranked 25th in the GII this year, down one place from 2013 with a drop of five places from its 5th place in the Output Sub-Index in 2013 to 10th place in 2014. With a rank of 33rd in the Input Sub-Index, explained in great measure by relative weakness in Human capital and research (49th) and Market sophistication (65th), it achieves one of the highest efficiency ratios (ranked 3rd). Malta ranks 18th in Knowledge and technology outputs and 8th in Creative outputs.

Learning to innovate: Top performers by income group

Identifying the underlying conditions of a country and comparing performances among peers is the key to a good understanding of the implications of a country's ranking on the GII. 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, three fewer than in 2013. Switzerland, the UK, Sweden, Finland, and the USA are among the high-income top 10 on the three main indices, while Switzerland, Luxembourg, and Malta are the only economies also in the high-income top 10 in the efficiency ratio.

Among the upper-middle-income 10 best performers, only three remain from 2013: China (29th), Malaysia (33rd), and Bulgaria (44th). Hungary (35th), Mauritius (40th), Thailand (48th), Seychelles (51st), Panama (52nd), South Africa (53rd), and Turkey (54th) enter the list this year, displacing Costa Rica (57th), Montenegro (59th), Romania (55th), and the Former Yugoslav Republic of Macedonia (60th), as well as Latvia, Lithuania, and Chile (these latter three were reclassified as high-income countries during 2013). China, Hungary, Mauritius, and Bulgaria are among the 10 best performers in the three indices; of these, China, Hungary, and Bulgaria 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 2013 remain in the top 10 this year, with Morocco (84th) and Bhutan (86th) displacing Indonesia (87th) and Guatemala (93rd). The Republic of Moldova (43rd), Mongolia (56th), Ukraine (63rd), Armenia (65th), Georgia (74th), and Guyana (80th) are among the top 10 in the three indices; of these, the Republic of Moldova, Ukraine, and Armenia are the only countries with top 10 positions in the efficiency ratio as well.

Among low-income countries, nine out of 10 economies remain in the top 10, with Gambia (104th) displacing Tajikistan (137th). Those showing above-par performances in the three indices are Kenya (85th), Uganda (91st), Gambia (104th), Cambodia (106th), Mozambique (107th), Burkina Faso (109th), and Malawi (113th); all of them, with the exception of Mozambique, are in the low-income top 10 on efficiency.

Doing more with less: The Innovation Efficiency Ratio

While the GII is calculated as the average of its Input and Output Sub-Indices, the Innovation Efficiency Ratio is calculated as the ratio of the Output over the Input Sub-Index. The relationship between the GII rankings and the efficiency ratios is slightly positive, as expected, implying that more efficient countries achieve, on average, better GII scores (Figure 5).

The efficiency ratio is designed to be independent from countries' stages of development, and indeed, the data reflect this. That said, the analysis by income group for efficiency ratios is particularly crucial, because economies might reach a relatively high efficiency ratio as a result of particularly low input scores. Efficiency ratios must be analysed jointly with GII, Input, and Output scores, and with development stages of the economies in mind. Efficiency ratios are reported next to the GII scores for this reason (Table 1).

The 10 countries with the highest Innovation Efficiency Ratios are countries that are particularly good at surmounting relative weaknesses on their Input Sub-Indices with relatively robust output results, with GII rankings ranging from 1st to 122nd: the Republic of Moldova (43rd), China (29th), Malta (25th), Indonesia (87th), Viet Nam (71st), Switzerland (1st), the Bolivarian Republic of Venezuela (122nd), Nigeria (110th), Luxembourg (9th), and Côte d'Ivoire (116th).

Three of the top 10 most efficient economies are high-income economies: Malta, Switzerland, and Luxembourg. Within this group of high-income economies, European countries take up the first 20 positions, with the exception of Israel (14th) and Kuwait (18th). The USA and Canada are ranked 25th and 37th, respectively. In the high-income group, 36.7% have better rankings in outputs than they do in inputs.

Among upper-middle-income countries, China and the Bolivarian Republic of Venezuela are in the top 10. China, Hungary, Bulgaria, and Malaysia make it to the top 40 globally in outputs, surmounting lower capabilities (except for Malaysia, which ranks 30th in inputs and 35th in outputs). In this income group, 39.5% of countries have better rankings in outputs than in inputs.

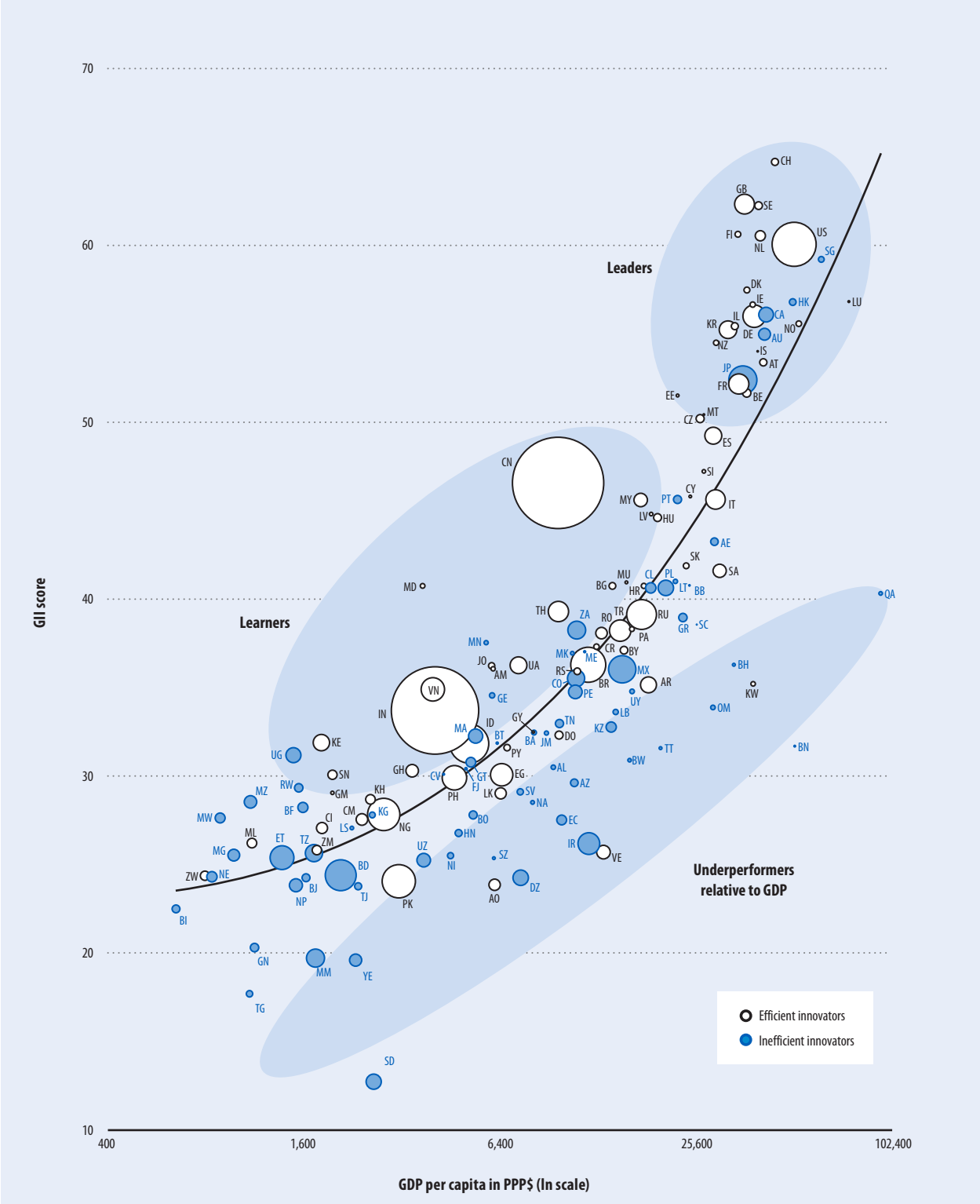
Among lower-middle-income countries, the Republic of Moldova, Indonesia, Viet Nam, Nigeria, and Côte d'Ivoire are among the global top 10. The Republic of Moldova, Viet Nam, and Ukraine are in the global top 50 in outputs, with lower positions in inputs. Within this income group, 63.6% of countries have better rankings in outputs than in inputs. No low-income countries are in the top 10 innovation efficiency rankings.

Leaders and learners: The reward of leveraging strengths and addressing weaknesses

Figure 6 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.

The economies that appear close to the trend line show results that are in accordance with what is expected

Figure 6: GII scores and GDP per capita in PPP$ (bubbles sized by population)



Note: 'Efficient innovators' are countries/economies with Innovation Efficiency ratios ≥ 0.74; 'Inefficient innovators' have ratios < 0.74; the trend line is a polynomial of degree three with intercept ($R^2 = 0.7163$).

Figure 6: GII scores and GDP per capita in PPP$ (bubbles sized by population): ISO-2 Country Codes

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

from their level of development.[26] A majority of economies are in this category. The farther up and above the trend line a country appears, the better its innovation performance compared with that of its peers at the same stage of development. White bubbles in the figure correspond to the efficient innovators (a majority of them are situated above the trend line), while the blue 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 and in Box 2: they are the same economies as in 2013, all with GII scores above 50. They have succeeded in creating well-linked innovation ecosystems where investments in human capital thrive in fertile and stable innovation infrastructures to create impressive levels of innovation outputs.[27]
- The group of innovation learners (to the left of the diagram) includes 12 high- and middle-income countries: the Republic of Moldova, China, Mongolia, Viet Nam, India, Jordan, Armenia, Senegal, Malaysia, Thailand, Ukraine, and Georgia (these countries appear 10% or more above the trend line, and are listed here in order of distance). They demonstrate rising levels of innovation 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. Among low-income countries, Kenya, Uganda, Mozambique, Rwanda, Malawi, Gambia, and Burkina Faso (all from the Sub-Saharan African region) display above-par performances.

The paradox of plenty: High GII rankings and below-par performances

Nine high-income economies, 21 middle-income economies, and 4 low-income economies show relative weaknesses in their innovation ecosystems when compared with countries of similar income levels (scores that are 10% or more below the trend line).

In the Middle East, with the exception of the United Arab Emirates, the resource-rich economies of the Gulf Cooperation Council (GCC) are in this group: Qatar, Oman, Kuwait, Saudi Arabia, and Bahrain. Other high-income economies included here are Brunei Darussalam, Trinidad and Tobago, Greece, and Uruguay.

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

These countries, however, are uniquely positioned to do better in the years to come. Many of them have been diversifying towards innovation-rich sectors already. But several of these countries are resource-rich in oil, gas, or some other natural resource, and their resource-extracting activities tend to crowd out investment in other productive sectors and hinder innovation. This phenomenon—reminiscent of what has been called the 'resource curse' or the 'paradox of plenty'—has been well documented historically and across regions, and is noted by the GII.

The middle-income innovation challenge: The need for knowledge-based growth strategies

Middle-income countries with below-par performances, beginning with the farthest from the trend line, include Sudan, the Bolivarian Republic of Venezuela, the Islamic Republic of Iran, Botswana, Algeria, Ecuador, Angola, Seychelles, Argentina, Azerbaijan, Yemen, Swaziland, Kazakhstan, Lebanon, Namibia, Albania, Nicaragua, El Salvador, Pakistan, Uzbekistan, and Honduras.

In previous editions, the GII posited that countries might develop their innovation capabilities and results following an innovation transition model in four stages, briefly sketched here.[28]

- **Stage 1:** A critical level must be reached in all input areas for innovation activities to take off.
- **Stage 2:** Innovation results increase from improvements in institutions, tertiary education, infrastructure, and market and business sophistication.
- **Stage 3:** Input rankings improve with an innovation hysteresis effect that explains the steepness of the trend line, as illustrated in Figure 6. Innovation learners are found in stages 2 and 3.
- **Stage 4:** For innovation leaders, innovation capabilities and results stabilize at a higher level.

The remarkable stability of the top 25 and the steepness of the trend line between these top 25 and their middle-income followers is a phenomenon reflecting an inability of middle-income countries to compete with both high-skill economies

Box 3: Top-scoring middle-income economies narrowing the gap on innovation quality

Not all innovation inputs and outputs have the same impact on actual innovation. Where possible, introducing metrics on the quality of innovation inputs and outputs is desirable (see Box 3 in the GII 2013). Three indicators of innovation quality are used in the GII to overcome the traditional quantity-focused innovation metrics: (1) an indicator measuring the performance of a country's universities (2.3.3, QS university ranking average score of top 3 universities); one measuring the international scope of domestic inventions (5.2.5, Patent families filed in at least three offices); and, finally, one assessing the extent to which scientific publications emanating from one country are cited (6.1.5, Citable documents H index).

Figure 3.1 was constructed by summing the scores of these three indicators to show the best-performing high- and middle-income economies in these innovation quality variables.

In terms of the innovation quality indicators, the United States of America (USA) holds the top place within the high-income group (as compared to its 6th place in the overall GII rankings). The USA keeps its leadership across these quality indicators for the second year in a row because, in part, of its top score in the citable documents H index and its 2nd place in the QS university ranking average. Japan reaches the 2nd spot in this innovation quality list, a rise from 4th position in 2013 and in striking difference to its lower overall GII ranking of 21st. In achieving this position, Japan is helped by its 1st position in patent families filed in at least three offices, its 6th position in the citable documents H index, and its 7th position in the QS university ranking average score. France (22nd in the overall GII) and the Republic of Korea (16th) are similar to Japan in that they score far better in innovation quality indicators than in the overall GII rankings. France remains in 6th place in the high-income economies group because of an overall good performance in the quality indicators, particularly with the 4th largest number of citable documents. The Republic of Korea retains its 10th position with the 2nd highest number of inventions with international scope, in addition to good university scores and a higher than average number of citable documents. Although Germany does not make it into the overall GII top 10, it ranks 3rd in the quality indicators,

(Continued)

to the right and low-cost economies to the left (see Figure 6).

To address this situation, knowledge-based growth strategies are required to encourage innovation and creativity through a supportive ecosystem. To reach that goal, these middle-income economies must closely monitor the quality of their innovation inputs and outputs as yet another tool to achieve innovation competitiveness. We find that a few middle-income countries perform particularly well on innovation quality (see Box 3). Other adjustments made to the GII framework point in the same direction (Annex 2 includes a table summarizing adjustments made this year).

Regional rankings

This section discusses regional and sub-regional trends, with snapshots for some of the economies leading in the rankings. The two countries in the Northern America region are examined earlier: The USA's rankings are discussed in the section on 'The top 10 in the Global Innovation Index' and Canada's rankings are discussed in the section on 'The top 10 in the Innovation Input Sub-Index.' The other six regions are each considered here. Table 5 presents a heatmap with the scores for the top 10, along with average scores by income and regional groups. To put the discussion of rankings further into perspective, Figure 7 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 GII rankings (except for the EU, which is placed at the end).

Some observations are noteworthy. For example, the great dispersion seen in South East Asia and Oceania in the first three pillars is greatly reduced in Business sophistication and Creative outputs; even if it is still lagging in overall GII rankings, the group of Sub-Saharan African countries achieve a better median score than the median Central and Southern Asian countries in three pillars; and the median score in South East Asia and Oceania is above that of Europe in Market and Business sophistication. Although Human capital and research, Infrastructure, and Knowledge and technology outputs present the expected shape, Institutions, Market sophistication, Business sophistication, and Creative outputs present the greatest dispersion in median scores compared to the GII. Knowledge and technology outputs is now less dispersed, a result of catching up by Northern Africa and West Asia, Latin America and the Caribbean, Central and Southern Asia, and Sub-Saharan Africa.

Box 3: Top-scoring middle-income economies narrowing the gap on innovation quality *(cont'd.)*

primarily because it has the highest rank for citable scientific publications.

Top 10 middle-income economies

Because of a change in income group status from middle income to high income, Chile and the Russian Federation dropped out of the top 10 middle-income economies in this chart this year. The list of top 10 middle-income economies with the highest scores in quality indicators continues to be led by China, which ranks 29th in the GII and 21st in quality indicators (29th/21st). China's top scores in two of the three innovation quality variables—the QS university average ranking `and the citable documents H index—result in its continued leadership among the middle-income countries in terms of innovation quality indicators.

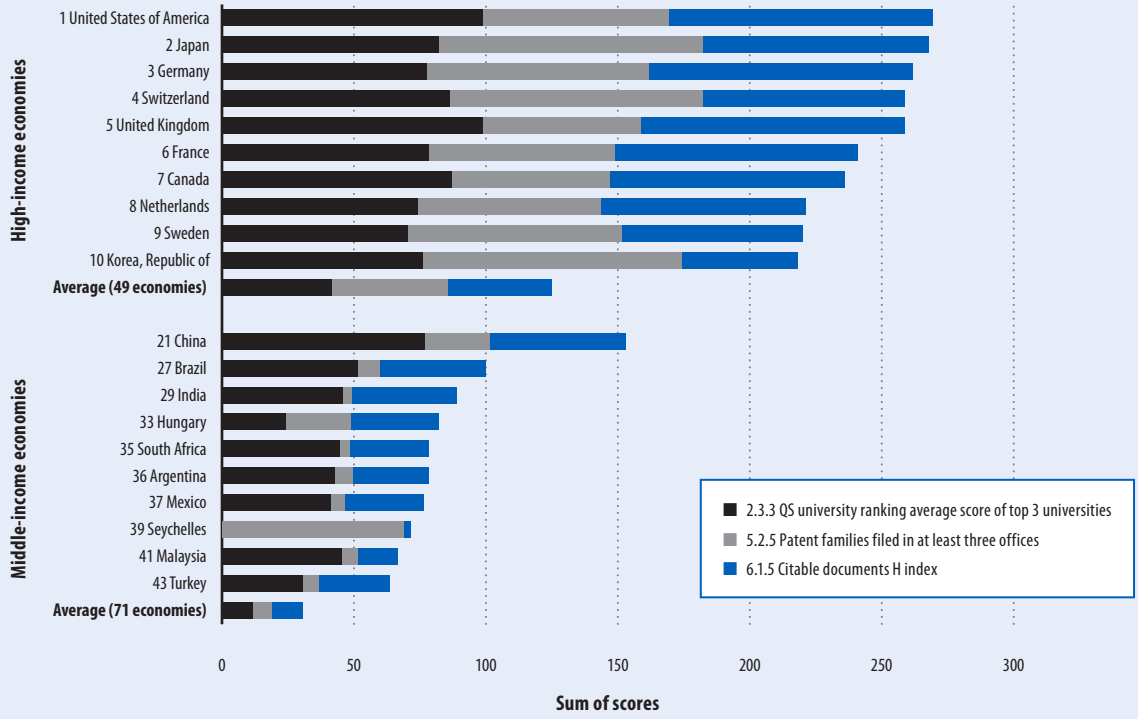
Apart from the Russian Federation, which left the middle-income category, the remaining BRICS economies are in the top 10 on innovation quality. India (76th/29th) is the only BRICS country that moved down in overall GII rank and yet managed to move up one position on quality in the middle-income group.

South Africa (53rd/35th) improved in the quality indicators by one place, primarily because of its jump in the ranking of patent families filed in at least three offices—from 81st place in GII 2013 to 53rd place this year.

Unlike the high-income economies—which display a more balanced quality indicator score portfolio—the majority in the middle-income economy group rely more heavily on the QS university ranking average to boost their overall quality scores, while performing less well in patent families filed in at least three offices. Both China and Brazil highlight this point. The gap between high-income and middle-income average performance is the largest in patents (36.7 points), followed by university scores (30.1 points), then citable documents (28.0 points).

Although neither Chile nor the Russian Federation made it to the list of top 10 in their new high-income category, both still display a much better sum of scores in these three quality indicators than the majority of the top 10 middle-income countries.

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.

Table 5: Heatmap for GII top 10 economies and regional and income group averages (1–100)

Country/Economy	GII	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Input	Knowledge and technology outputs	Creative outputs	Output	Efficiency
Switzerland	64.78	87.64	56.66	58.97	74.75	54.20	66.44	60.89	65.33	63.11	0.95
United Kingdom	62.37	88.59	60.29	60.57	81.43	50.18	68.21	56.42	56.62	56.52	0.83
Sweden	62.29	89.75	61.89	63.59	68.19	53.86	67.46	58.83	55.43	57.13	0.85
Finland	60.67	95.28	66.51	59.69	61.36	54.79	67.53	54.24	53.41	53.82	0.80
Netherlands	60.59	93.29	50.45	58.66	63.57	51.31	63.46	53.76	61.70	57.73	0.91
United States of America	60.09	86.21	58.34	57.55	83.78	53.70	67.92	58.10	46.45	52.27	0.77
Singapore	59.24	92.76	64.86	65.56	78.15	66.67	73.60	46.68	43.07	44.88	0.61
Denmark	57.52	93.65	61.48	59.11	67.78	45.60	65.52	46.65	52.39	49.52	0.76
Luxembourg	56.86	82.95	47.17	53.39	49.65	60.76	58.78	45.80	64.09	54.94	0.93
Hong Kong (China)	56.82	91.42	49.47	67.38	79.71	54.85	68.57	33.31	56.84	45.08	0.66
Average	**36.9**	**62.51**	**31.02**	**37.09**	**50.16**	**33.32**	**42.82**	**29.15**	**32.82**	**30.99**	**0.71**
Region											
Northern America	58.11	89.47	57.35	57.98	79.83	50.83	67.09	50.89	47.38	49.13	0.73
Europe	47.23	75.78	44.16	47.14	54.43	39.97	52.30	40.52	43.82	42.17	0.80
South East Asia and Oceania	41.72	65.19	38.73	43.13	57.94	38.49	48.70	33.69	35.78	34.74	0.73
Northern Africa and Western Asia	35.73	61.92	32.06	38.57	48.49	30.43	42.29	26.49	31.86	29.17	0.69
Latin America and the Caribbean	32.85	55.95	24.96	33.44	45.95	32.68	38.59	22.69	31.52	27.11	0.70
Central and Southern Asia	27.48	48.64	22.14	31.12	45.14	21.27	33.66	21.24	21.34	21.29	0.64
Sub-Saharan Africa	27.45	53.14	16.31	24.43	44.75	27.82	33.29	20.55	22.66	21.61	0.65
Income level											
High income	48.83	79.49	46.81	50.37	58.25	42.96	55.58	39.58	44.58	42.08	0.75
Upper-middle income	34.76	58.87	29.58	36.41	47.30	30.85	40.60	26.95	30.87	28.91	0.71
Lower-middle income	29.53	50.98	19.76	28.41	45.01	26.56	34.14	22.41	27.43	24.92	0.73
Low income	25.62	48.86	15.89	22.40	45.04	26.54	31.74	20.27	18.73	19.50	0.62

Worst — Average — Best

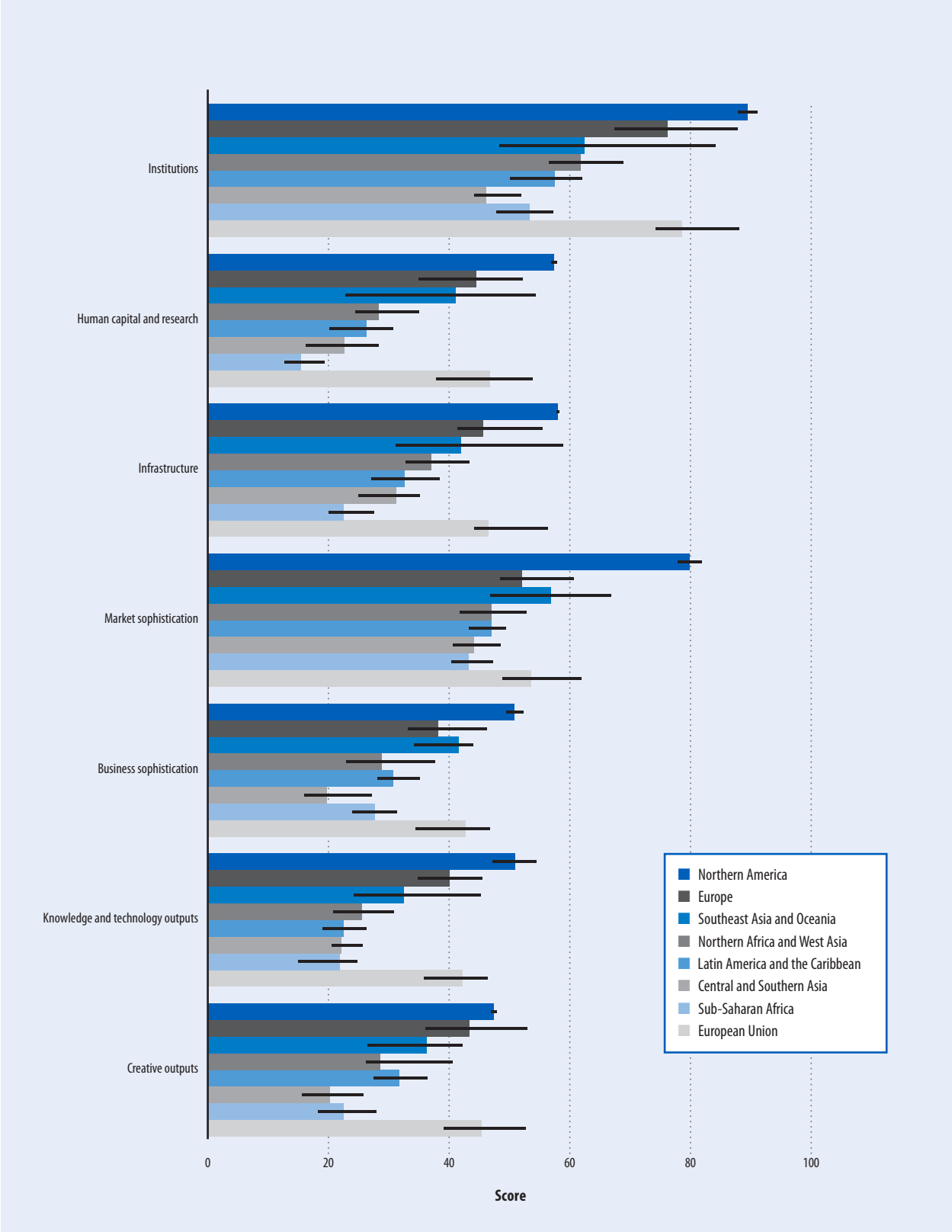
Note: Darker shadings indicate better performances. Countries/economies are classified according to the World Bank Income Group and the United Nations Regional Classifications (July 2012 and 11 February 2013, respectively)

Sub-Saharan Africa (33 countries)

As pointed out in this report's main findings, a large group of the innovation learner economies are from Sub-Saharan Africa. Since the first edition of this report, only two 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 40th in 2014 (up from 54rd in 2013); and South Africa, which has been in the top half of the rankings in all previous editions of the GII, is 53rd in 2014 (up from 58th in 2013). This year, however, a new Sub-Saharan African county has been included in the GII rankings: Seychelles, 51st in its first year in the index, is the third Sub-Saharan African country to be placed in the upper half of the GII rankings. In addition, six countries from this region are ranked among the top 100: Kenya, Uganda, Botswana, Ghana, Cabo Verde, and Senegal.

The remaining 24 countries in this region can be found at the bottom of the rankings (100 or lower); 13 of them have improved since

Figure 7: 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.

Box 4: Sub-Saharan Africa: A region of innovation learners

Sub-Saharan Africa is the region that sees the most significant improvement in GII rankings in 2014. Thirty-three countries make up the region in the GII. Of these 33, 17 climb in the rankings this year, three remain in the same position, two new countries are added, and the remaining 11 exhibit a drop in ranking. Three countries—Mauritius (40th), Seychelles (51st), and South Africa (53th)—are in the upper half of the overall GII rankings.

This year, Rwanda (102nd), Gambia (104th), Mozambique (107th), Burkina Faso (109th), and Malawi (113th) join Kenya, Uganda, and Senegal among the Sub-Saharan countries referred to as 'innovation learners' (see Figure 6). This is an increase of five countries—an achievement when considering that the average GDP per capita of each of these five nations is below PPP$2,000. The region now makes up nearly 50% of the innovation learner economies in this year's rankings. With respect to innovation efficiency, Senegal, Kenya, and Gambia stand out among economies that are innovation learners. With efficiency ratios (ERs) of 0.85, 0.84, and 0.76, respectively, these perform above much larger economies such as India (ER 0.82), Thailand (ER 0.76), and Georgia (ER 0.68).

Figure 4.1 compares the scores of four of Sub-Saharan Africa countries (Mauritius, South Africa, Kenya, and Nigeria) with the average scores for all Sub-Sahara African countries, the average scores for upper-middle-income countries, and the average scores for high-income countries for all pillars and indices. The low-income country grouping includes half of the countries in Sub-Sahara Africa; on average, their scores are very close, which is why that income grouping is not shown separately in the graph.

Mauritius, one of the innovation learners, climbs 13 places, from 53rd to 40th rank. It performs above the upper-middle income group average score in GII ranking (40th), the Input Sub-Index (42nd), the Output Sub-index (43rd), Infrastructure (67th), Market sophistication (20th), and Creative outputs (31st). Its greatest strength is in Institutions (27th), where it performs above the average score of the high-income group. It remains below the average of the upper-middle income group in Human capital and research (80th), yet is closing the gap in both Business sophistication (80th) and Knowledge and technology outputs (72nd).

South Africa (improves by five places, moving up from 58th to 53rd) and also places above the upper-middle-income group average score in the three indices: GII (53rd), Input (47th), and Output (63rd). Its relatively strong pillars are Institutions (44th), Knowledge and technology outputs (62nd), Business sophistication (68th), and Creative outputs (70th). However, its greatest strength is in the Market sophistication pillar (18th), with a score that is above the average performance of high-income economies. Its performance is below par in Infrastructure (84th) and Human capital and research (70th).

Kenya, another one of Sub-Saharan Africa's innovation learners, improves by 14 places, rising from 99th to 85th in the rankings. It has scores in all three indices that are above those of the low-income group: GII (85th), Input (103rd), and Output (73rd). Its greatest strengths are in Institutions (97th), where it performs even above the level of

(Continued)

2013. Kenya, Uganda, Mozambique, Rwanda, Senegal, Malawi, Gambia, and Burkina Faso are among innovation learners this year, while middle-income countries Namibia, Swaziland, Angola, and Sudan have below-par performances.

Central and Southern Asia (11 economies)

In all prior editions of the GII, only India (76th), Kazakhstan (79th), and Sri Lanka (105th) have consistently achieved positions among the first 100; this year, Sri Lanka drops out of the top 100 and is displaced by Bhutan (86th), a new addition to the GII. The remaining seven countries of the region can be found at the bottom of the rankings: Kyrgyzstan (112th), the Islamic Republic of Iran (120th), Uzbekistan (128th), Bangladesh (129th), Pakistan (134th), Nepal (136th), and Tajikistan (137th). In 2014, none of the Central and Southern Asian countries are innovation leaders, with only India as an innovation learner, and Tajikistan, Uzbekistan, Pakistan, Kazakhstan, and Islamic Republic of Iran with below-par performances relative to their GDP (Figure 6).

India still comes 1st in the region, although it is now ranked 7th among lower-middle-income countries (3rd in 2013) and has dropped 10 positions in the overall GII since 2013. With more than 1.2 billion inhabitants and a robust economy (India showed a GDP per capita of PPP$4,077.1 in 2013, up from PPP$3,851.3 of the previous year), this low-income country is again among the innovation learners. As noted earlier, India lost traction in the Output Sub-Index this year (65th, down from 42nd in 2013, but still 1st in the region) over the Input Sub-Index (93rd, down from 87th in 2013), which led to a further fall in its efficiency ratio (to 31st this year, down from 11th in 2013). Weak

Box 4: Sub-Saharan Africa: A region of innovation learners *(cont'd.)*

lower-middle-income countries; and Market sophistication (40th), in which it scores well above the upper-middle-income average and quite close to that of the high-income group. With only the two exceptions of Human capital and research (117th) and Infrastructure (127th), Kenya performs above all the lower-middle income average scores—one income group above its own.

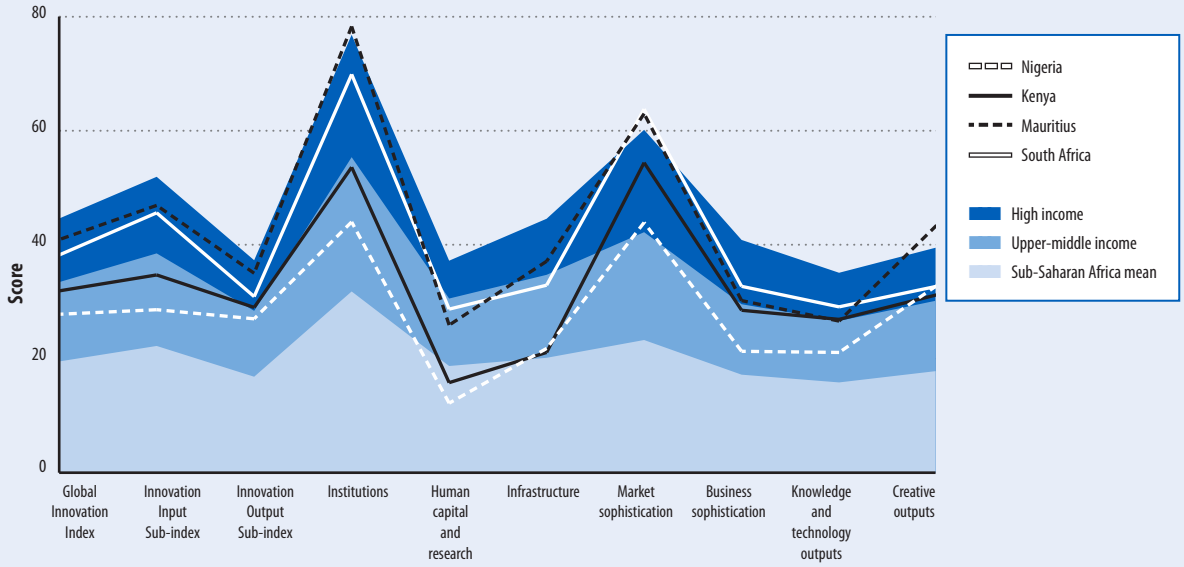
Nigeria also improves in the GII rankings this year, from 120th to 110th place. It places above both its region's average and its income group's average (lower-middle) in both its efficiency score (ranked 8th) and performance in Creative outputs (69th).

This group of Sub-Saharan African economies in the top half of the GII rankings, along with those described as innovative learners (a few exceptions aside),[1] performs close to or better than the regional average. The relative performance advantage of some of these nations is significant, reaching scores over 35% above the regional average in some areas. Examples include Mauritius's high score in Institutions, Ghana's score in Human capital and research, Seychelles' performance in Infrastructure, South Africa's high score in Market sophistication, Rwanda's levels of Business sophistication, Gambia's performance in Knowledge and technology outputs, and Seychelles' score in Creative outputs.

Note

1 The exceptions are Malawi, Senegal, Burkina Faso, and Gambia in the Input Sub-Index; Rwanda in the Output Sub-Index; Mozambique and Gambia in Institutions; Kenya, Gambia, Burkina Faso, Malawi, and Senegal in Human capital and research; Malawi, Burkina Faso, Gambia, Kenya, and Rwanda in Infrastructure; Seychelles, Uganda, Burkina Faso, Senegal, and Malawi in Market sophistication; Senegal in Business sophistication; and Malawi, Gambia, Rwanda, and Mozambique in Creative outputs.

Figure 4.1: Sub-Saharan Africa: Best-ranked countries compared



positions in Institutions (106th) and Human capital and research (96th), as well as Business sophistication (93rd), remain, with rankings in Knowledge and technology outputs (50th) and Creative outputs (82nd) worsening (from 37th and 65th in 2013, respectively). India's strengths are in the sub-pillars Knowledge diffusion (24th), R&D (31st), and General infrastructure (33rd).

Latin America and the Caribbean (22 economies)

Latin America and the Caribbean includes only upper- and middle-income economies, except for high-income Barbados, Trinidad and Tobago, Chile, and Uruguay (Chile and Uruguay both reclassified from upper-middle income to high income in 2013).

This year, Barbados (41st) reaches 1st place in the regional rankings, followed by Chile (46th) and upper-middle-income countries Panama (52nd), Costa Rica (57th), Brazil (61st), Mexico (66th), Colombia (68th), and Argentina (70th), all in the first half of the rankings.

The remaining countries in the top 100 are Uruguay (72nd), Peru (73rd), and Guyana (80th), followed by the two Caribbean countries Jamaica (82nd) and Dominican Republic (83rd), as well as Paraguay (89th), Trinidad and Tobago (90th), and Guatemala (93rd). The remaining countries are ranked below 100: El Salvador (103rd), the Plurinational State of Bolivia (111th), Ecuador (115th), Honduras (118th), the Bolivarian Republic of Venezuela (122nd), and Nicaragua (125th).

No countries in the region are among innovation learners this year; eight display below-par performances relative to their GDP per capita (Figure 6): Honduras, El Salvador, Uruguay, Nicaragua, Argentina, Ecuador, Trinidad and Tobago, and the Bolivarian Republic of Venezuela.

Barbados is ranked 41st, up six positions from 47th place in 2013. With a population of 0.3 million and a GDP per capita of PPP$25,180.9, Barbados ranks 38th in the Input Sub-Index (up from 42nd in 2013). It comes in at 53rd in the Output Sub-Index (down from 49th), primarily because of a lack of data for pillar 7 Creative outputs. The majority of its strengths are on the input side, particularly in the Business sophistication pillar, where it ranks 5th (from 15th in 2013). Barbados ranks 3rd in patent families filed in three or more offices, 7th in joint venture-strategic alliance deals, and 11th in the number of GMAT test takers. Although its position in Human capital and research continues to deteriorate (from 38th to 58th), it improved in Infrastructure (131st to 103rd).

Brazil is ranked 61st (up from 64th in 2013), 16th among upper-middle-income countries (up from 21st), and 5th in the region (up from 8th). Brazil is one of the four countries in the region that improves in the rankings this year. With a population of 198.7 million and a GDP per capita of PPP$12,220.9, Brazil ranks 63rd in the Input Sub-Index, 64th in the Output Sub-Index, and 71st in the efficiency ratio; it also shows relative strengths in Business sophistication (37th), Infrastructure (60th), Human capital and research (62nd), Creative outputs (64th), and Knowledge and technology outputs (65th). Brazil's strongest performance is in the Knowledge absorption sub-pillar, ranking in the top 30 for three out of the four variables. Brazil's weaknesses remain in Institutions (95th), particularly in the Business environment sub-pillar (137th).

Northern Africa and Western Asia (19 economies)

Israel (15th) and Cyprus (30th) achieve the top two positions in the region for the third year running. Three of the six countries of the Gulf Cooperation Council (GCC) come next: the United Arab Emirates (36th), Saudi Arabia (38th), and Qatar (47th). With per capita incomes ranging from PPP$29,813.16 (Oman, 75th) to PPP$98,813.66 (Qatar), most GCC economies achieve rankings below those of their peers in GDP per capita (with the exception of the UAE, which performs on par with those of its peers), a feature common to most resource-rich economies.

In past editions of the GII, GCC countries appeared all together in a block right after Israel and Cyprus; the regional rankings are now more dispersed: Bahrain (62nd) comes behind Turkey (54th), Armenia (65th) and Kuwait (69th) come behind Jordan (64th), and Oman (75th) comes behind Georgia (74th).

At the bottom of the regional rankings we find Lebanon (77th), Tunisia (78th), Morocco (84th), Egypt (99th), Azerbaijan (101st), Algeria (133rd), and Yemen (141st). Although Israel is the only innovation leader in the region (its profile is discussed in the section on the Output Sub-Index top 10), Armenia, Jordan, and Georgia remain in the group of innovation learners, while Saudi Arabia, Lebanon, Azerbaijan, Yemen, Algeria, Bahrain, Oman, Kuwait, and Qatar show below-par performances compared to their income levels (Figure 6).

South East Asia and Oceania (17 economies)

This region includes 17 economies that are very dissimilar in levels of development. The first five rank among the top 25 in the three indices (GII, input, and output): Singapore (7th), which displaces Hong Kong (China) at the top of the regional rankings this year; Hong Kong (China), which is now 10th globally and 2nd regionally; the Republic of Korea (16th), Australia (17th), and New Zealand (18th). These five economies, as well as Japan (21st), are innovation leaders, all placing within the top 25. High-income Brunei Darussalam ranks a disappointing 88th place (13th out of 17 in the region).

Among upper-middle-income economies, China (29th) and Malaysia (33rd) rank high, with Thailand climbing from 57th in 2013 to 48th in 2014. Lower-middle-income Mongolia (56th), Viet Nam (71st), Indonesia (87th), and upper-middle income Fiji (95th) and lower-middle-income Philippines (100th) are among the top 100. Low-income Cambodia is ranked 106th and Myanmar—another new addition to the 2014 GII—is ranked 140th.

China, Mongolia, Viet Nam, Malaysia, and Thailand are among the innovation learners this year, whereas Myanmar and Brunei Darussalam show below-par performance (Figure 6).

For the third year in a row (even more markedly in 2014), **China** shows several remarkable strengths: Overall, it is ranked 29th, up from 35th in 2012, 1st among upper-middle-income countries and 7th in the region. Ranking a strong 2nd in efficiency, China continues to improve in the Input Sub-Index (from 46th to 45th) and Output Sub-Index (from 25th to 16th). China's biggest improvement is in the Creative outputs pillar, partly due to retaining 1st position in the Creative goods exports variable (measured as the total value of creative goods exports net of re-imports over total trade), and an improvement from 12th to 8th position in the number of domestic resident trademark applications. Moreover, China remains 2nd overall in the Knowledge and technology outputs pillar, with strengths in all sub-pillars.

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), Finland (4th), the Netherlands (5th), Denmark (8th), Luxembourg (9th), Ireland (11th), Germany (13th), Norway (14th), Iceland (19th), Austria (20th), France (22nd), Belgium (23rd), Estonia (24th), and Malta (25th). All of them achieve positions in the top 25 in both the Output and Input Sub-Indices with the exception of France (26th in outputs) and Malta (33rd in inputs).

Fifteen countries follow among the top 50, including all remaining EU countries, with the exception of Romania (55th): the Czech Republic (26th), Spain (27th), Slovenia (28th), Italy (31st), Portugal (32nd), Latvia (34th), Hungary (35th), Slovakia (37th), Lithuania (39th), Croatia (42nd), the Republic of Moldova (43rd), Bulgaria (44th), Poland (45th), the Russian Federation (49th), and Greece (50th).

Romania (55th), Belarus (58th), Montenegro (59th), the Former Yugoslav Republic of Macedonia (60th), Ukraine (63rd), Serbia (67th), Bosnia and Herzegovina (81st), and Albania (94th) make up the rest of the European economies, all of which are ranked in the top 100. In addition, the Republic of Moldova and Ukraine are positioned among the innovation learners, while Greece and Albania show below-par performances (Figure 6).

Ranked 49th, up 11 positions from its 62nd place in 2013, the **Russian Federation** (also discussed above in the BRICS section) is ranked 42nd among high-income countries and 30th in Europe. This year, the country makes significant progress in the Output Sub-Index (from 72nd in 2013 to 45th) closing gaps in Knowledge and technology outputs (from 48th in 2013 to 34th) and Creative outputs (from 101st in 2013 to 72nd). Its relatively strong position in Human capital and research (30th) was maintained, although it fell from 74th to 111th in Market sophistication this year. The Russian Federation's main strengths are in Education, with robust scores in pupil-teacher ratio in secondary levels, tertiary enrolment, and graduates in science and engineering, in addition to Knowledge creation (number of domestic resident applications, domestic resident utility model applications, and citable documents H index).

Conclusion

The Global Innovation Index (GII) has grown over the years into a unique study of innovation capabilities and results around the world. The GII 2014 covers 143 economies and uses 81 indicators across a range of themes to analyse innovation in each economy. Thus the GII 2014 presents us with a rich dataset to analyse for global innovation trends.

The GII model is revised every year in a transparent exercise to improve the way innovation is measured. Such evolution will continue over the years as new metrics that provide better and more accurate measures of innovation, capabilities, and impact become available. Therefore the scores and rankings from one year to the next are not directly comparable (see Annex 2 for further details). The GII is focused both on improving the 'journey' to better measuring and understanding innovation and on identifying targeted policies and good practices.

Some of the results from GII 2014 mirror those from last year. We note that high-income economies continue to dominate the top 10 rankings. Innovation leaders such as Switzerland consistently score high on most dimensions of the GII model. Although not all high-income economies make it to the top of the GII rankings, the results show that innovation divides continue

to exist around the world—across income groups, across regions, and also within income groups and regions. The persistence of these innovation divides can be traced to the challenges of making progress in a holistic manner along all dimensions of the GII model and to the legacy benefits of investments (in education, infrastructure, institutions, etc.) made by leading economies in the sophistication of their business and market conditions, among other aspects.

Some interesting new regional trends are revealed in the GII 2014. The BRICS economies mostly progress in the rankings but show some divergence, with China improving at a significantly faster pace than its BRICS counterparts and India slipping back. If China continues to improve at this pace, it would not be a surprise to see that country move from its current 29th position to within the top 25 within a few years. The divergence of India from the rest of the BRICS economies is the result of the challenges it faces in integrating its efforts along the different dimensions of innovation to sustain a high level of innovation success.

A significant development is evident this year in selected parts of Sub-Saharan Africa. Five economies from this region—Burkina Faso, Gambia, Malawi, Mozambique, and Rwanda—entered the group of innovation learners (economies that perform greater than or equal to 10% of their expected level of development with respect to GDP—see Box 4 for more details). Sub-Saharan Africa now comprises nearly 50% of the innovation learner economies. These economies demonstrate rising levels of innovation, particularly in the areas of Human capital and research and Market sophistication.

The GII shows that it is crucial for lower-income economies to continue exploring ways to foster the environments in which new sources of innovation-based growth will flourish. These nations also face the challenges of optimizing the mix of institutional, infrastructural, and knowledge-based systems that will allow them to continue expanding their human capital, knowledge production capacity, and overall technology success.

The theme for this year's GII is the 'Human Factor in Innovation'. The importance of both individual and collective efforts of creators and scientists in the innovation process has been well documented in the literature. The results of the GII provide additional evidence of this significance. Further analysis of the GII results shows that the human factor is more critical for innovation success in higher-income economies than in lower-income economies. It is likely that better educated citizens are more successful in higher-income economies in leveraging the favourable contexts (in business and markets) for driving innovation.

The GII also recognizes that some important qualitative aspects of innovation policies and processes are not captured adequately within the GII model. Hence the GII report also includes special analytical chapters and case studies focused on country experiences. The following chapters provide additional details on successful strategies for leveraging the human factor in innovation.

Notes and References for Box 1

Notes

1 UNESCO-UIS Science & Technology Data Center and OECD Main Science and Technology Indicators (MSTI), update from 2 May 2014. Data used: GERD, performed by Business enterprise (in '000 PPP$, constant prices, 2005). Economies included: Australia, Austria, Azerbaijan, Belarus, Belgium, Bulgaria, Canada, Chile, China, Colombia, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hong Kong (China), Hungary, Ireland, Israel, Italy, Japan, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malaysia, Malta, Mexico, Mongolia, the Netherlands, Norway, Panama, Poland, Portugal, the Republic of Korea, the Republic of Moldova, Romania, the Russian Federation, Serbia, Singapore, Slovakia, Slovenia, Spain, Sweden, Turkey, Ukraine, the United Kingdom, and the United States of America.

2 UNESCO-UIS Science & Technology Data Center, update from 2 May 2014. Data used: GERD, performed by Business enterprise in '000 PPP$ (constant prices, 2005). Economies included: Austria, Azerbaijan, Belarus, Belgium, Bulgaria, Canada, China, Colombia, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Israel, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malaysia, Malta, Mexico, Mongolia, the Netherlands, Norway, Poland, Portugal, the Republic of Moldova, Romania, the Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Ukraine, the United Kingdom, and the United States of America.

3 OECD MSTI, updated 4 February 2014. Data used: Business enterprise expenditure on R&D (BERD) at constant 2005 PPP$. OECD countries are represented by the Main Science and Technology Indicators (MSTI) indicator 'OECD-total'.

4 Booz & Company, 2013. This growth is based on a changing sample of firms of the top 1,000 R&D spenders of a given year. Hence the numbers are upward biased compared with a stable sample of top R&D firms. That said, the composition of the top 1,000 spender list is quite stable over time.

5 UNESCO-UIS Science & Technology Data Center, updated 5 May 2014. Data used: GERD in '000 PPP$ (in constant prices, 2005). Countries included: Armenia, Austria, Azerbaijan, Belarus, Belgium, Brazil, Bulgaria, Burundi, Canada, Chile, China, Colombia, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, El Salvador, Estonia, Finland, France, Germany, Guatemala, Hong Kong (China), Hungary, Iraq, Ireland, Israel, Italy, Japan, Kazakhstan, Kuwait, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Macao (China), Madagascar, Malta, Mexico, Mongolia, the Netherlands, Norway, Panama, Poland, Portugal, the Republic of Korea, the Republic of Moldova, Romania, the Russian Federation, Serbia, Singapore, Slovakia, Slovenia, Spain, Sweden, Tajikistan, Trinidad and Tobago, Turkey, Ukraine, the United Kingdom, the United States of America, and Uruguay. For 2011, data were available for all the above-mentioned countries except for Brazil, Chile, El Salvador, Guatemala, Hong Kong (China), Japan, Panama, the Republic of Korea, Singapore, Trinidad and Tobago, and Uruguay.

6 OECD MSTI, updated 4 February 2014. Data used: Gross domestic expenditure on R&D (GERD) at constant 2005 PPP$. OECD countries are represented by the Main Science and Technology Indicators (MSTI) indicator 'OECD-total'.

7 OECD MSTI, updated 4 February 2014.

8 Batelle and *R&D Magazine,* 2014.

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Notes and References for Chapter 1

Notes

1 Becker, 1964.

2 Nelson and Phelps, 1966.

3 Lucas, 1988.

4 Aghion and Howitt, 1999.

5 Eurostat and OECD 2005, p. 141.

6 Trantow et al., 2011.

7 Lanvin and Evans, 2013, p. 7.

8 Pritchett, 2006.

9 Luthria and Dale, 2013.

10 Fink et al., 2013.

11 Meyer and Wattiaux, 2006.

12 Meyer and Wattiaux, 2006.

13 Kuznetsov and Sabel, 2006.

14 Beechler and Woodward, 2009.

15 Tung and Lazarova, 2007.

16 Leblang, 2011.

17 Carr et al., 2005.

18 Dutta et al., 2013.

19 Dutta et al., 2013.

20 See http://mineduc.gov.rw/rief/.

21 See http://yourstory.com/2014/04/innovation-africa-digital-summit-2014.

22 Dutta et al., 2013, p. 23.

23 The three indicators are: university rankings, patent families and cited documents.

24 Countries are grouped according to the World Bank classification. Economies are divided 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 Polynomial of degree 3 with intercept.

27 Although the Czech Republic achieved a score at the level of all leader economies (above 50), it is not considered to be a leader economy because it is not among the top 25.

28 See the GII 2012 for a complete overview of the four stages.

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