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The Global Talent Competitiveness Index 2017

Talent and Technology

Bruno Lanvin and **Paul Evans,** Editors

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Preface

The concept of *talent competitiveness* that the GTCI has pioneered is clearly entering the vocabulary of government and business leaders around the world. The GTCI's robust model, with its country assessment and its annual theme (last year the report focused on international mobility and 'brain circulation'), has illuminated well some of the current global trends and concerns. The value of the GTCI was confirmed through the events organised around the world to launch the report and via discussions at international meetings and conferences in places as diverse as Belgium, Denmark, France, Jordan, Luxembourg, the Netherlands, Norway, Portugal, Singapore, South Africa, South Korea, Spain, Switzerland, Taiwan, and the United Arab Emirates. The need to link micro and macro components of talent competitiveness through interdisciplinary research is also capturing the attention of academic scholars around the world, supporting the collaboration between government, business, and educational institutions that the GTCI has identified as being imperative to inspire and manage profound changes rapidly and effectively.

At its outset in 2013 and 2014, the GTCI flagged the idea that *'technological change will affect new segments of the labour market, implying changes in the required profiles and employable skills'*. So it should be no surprise that the theme of the GTCI 2017 is **Talent and Technology.** Contrary to some dismal predictions about a 'jobless future', the analyses and chapters contained in this year's report indicate that people, machines, and algorithms are combining to create an unfolding future for work where new skills will need to be provided and acquired. While routine, repetitive, and dangerous tasks continue to move from people to machines and robots, individuals, organisations, and our educational systems will need to adapt to a work environment in which career changes will be part of a typical working life. The orthodoxies of the 20th century factory age are being undermined: new business and organisational models are emerging that affect all sectors of society. This is a massive challenge to our educational systems, and to employment policies that must encourage flexibility while offering social protection and training for new opportunities—in a world where salaried employees may be becoming a minority. Inside companies and organisations, there is clearly a need to rethink approaches to managing human resources. At the international level, governments have the difficult task of anticipating where the sources of the competitiveness of their countries will reside, and how this will affect their definition of 'employable skills'.

Again this year the GTCI report includes several innovations. The **model** itself, which has proved to be robust, has been further improved with a new sub-pillar on matching talent to opportunities; the data and country coverage of the index have continued to broaden, allowing the report to cover 118 countries (as opposed to 109 last year). Moreover, some variables have been repositioned across pillars and sub-pillars in order to increase the accuracy of the GTCI model. The GTCI 2017 includes **a special section on cities and regions,** which are critical players in global talent competitiveness. This will not come as a total surprise to the GTCI's readership, as previous editions had flagged the growing importance of local policies in global talent competitiveness. For this inaugural special section, a separate index (the GCTCI, or Global City Talent Competitiveness Index) has been developed in a 'beta version'; this means that it is likely to improve significantly in subsequent years, both in terms of coverage (it includes 46 cities this year) and in terms of its structure and data components.

As in previous years, the GTCI has continued to benefit from the valuable support of its partners and sponsors in government, business, and academia. The Adecco Group and Singapore's Human Capital Leadership Institute (HCLI) have remained strong and active supporters. Our gratitude goes not only to them, but also to all the individuals, institutions, and organisations who have contributed chapters to the present edition, and to those who participated in the many streams of discussions and consultations since the launch of the GTCI in 2013. As in previous years, we wish to direct special thanks to the European Commission Joint Research Centre (JRC), who have continued their highly professional and constructive evaluation of the strengths and weaknesses of the GTCI model.

Finally, we acknowledge with gratitude the continued support of our prestigious Advisory Board. It is composed of remarkable individuals who, in spite of heavy schedules, have always remained ready to help improve the quality and dissemination of the GTCI.

High-quality feedback and dialogue from our readership has nurtured the GTCI since the outset. We hope that this will continue with this new edition, contributing to necessary and urgent actions to ensure our future prosperity in a world that is changing with a velocity that merits concern, imagination, open-mindedness, and good metrics.

Bruno Lanvin
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The Adecco Group | Foreword

From the invention of the wheel to the arrival of the semiconductor and artificial intelligence, technology has disrupted the way people work. Through most such momentous changes, debate has raged. Detractors have claimed that technology enslaves workers and reduces them to poverty and despair, while supporters have argued that such progress is a blessing, relieving sweat or boredom and potentially creating new positions alongside the posts it displaces.

We lean towards the latter approach, and this year's GTCI analyses how technology can indeed 'augment' human efficiency. It goes further by examining how technological change affects and intensifies talent competitiveness and the nature of work, and how—inevitably, given the velocity of change—it will continue to do so.

Data demonstrate that technology stimulates economic growth by boosting productivity and lowering costs. It also creates immense opportunities—and, temporarily at least, potential skills shortages as new types of human expertise become necessary. Just think of how exponential increases in processing power have revolutionised employment in fields like manufacturing and healthcare, creating once virtually unimaginable new jobs.

Technology's hunger for new human abilities may be focused on 'hard' areas, like the so-called STEM skills of science, technology, engineering, and mathematics. But this year's GTCI highlights the need for 'softer' talents too, like creativity, adaptability, and the ability to share ideas and work in teams.

Technological disruption will also require us to work differently in the future. In my own industry alone, human resource departments face significant changes, with the availability of big data, faster and more precise search and matching systems in recruitment, and increasingly advanced and predictive HR management tools. More broadly, the latest GTCI foresees new paradigms in workforce management, with a more dispersed workforce, greater autonomy for individual employees, and the search for an improved work-life balance thanks to advances in communications and 'smart' working, all prompting greater flexibility.

Flexibility will, indeed, be the watchword of this new age, as we are undergoing a transition from work grounded on traditional long-term contract-based employment to an era where around 30% of the US and European working population are free agents, in the sense of having freelance work as their primary or secondary source of income.

Over time, we will adjust to such changes, given the ever-wider adoption of technology and the adaptation of our societies to new organisational forms and talent needs. The GTCI shows that such transformational change is most likely to succeed amid strong ecosystems, including close public-private alliances. Such circumstances are particularly evident in cities, which—in many cases—can offer a degree of financial independence and economic growth rates that can be significantly higher than their national averages. Cities can also bring specific advantages related to geography, culture, or quality of life, as well as agile decision making and innovative branding skills. Together, such abilities can place cities very favourably for attracting globally mobile talent.

Hence the decision this year to launch the inaugural Global Cities Talent Competitiveness Index to single out the best performers and share best practices. The top three cities—Copenhagen, Zurich, and Helsinki—emerged from a ranking on six pillars and 19 variables, including information and communication technologies, business communities, quality of life, cost of living, availability of academic and vocational education, and international connections.

So what does our fourth GTCI reveal, and what are its central lessons for workers, policymakers, and particularly employers? First, they need to think beyond just automation and acknowledge the extensive transformation of social systems underway. Among such developments are spiraling connectivity and a reduced reliance on authority. In terms of careers, people will have to grow accustomed to having multiple jobs during their working lives. This means that workers will need to plan for their continuous upskilling to stay employable on the labour market. At the same time, national educational systems will have to do more to equip school leavers with the right mix of technical and vocational skills, as well as the nous to work with colleagues from different disciplines.

Employment policies must also be amended to combine labour market flexibility with social protection, and to facilitate retraining, mobility, and adjustments to market needs. That also involves a reduction in red tape and elimination of outdated thinking to boost competitiveness and job creation. Lean, efficient regulation does not mean less protection for workers. But worker protection and benefit schemes will have to become much more agile. They must apply to all sorts of workers, including players in the ever-growing sharing economy, to ensure a level playing field for all forms of employment.

Finally, companies must offer work-based training opportunities to allow youngsters to develop their employability and gain the required skills, and upskill their existing workforces. They must also maximise their organisational flexibility, given the likelihood of ever-greater volatility in increasingly uncertain circumstances. Only in this way will it be possible to shape new skills and working models for employability and competitiveness.

Alain Dehaze
Chief Executive Officer, The Adecco Group

Human Capital Leadership Institute | Foreword

The Human Capital Leadership Institute (HCLI) is extremely pleased to partner with INSEAD and the Adecco Group in the Global Talent Competitiveness Index (GTCI) for the fourth year running. Jobs are being created and destroyed at an unprecedented rate by technology and it is, therefore, not surprising that the theme for this year's GTCI is how technology will drive the future of work and talent.

The term *Luddite* has been used pejoratively to describe people who oppose industrialisation, automation, and computerisation because of their fear that these technological advancements will destroy their jobs. The term *Luddite* comes from the 19th century movement of English textile workers who demolished power looms because they believed those machines were taking away their jobs and threatening their livelihoods. Economists have, habitually, used the expression *Luddite fallacy* to argue that this fear is unfounded because technology does not lead to overall higher unemployment—the destruction of jobs in some sectors will inevitably be accompanied by new jobs in others. Although this belief has generally held in economic environments where the transitions from old to new technologies were slow enough for those who were technologically displaced to learn new skills for new jobs, with today's rapid technological change, the Luddite fallacy is now perhaps less of a fallacy.

Today we are witnessing a unique point in mankind's history where the Luddite fallacy may be becoming the 'Luddite reality'. Humans are increasingly being displaced by both robots and algorithms. Every traditional industry and job will be impacted by technology, and jobs are being lost much more quickly than they are being created. The skill sets of people who have experienced technological unemployment are often not sufficient to help them adapt to the dramatic changes that are taking place. Although economists and pundits have historically often been divided in their opinions on how technology will impact work and employment, they are fast reaching consensus that there is a need to create new economic structures to manage the impending changes confronting our economies and the onslaught of job displacement that will follow.

Given that technology will irrevocably alter the design, structure, and nature of work, its impact on work arrangements is no less significant. In Chapter 5, we explore how the adoption of workplace technology would lead to changes in work arrangements for women, and we investigate the implications of non-traditional work arrangements (powered by technology) on their career development and advancement. The issue of diversity at work has preoccupied business leaders for a long time, and ensuring adequate female representation at senior levels is a top concern for many companies. We believe that workplace technology is a sword that cuts both ways. On the one hand, it is a potential enabler that helps women better manage the multiple demands that are placed on them; yet on the other hand, it is a disabler that hampers their access to strategic networks by reducing their exposure to senior management.

Quite evidently, technology has an impact not only on how work is designed and structured but also on how employees interpret, make sense of, and organise their work environments. While the focus of most research about the impact of technology on work tends to take a more macro view about the changing nature of work and employment, HCLI's chapter highlights the career opportunities and challenges that individuals might face when companies adopt workplace technology.

We hope that our chapter will help tilt the conversation from one that focuses on work design to one that also discusses how employees can transverse the changing landscape of work that is powered by technology.

Su-Yen Wong
Chief Executive Officer, Human Capital Leadership Institute

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Chapters

CHAPTER 1

Shifting Gears: How to Combine Technology and Talent to Shape the Future of Work

Bruno Lanvin, Paul Evans, and Eduardo Rodriguez-Montemayor
INSEAD

We are being afflicted with a new disease of which some readers may not yet have heard the name, but of which they will hear a great deal in the years to come—namely, technological unemployment. This means unemployment due to our discovery of means of economizing the use of labor outrunning the pace at which we can find new uses for labor.

—John Maynard Keynes,
Economic Possibilities for our Grandchildren, 1930.

... in a 'technology-based Internet society', we predict that increasingly capable machines, operating on their own or with non-specialist users, will take on many of the tasks that have been the historic preserve of the professions. We anticipate an 'incremental transformation' in the way that we produce and distribute expertise in society. This will lead eventually to a dismantling of the traditional professions.

—R. & D. Susskind,
The Future of the Professions—How Technology Will Transform the Work of Human Experts, 2015.

Last year's *Global Talent Competitiveness Index* (GTCI) focused on the international mobility of talent. Against the background of migration, it assessed the social and economic benefits of skilled talent attraction as well as the growing importance of 'brain circulation'. One of its key messages was that technology is redefining mobility: *'While people continue to move to jobs and opportunities, jobs are now moving to where the talent is';* another of last year's key messages was that *'Low-skilled workers continue to be replaced by robots, while knowledge workers are displaced by algorithms'*.

This year, the GTCI attempts to explore further some of the ways in which technological change has been (and will be) affecting talent competitiveness as well as—more broadly—the nature of work.

The digital revolution has been unfolding for decades—its impact on business and society has been visibly accelerating since the start of the new millennium. But we are now taking a step further by exploiting at an unprecedented velocity multiple technologies underpinned by digital means and data, leading to ever-smarter systems and machines. The generation and sharing of data is increasing exponentially; we are all aware of the impact of internet communications, but the exponential future growth is above all in machine-to-machine communications and the future blossoming of the 'internet of things' (IoT) revolution.

The resulting changes will have massive consequences in all types of economies as two kinds of effects combine in unprecedented ways. On one hand, automation and digitalisation will continue to offer ways to reduce costs, enhance productivity, and stimulate innovation. On the other hand, new combinations of information technologies, global networks, and powerful algorithms will generate new business models and social models. The first trend—the way in which technology allows us to do things better, cheaper, and faster—will continue to have dramatic effects on low- and medium-skilled jobs. The second—the emergence of new business and social models—will have even more profound consequences, affecting not only higher-skilled workers (experts and professionals such as lawyers, journalists, accountants, and bankers) but transforming entire sectors of activity as well as the nature of work itself.

The two quotes at the beginning of this chapter illustrate those two concurrent trends.

TECHNOLOGY AND WORK

Whether we call it Industry 4.0 or any other name,[1] we are in the middle of a new industrial revolution. Unlike those of the 20th century based on mechanisation and the mass production of physical goods, this one is characterised by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres. And given the velocity with which this is occurring, this revolution becomes so much more disruptive. While firms become more efficient and productive with the new technological capabilities, people face both challenges and opportunities.

The combination of big data, cloud computing, and IoT is enabling increasingly autonomous and intelligent machines that do a better job than humans in an expanding variety of tasks. Any job that is routine and codifiable is a candidate for automation, and even complex jobs can be broken down into routine sub-elements that can be managed by algorithms and robots.[2] Be it robots replacing workers in assembly management or algorithms doing background fact-checking instead of journalists,[3] many jobs are being transformed. Even some of the high-level tasks performed by C-suite executives—notably activities such as analysing reports and data to inform operational decisions—could be automated. By some estimates, more than half of currently existing jobs are susceptible to automation in rich countries in the following decades[4]—in Organisation for Economic Co-operation and Development (OECD) countries, at least 54% of people are employed in routine occupations.[5] In developing countries that have benefited from the outsourcing of routine tasks on the value chain, the impact of automation could be higher. China's factories are adding robots faster than they are hiring people. India's information technology (IT) sector is already witnessing jobless growth, paralleling the recently publicised downside of the tech boom in the United States—not enough jobs.[6]

Yet recent fears that machines will wipe out all jobs are unfounded. New jobs are being created elsewhere, with higher value added, just as happened in previous industrial revolutions. *'I wished never to see machines such as saw mills and stamps as they would exclude the labour of thousands of the human race, who are usefully employed'*, wrote English writer and philosopher Thomas Mortimer in 1772.[7] The predictions of techno-pessimists have typically failed, and this time it may be no different. Although machines are becoming increasingly capable, the challenges of substituting machines for workers in tasks requiring adaptability, common sense, social intelligence, and creativity remain immense. And even if one day these challenges are overcome, the logic contending that machines take jobs at the expense of people is a fallacy. The amount of work available in an economy is not fixed and is subject to change[8]—who would have imagined only 20 years ago the job of social media coach? New jobs are being created to exploit the new human-machine symbiosis.

Although we are not near the apocalypse of work, the urgent reality is that we have to work differently than we are used to. We see the emergence of new models of employment as evidenced by the rise of contingent and project-based work. People are living longer, and we have to adapt to career paths that look different from the prototypical linear, single-employer career path of the 20th century. Work is becoming more mobile and blurring the boundaries between work and family life. And, above all, people need a wide range of new skills—hard and soft—to find fulfilling jobs. Humans will have to learn how to work alongside robots.[9] Baxter, a collaborative robot, is actually affordable for many smaller enterprises and can be taught by humans to do various sorts of tasks. In knowledge-based industries, people increasingly require data analytic skills. Working with robots and with data are activities that require new knowledge, which can be learned and updated during a career. Perhaps more challenging, as pointed out in Chapter 6, is the development of the deep soft skills needed in a fast-changing world—such as adaptation and learning how to learn—because these

FROM JOBS CLEANING SINGAPORE HOTEL ROOMS TO JOBS AS SMART TECHNICIANS ACROSS ASIA: THE TRANSFORMATION IN MICROCOSM

Singapore is one of the world leaders in the new economy of technology and talent.[1] Its Ministry of Manpower organises Learning Journeys to showcase how small and medium-sized enterprises (SMEs) can become early adopters of change, becoming more productive and innovative as well as manpower lean. In September 2015, such a Learning Journey introduced automated smart technology for SMEs in the cleaning sector, staged by Mr Lim Swee Say, Singapore's Minister for Manpower, in cooperation with its agency for digitalisation (IDA or the Infocomm Development Authority), Singapore's Workforce Development Agency (WDA), and the Marina Bay Sands (the iconic hotel overlooking the business district, with an infinity pool surrounded by palm trees on the roof and a giant casino in the basement).

Using an on-board camera and sensor that record images, allowing remote analysis and monitoring of cleaning tasks, the autonomous controllers can be retrofitted to existing scrubber machines. This pilot smart technology will allow the redesign of workflow processes, enabling the transformation of the cleaning landscape in a hotel such as Marina Bay Sands. Singapore has fewer and fewer people available for low-skilled and poorly paid jobs such as cleaners, and with immigration constraints it is reluctant to import that unskilled labour. If this pilot succeeds, many unskilled jobs will disappear, but some new high-skilled positions in SMEs will be created. Marina Bay Sands and similar buildings throughout the island are interested in low-cost and consistent cleaning services. But the sights go beyond Singapore. This smart technology is currently being tested by Ramky Cleantech Services, one of the leading environment management service providers that have grown rapidly in regional markets such as China, India, and the Philippines.

'With over 2,500 hotel rooms and an average occupancy of over 90 percent, Marina Bay Sands is constantly looking at improving our efficiency and effectiveness to remain successful. The heart of our productivity roadmap is based on "doing more with less". As we future-proof our operations and prep ourselves for productivity-led growth, we are actively leveraging analytics, innovative technology, as well as continuous staff engagement. In the long run, our goal is to optimise available technology to automate processes where possible so as to enable our staff to take on high-value jobs,' said Ian Wilson, Senior Vice President of Hotel Operations of Marina Bay Sands.

Source

IDA introduces Robot-as-a-Service solution for cleaning sector, *Computerworld,* Singapore, 27 April 2016, available at http://www.computerworld.com.sg/print-article/96060/

Note

1 See Chapter 6 where Singapore's lead in Talent Readiness for Technology is outlined.

skills need to be acquired in the early stages of life. Educational systems will thus have to be completely re-thought.

In the context of all these transformations, technology will continue augmenting, not replacing, the work of humans. Many tasks will certainly be automated. But jobs usually involve bundles of tasks, only some of which can machines easily handle. People can thus refocus on activities with more value added. If artificial intelligence becomes more agile in crunching the numbers behind research and development processes and in coming up with better hypotheses than human judgment, so be it—then let human specialists take it from there. Biochemists, for instance, could then focus on investigating avenues for new classes of drugs. If IBM's Watson is more efficient than a doctor in analysing a patient's healthcare data and providing a recommendation, then let doctors augment their capabilities and look at evidence-based treatment options based on a large number of factors, including the individual patient's presentation and history (Chapter 2 devotes a section to healthcare in the digital age). It is to be hoped that, in this way, better treatments for illnesses will be available in the future.

Technological augmentation of human capabilities—in other words, *talent* in the 21st century—requires a series of enablers to reach its full potential. The adjustment of our societies will take time. The maximum impact of steam power on British productivity growth was not felt until the third quarter of the 19th century, nearly 100 years after James Watt's patent. A first enabler in the 21st century is the wide adoption of technology. Cloud computing, for instance, was first commercialised in the 1990s, but today less than a quarter of businesses in OECD countries have adopted it. A second enabler is the adaptation of societies to new organisational forms and needs for talent.[10] The digitalisation of industrial production requires investments in research and development in fields such as the IoT and data analytics. And countries with greater research capabilities in such fields could enjoy first mover advantages. For countries that are lagging behind in terms of skills and business practices, a full shift to Industry 4.0 could well take 20 years or more.[11]

A simple example of the impact of technology on work is shown in the box *'From jobs cleaning Singapore hotel rooms to jobs as smart technicians across Asia: The transformation in microcosm'.* Between the lines of this single example are many aspects of the revolution in technology and talent. Taking the unskilled task of cleaning hotel and office rooms, this Singapore initiative shows how an environmental management firm may be positioning itself to become a multinational leader in a newly reshaped industry, with technical, commercial, and strategic talent rather

than unskilled labour at the fore. With the involvement of stakeholders—from Singapore's Minister of Manpower to technology providers as well as a major hotel user of cleaning services—this learning journey also illustrates an important theme that runs through many chapters of this GTCI report: the importance of ecosystems, here in the shape of public-private partnerships, in surmounting and exploiting the challenges of building the new economy.

One should also note that jobs such as cleaning hotel rooms are often undertaken by unskilled labour from less developed countries. Also between the lines of this story is the fact that machines may progressively replace these jobs, an issue that we discuss in a later section on the changing geography of employment. Industry 4.0 is challenging the model of economic development that developing countries hoped to ride: first using earnings or remittances from unskilled labour to educate and upskill their children, then moving up the value chain to low-cost manufacturing—those factories are now being reshored to automated factories in the developed world where the talent and the consumers are located.

The elephant in the room, as described in Chapter 6, is that of growing inequalities between people. Technology complements the work of some people whereas it replaces the jobs of others.[12] With 'skill-biased technical change', the gains of growth go to those few people with the right skills to take advantage of new technologies. Technology has thus contributed to a polarisation of employment: more jobs for highly skilled workers, more jobs for low-skilled workers (who staff service jobs, albeit with low pay—the hairdresser is the prototypical job that cannot be automated), but a hollowing out of the middle.[13] While technology is creating enormous wealth and improving many aspects of our lives, the deeper challenge has more to do with the inequalities between the winners and the losers in the technological revolution than with the assessment of its technical and economic scenarios.[14] Technology will not reach its enormous potential if there is broad and deep resistance to the way that it reshapes the work scene.

THINKING BEYOND AUTOMATION

Digitalisation and artificial intelligence are certainly providing new services to people, symbolised today by the voice-directed personal assistants of smartphones and the online avoidance of traffic jams as one drives to a destination, and more generally by the emergence of self-driven cars. They also make the production and the delivery of goods and services smarter and more efficient. But it is important to think beyond such object-embedded technological innovations. The disruptive feature of the current technological revolution is that it is transforming the social systems upon which the economy operates.

The backbone of the 20th century economy was the factory model, along with the assumption that most people would be salaried employees working for corporations or public organisations. Educational systems, reward systems, career structures, human resources models, skill structures, employment systems, trade union structures, and economic assumptions about the relationship between capital and labour—much of the structure of our society—were rooted in this model, which grew out of the first and second industrial revolutions in the 19th and 20th centuries, focused respectively on mechanisation and mass production. In the last few decades, developments in the third revolution (computerisation) and the advent of 'knowledge societies' have been chipping away at this factory model of a social system. Today, with the acceleration of the new technologies of the fourth revolution, it has become obvious that we are moving to a different social order. The challenges around talent and technology are hence far broader than only those presented by automation (whereby machines replace humans in certain tasks), and should be regarded as a more complex set of equations that need to be solved in different spaces and in multiple dimensions.

The chapters in this GTCI report address different aspects of these profound transformations. Since skills are at the heart of talent competitiveness, we start with a focus on the way in which skills are changing. The CEO of the world's largest provider of workforce solutions shares his perspectives in **Chapter 2** on *The skills imperative: Shaping the future of work through talent and technology.* Indeed, previous GTCI reports have highlighted the paradox of the skills gap faced by many developed countries—millions of unemployed people, notably youth, while millions of jobs go vacant because there is no one with the skill sets to fill them. The skills gap is one manifestation of how technology has been eating away at the traditional foundations of society. In **Chapter 3,** one of the world's leading consulting companies addresses the fundamental nature of this societal transformation with *Ten new work orthodoxies for the Second Machine Age,* sharing their experience in helping organisations to master the challenges of global evolution. **Chapter 4** shows that business organisations are struggling to understand the impact of digitalisation: *Digitalisation initiatives and corporate strategies: A few implications for talent* is authored by INSEAD academics who recently undertook a wide European survey on such corporate initiatives. Technology allows some people to commute to work and communicate by computer, and **Chapter 5** leads us to consider the impact on individual lifestyles. Written by our Singapore partners, it builds on Asian research into *Telecommuting and technology-mediated work platforms: A double-edged sword for the advancement of female executives at work.* Finally, the GTCI research team share their review of the research on technology and talent in **Chapter 6,** asking *Are we prepared for the talent overhaul induced by technology? A research commentary.* Their analysis leads them to highlight three priorities for policy—education, employment policy, and stakeholder relations—assessing how well prepared the nations covered by the GTCI are in terms of talent readiness for technology. Based on their interviews around the world, they also share the experience of two of the talent-ready nations.

At the heart of this transformation is the reality that *information,* not assets or machinery, has become the key commodity of the new businesses of the 21st century economy. Information is not only growing exponentially,[15] but it is also becoming increasingly accessible to those equipped with the right tools.[16] Given the fundamental importance of information, the new economic and societal models are empowered by *connectedness*. Connectedness is the basis for the platform models of dominant players

in the new economy such as Google, Amazon, and Uber, and its importance is seen in the way in which our wider concept of organisation is changing (as outlined in Chapter 6) and in the new assumptions underpinning the new economy (see Chapter 3). It also underlies the new work models that are described in many of these chapters, characterised by the rise of free agents who are connected by technology and the decline of the salaried employee. This in turn affects the skills that define the needed talents, with major implications for our educational systems.

Employment systems are also struggling to adapt to the new economy because the reality is that our institutional structures, from educational and social security systems to employment laws and policies, were designed for the factory model of the 20th century industrial age. Insufficient flexibility in labour markets has also contributed to even more massive skill and employment gaps.[17] Innovation is also at the heart of the new economy, but the drivers of innovation have shifted. In these chapters, we see the rising importance of co-creation and collaborative innovation in different shapes and forms. At the more macro-level, this is found in the agreement across many of these chapters that collaboration between government, business, and educational institutions (eco-systems) is imperative if countries are to innovate at the societal level so as to respond to the new technological realities.

HOW TECHNOLOGY AFFECTS THE GEOGRAPHY OF EMPLOYMENT

As discussed, some jobs are being replaced by machines, while others (typically requiring higher skills) will be created. But predicting what kind of jobs will gain prominence in the next few decades is a difficult (and risky) task. Many of those jobs do not exist at present. More challenging, perhaps, is predicting *where* those jobs will take place.

Technology, globalisation, and the relationship between the two are constantly reshaping the world economy.[18] With global value chains, jobs may move overnight from one country or region to another. Who anticipated 25 years ago how rapidly manufacturing jobs would move to China, and then on to Viet Nam today? By 'exporting' jobs to cheaper countries in Asia, total employment at computer and electronic firms in the United States sank to 1.03 million in 2016 from 1.87 million in 2001. Employment at semiconductor makers fell by half to 359,000 in the same period.[19] But today, technology is moving some of those manufacturing tasks back to robotised facilities in the West, where the skilled specialists are to be found.

Technology as a Game Changer

New technologies change not only *how* things are produced but, more importantly, also *where* they are produced. During the last 25 years we have witnessed two massive examples of the role of technology in changing the game. The first change in the game started in the 1990s. Facilitated by information and communication technologies (ICTs) and container shipping, global value chains transformed global trade by moving from products 'made in one country' to those 'made in the world', and from 'trade in goods' to 'trade in tasks', [20] as expressed by the World Economic Forum.[21] So a pair of blue jeans with an Italian brand will have been designed in Milan but manufactured in 7–12 different locations, going from China to Indonesia, and Thailand to Tuscany.[22]

Technology today is bringing about a second change in the game. To take one of many examples, Adidas is about to do something that it has not tried for three decades: bring shoe production back to Germany, to a small Bavarian factory in the south of the country.[23] With new advances in robotics, the process of making a pair of trainers from start to finish takes roughly five hours, far less than the several weeks in Adidas's Asian supply chain.

After decades of offshoring, particularly of manufacturing tasks, new technologies are turning the tide to reshoring because multinational firms have advantages in their home countries.[24] First, they can become more agile in responding to local markets. Zara realised decades ago that fashion is fickle; by the time that goods planned and ordered a year ago arrive from Asia, the demand has changed. A growing number of customers want to have shoes, clothes, and cars made on demand—perhaps soon by a robot in a sports shop. Second, logistic and storage costs decline with the elimination of complex global supply chains. Third, firms can operate in clusters that give access to a pool of people with the new talent required by Industry 4.0, while traditional service technicians, production planners, and professionals in assembly and inventory management are no longer needed. That new talent is vital for the processes of the future—predictive maintenance will fuel novel work in system design and data science; self-organising production will require specialised data modellers; and 3D printing will create jobs for computer-aided designers.

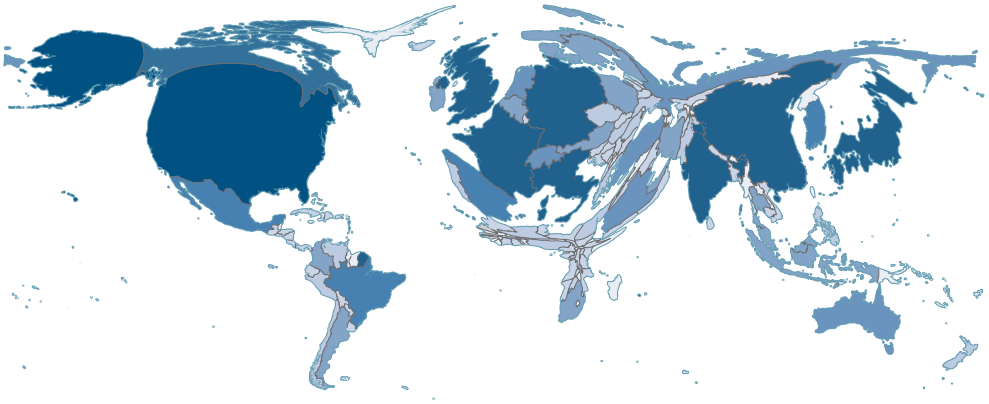
As rich countries become more self-sufficient with robots and automation, many emerging countries are losing their main source of competitive advantage—namely cheap labour for manufacturing operations and call centres. Even China will be losing more jobs to automation than to competition from cheaper countries. Moreover, rich countries are also anticipating future benefits in the transition of global trade from traditional physical goods to trade in ideas and intellectual property—by being better equipped with regulatory frameworks that promote and protect intangible ideas.[25] After two decades of increasing global equality,[26] will we return to a situation where rich nations again become richer compared with the rest of the world? Can some developing countries leapfrog industrialisation altogether without being dragged down by legacy industrial infrastructures that are no longer competitive?

How Can Developing Countries Adjust?

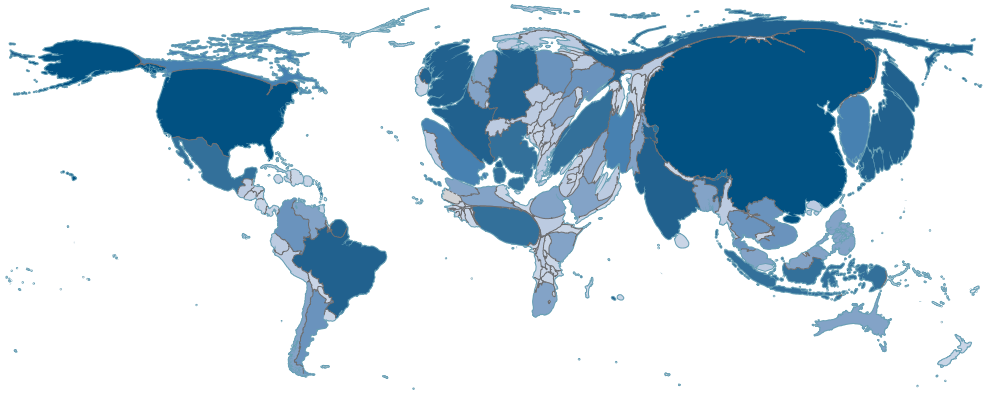
In the past, the technology transfers to developing countries that accompanied foreign direct investment, along with the industrialisation of those countries, have facilitated a process of catch-up, and thus the reduction of global inequalities—as we indicated earlier.[27] Today, although not all manufacturing will flow back to the developed world,[28] emerging countries need to think beyond their labour advantages in doing routine tasks. Labour advantage is giving way to digital advantage. The use of

Figure 1
The spread of the internet versus income

Panel a: Based on national income, 2014



Panel b: Based on internet penetration, 2014



Source: World Bank (2016).
Note: Countries' sizes are rescaled in proportion to national income and internet penetration. The darker the shade, the higher the national income (panel a shows GDP at market exchange rates) and the greater the internet penetration (panel b).

machines will go beyond automation to smart production—countries adopting advanced analytics and advanced sensor technologies to enhance production processes will have the advantage in global value chains.[29] Indeed, the internet and mobile technologies have reached developing countries much faster than previous technological innovations (as Figure 1 shows, the internet is more evenly spread than income). Digitalisation may enable some leapfrogging by emerging countries to develop new types of services (e.g., mobile money transfers as in the case of Kenya's M-Pesa) or even to focus on higher-value industries.[30] The internet also enables more products to be exported to more markets, often by newer firms—firms selling on eBay, whether from Jordan or Peru, are younger than firms in the offline markets.[31] In terms of services, while some that were part of the traditional unbundling of production processes such as back-office functions will be outcompeted by machines,[32] people and firms in, say, India or the Philippines can continue to capture a market in software development or long-distance online tutoring, as they have done in the past.[33]

Furthermore, with the internet and connectivity, moving knowledge and ideas across borders has never been easier. The cross-fertilisation of ideas between, say, Africa and Europe that once took decades can now happen in minutes.[34] This opens up opportunities because even countries like the United States face shortages of knowledge talent, notably in science, technology, engineering, and maths (STEM), where many emerging countries have strengths.[35] The need to access qualified personnel can lead to offshoring skill-intensive processes to emerging markets,[36] and the destiny of countries can rapidly change. For example, one bank that set up an offshore centre in Poland in the 1990s to do low-value back-office administration now uses Polish mathematicians to develop complex trading algorithms—16 of the 24 finalists of Google's annual Code Jam programming competition were from Central and Eastern Europe in 2014.[37]

The internet and digital technologies enable many small firms based in different locations to participate in global trade, leading to more inclusive and democratised innovation.[38] However, the infrastructure and governance conditions—including the talent competitive conditions that the GTCI measures—are far from ideal in many developing countries. There is the risk of creating a 'two-tier economy'—a split between modern foreign plants and a few innovative local enterprises, on the one hand, and a bunch of inefficient and lightly funded smaller companies on the other. The few 'black swan' firms that innovate in unfavourable conditions create islands of excellence in a sea of mediocrity, without tight links to the rest of the economy or society.[39] Ensuring the connection of the different players and stakeholders is, however, important because the knowledge industries of the future will be empowered by ecosystems, clustered in highly innovative cities.

TECHNOLOGY, ECOSYSTEMS, AND THE RISE OF CITIES

It is now commonplace to state that technology has changed the definition of proximity: even if it is undoubtable that clusters will continue to matter, their location will be more and more dependent on how connected they are to the rest of the world. A new geography of clusters is hence likely to emerge, one in which cities will be able to display new advantages over nation states, in particular in the sphere of talent competitiveness. Clusters have been important since earlier industrial revolutions. The transportation revolutions of the 19th century did not lead to the dispersion of economic activity, but instead to its concentration—in relatively few countries, and within those countries in large and often highly specialised cities. Technology now allows a reverse trend to gather momentum, in which a more diverse and widely dispersed set of cities would have competitive advantages. Such advantages, rather than being based chiefly on physical infrastructures such as ports, mines, and modes of transport would include the social and knowledge capital that—combined with reliable information connectivity—will be vital to attracting economic activity and foreign direct investment.[40] As cities, big and small, become global players, their respective talent pools will be key drivers of their prosperity.

Clusters will continue to matter because physical proximity reduces differentials in labour costs and enhances economies of scale and scope whenever infrastructure and external services can be shared or pooled. Local labour markets benefit from the training activities of other firms and from being close to top universities and research centres. Knowledge transfers are overwhelmingly local, falling off sharply with distance.[41] Firms derive knowledge spillovers from proximity to other firms. Although the internet and digital technologies facilitate the dispersion of firms by allowing better communication, distribution of jobs, and greater disintermediation of production processes,[42] firms still need to cluster in specific geographical locations to take advantage of specialised inputs, suppliers, and, above all, dense labour markets.[43] In this respect, large cities and existing well-established clusters continue to enjoy significant advantages in attracting talents. Yet this advantage is being rapidly reduced by the ability of smaller urban centres to combine local advantages with inputs that can be accessed through reliable internet connections.

Whether they are big or small, cities are clearly emerging as significant competitors on the scene of global talent competition. The advantages that cities display over national economies include agility (largely linked to their relatively smaller size), fiscal autonomy (growing with the tendency of centralised states to 'externalise' some of their traditional functions), and a superior ability to brand themselves around specific quality-of-life dimensions, cultural projects, or even architectural landmarks (such as museums), for example.

Because of all of the elements above, it has become increasingly important to track and measure what cities plan and do regarding talent competitiveness. The special section that this report devotes to the talent competitiveness of cities is a first attempt in that direction. It also explores some of the critical dimensions of the abovementioned phenomena.

THE GTCI CONCEPTUAL FRAMEWORK

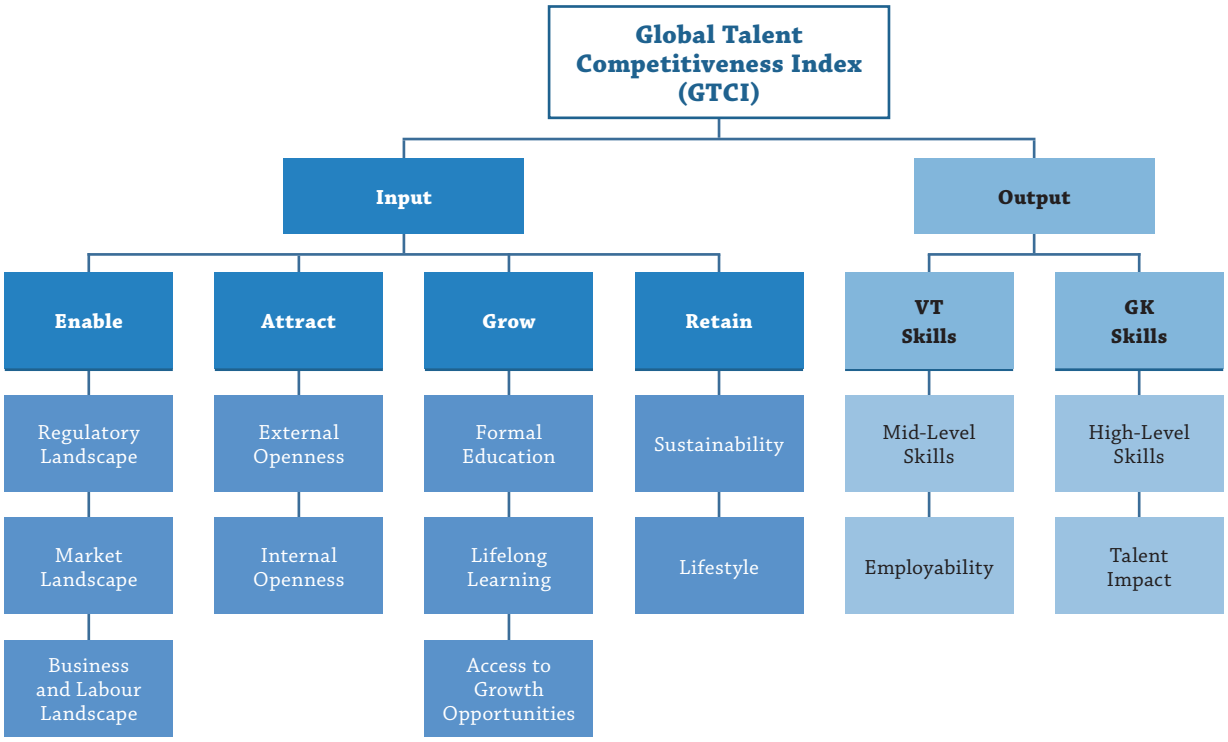
As underlined in the previous three editions of the GTCI, countries are competing globally to grow better talent, attract the talent they need, and retain those workers who contribute to competitiveness, innovation, and growth. Countries seek to put economic and social policies in place that will facilitate this. In such a context, governments, businesses, and various other stakeholders need quantitative instruments that can inform their decisions (as investors, employers, employees, or jobseekers) and help design and implement better policies in areas such as education, employment, and immigration, to name a few. This is the purpose of the GTCI.

Who Is Expected to Use the GTCI and Why?

Decisions regarding the development, attraction, and optimisation of talent are remarkably complex and multi-layered. They involve a multi-disciplinary endeavour to tackle talent dilemmas that have been raised in the fields of economics, education, human resource management and organisational behaviour, entrepreneurship, innovation, and strategy. At the policy level, this complexity is compounded by emotional dimensions and the international consequences of choices to be made in terms of immigration, social equity, and fiscal incentives, among others.

Faced with such intricate issues, decision-makers—both public and private—need quantitative tools that will enable them to benchmark the efforts made and results obtained in different socioeconomic environments in terms of talent management and talent competitiveness. The GTCI has been designed to help address this challenge by providing a composite view of talent competitiveness applicable to a large number of countries (118 this year). Although a number of composite indices concerning skills, talent, and human capital have been developed in recent years,[44] both private and public players in the field see the need for a neutral, global, and respected index that would enable them to: (1) assess the effectiveness of talent-related policies and practices; (2) identify priorities for action in relevant areas; and (3) inform international and local debate in this arena.

Figure 2
The GTCI 2017 model



Note: GK Skills = Global Knowledge Skills; VT Skills = Vocational and Technical Skills.

The Structure of the GTCI Model

After successfully launching the 2013, 2014, and 2015–16 editions, the Adecco Group, HCLI, and INSEAD have again joined forces to produce the 2017 edition of the report.[45] Feedback received on previous editions, additional research, and the availability of new data have allowed refinements to the model, though its basic structure is robust and unchanged.

In the context of the GTCI, *talent competitiveness* refers to the set of policies and practices that enable a country to develop, attract, and optimise the human capital that contributes to productivity and prosperity. The GTCI is an Input-Output model (see Figure 2) in the sense that it combines an assessment of what countries do to produce and acquire talents (Input) and the kind of skills that are available to them as a result (Output).

Regarding Output, the GTCI differentiates between two levels of talent, which can be broadly thought of as mid-level and high-level skills. Mid-level skills, labelled *Vocational and Technical Skills* (or VT Skills), describes skills that have a technical or professional base acquired through vocational or professional training and experience. The performance of VT Skills is measured by their degree of employability and by the labour productivity of those employed. Employability is measured by indicators of skills gaps and labour market mismatches and by the adequacy of educational systems. High-level skills, labelled *Global Knowledge Skills* (or GK Skills), deal with knowledge workers in professional, managerial, or leadership roles that require creativity and problem solving. Their economic impact is evaluated by indicators of innovation, entrepreneurship, and the development of high-value industries. Together, VT Skills and GK Skills constitute the two Output pillars of the GTCI model.

The Input pillars of the GTCI are inspired by the Attract-Grow-Retain framework used by corporations to steer talent management. Multinational corporations frame talent management in these terms, defining talent management as an organisation's efforts to attract, select, develop, and retain talented employees to meet their strategic needs.[46] The GTCI focuses on efforts by countries and thus the model is fed by macroeconomic and country-level variables. **Attracting** talent, in the context of national competitiveness, should be viewed in terms of luring valuable resources from abroad, both productive businesses (through direct investment from abroad and the like) and people with needed competences (through high-skilled migration), while internal attraction is focused on removing barriers to entering the talent pool for groups such as those from underprivileged backgrounds, women, and older people. **Growing** talent has traditionally meant education, but its definition should be broadened to include apprenticeships, training, and continuous education, as well as experience or what the GTCI calls access to growth opportunities (although we may acknowledge that most skill development occurs through experience, much remains to be done to conceptualise and measure its role). The more talented the person, the wider the opportunities he or she

can find elsewhere in the world. **Retaining** talent is thus necessary to ensure sustainability, and one of the main components of retention is quality of life. In addition, the regulatory, market, and business landscapes within a country facilitate or impede talent attraction and growth; the GTCI classifies these elements as part of the **Enable** pillar. Together, Enable, Attract, Grow, and Retain constitute the four Input pillars of the GTCI model.

The GTCI attempts to offer an approach to talent competitiveness issues that is comprehensive, action-oriented, analytical, and practical. As described earlier, the GTCI is a composite index, relying on a simple but robust Input-Output model, composed of six pillars (four on the Input side and two on the Output side), as illustrated in Figure 2. The GTCI generates three main indices that are the most visible focus for analysis, namely:

1. **The talent competitiveness Input sub-index,** which is composed of four pillars describing the policies, resources, and efforts that a particular country can harness to foster its talent competitiveness. Enable (Pillar 1) reflects the extent to which the regulatory, market, and business environments create a favourable climate for talent to develop and thrive. The other three pillars describe the three levers of talent competitiveness, which focus respectively on what countries are doing to Attract (Pillar 2), Grow (Pillar 3), and Retain (Pillar 4) talent. The Input sub-index is the simple arithmetic average of the scores registered on these four pillars.

2. **The talent competitiveness Output sub-index,** which aims to describe and measure the quality of talent in a country that results from the above policies, resources, and efforts. It is composed of two pillars, describing the current situation of a particular country in terms of Vocational and Technical Skills (Pillar 5) and Global Knowledge Skills (Pillar 6). The Output sub-index is the simple arithmetic average of the scores obtained on these two pillars.

3. **The Global Talent Competitiveness Index (GTCI),** which is computed as the simple arithmetic average of the scores registered on each of the six pillars described above.

The GTCI model has been refined in this 2017 edition with respect to the 2015–16 edition. In particular, the model now includes an 'Employability' sub-pillar under the Vocational and Technical Skills pillar on the Output side that measures the extent of skill gaps and labour market mismatches in each country. The variables included in this sub-pillar have been tested for coverage, consistency, and explanatory power. The total number of variables in this year's model has increased from 61 to 65. Country coverage has increased from 109 to 118 countries, representing 97.3% of the world's GDP and about 88.7% of its population. The audit carried out by the Joint Research Centre (JRC) of the European Commission (see Chapter 7) has confirmed that the changes introduced in the model have improved its accuracy, while maintaining its solidity and robustness.[47] Further details on the variable definitions and the method of calculation can be found in the Sources and Definitions and Technical Notes sections in the Appendices. Improvements will continue to be made to the GTCI model in the future, based on further discussions with academics and business and government leaders, as well as feedback from users of the GTCI.

GLOBAL TALENT COMPETITIVENESS INDEX 2017: MAIN FINDINGS

The top positions in the ranking of GTCI scores continue to be dominated by developed, high-income countries (see Table 1 on pages 13–15) and there is a high correlation between GDP per capita and GTCI scores (see Figure 3 on pages 16–17). The Statistical Annex to this chapter presents more detailed information on country performance for the different sub-pillars and variables. European countries continue to dominate the GTCI rankings, with 16 of them in the top 25. Switzerland maintains its position at the top, followed by Singapore. This year the GTCI sees three non-European countries make up the top 10, led by Singapore, the United States, and Australia. If we consider the top 25, six additional non-European countries make the grade: Canada, New Zealand, the United Arab Emirates, Qatar, Japan, and Israel. Seven key messages emerge from our analysis of technology and talent.

Key Messages

Message 1: Think beyond automation. In terms of its net effect on employment, technological innovation is likely to require new technical and vocational skills, while many unskilled jobs will continue to be automated, basically through the replacement of humans by robots and algorithms empowered by big data. But to manage the implications of digitalisation in a comprehensive way, decision-makers (private and public) need to think 'beyond automation'. This involves recognising the profound transformation of social systems that are underway—changes in organisation (connectivity, less reliance on authority, and a management focus on outputs rather than inputs—on what people deliver rather than where and how they do it), in careers (multiple careers during a person's life), and in the educational and employment systems that, in many if not most countries, are still founded on a fast-fading 20th century factory model.

Message 2: Technology is changing the nature of work. Propelled by cost reduction and innovation, technology is changing many aspects of work. It allows people with specialised skills to deliver on tasks, to collaborate, and even to engage in innovative co-creation—all without the umbrella (and constraints) of a physical workplace or employment contract. Organisations and societies are moving from an environment in which work was based on employment (salaries) to one where nearly 30% of the population in Europe and the United States are to a greater or lesser degree free agents. This new environment is having an enormous impact on legal, regulatory, fiscal, and social frameworks. The talent strategies of both employers and agents (formerly thought of as employees) need to adapt—there is also a need to rethink the process-heavy approach of corporations to human resource management, with more emphasis on facilitating individuals to help themselves. Organisations in the new economy need to manage talent differently.

Message 3: Technical skills PLUS social/project competence is the new talent profile. Although there will be many opportunities for people with digital skills, technical skills must be complemented with social and project skills to meet the needs of the highly connected new economy where innovation comes increasingly from collaboration and co-creation.

Message 4: Educational and employment policies must adapt to the transformational changes of the fourth industrial revolution. There is a profound mismatch between, on the one hand, our educational systems that typically do a fair job of forming routine workers and professionals, and on the other hand the requirements of our emerging technology-driven society where machines are taking over routine jobs. Educational systems need to produce talent with technical skills AND the ability to collaborate with others from different disciplines. They need to foster a sense of personal vocation AND flexibility or learning agility. Employment policies need to combine labour market flexibility with social protection and above all active labour market policies that facilitate mobility, retraining, entrepreneurship, and adjustment to market needs—since those market needs will continually change in the future. Employment policies also need to be adapted to a world where many people are free agents rather than employees.

Message 5: Successful transformational change is most likely to occur where there are strong ecosystems. Addressing the societal impact of digitalisation and automation requires close connectedness and collaboration between stakeholders such as government/municipalities, business, and educational institutions. This is particularly true because of the velocity of the changes associated with Industry 4.0. Such collaborative ecosystems are more likely to be found in cities and regions (or smaller countries that are either city-states or that display a cohesive heritage) than in large countries. Although the country remains important, since educational and employment policy frameworks are set at the country level, we expect to see leading examples of successful adjustment to technology at the city level, especially within large countries that are committed to digitalisation such as the United States and China.

Message 6: National strategies have started to reflect such changes, but too slowly. At the outset of the knowledge revolution 35 years ago, Peter Drucker noted that '*the greatest danger in times of turbulence is not the turbulence—it is to act with yesterday's logic*'. The GTCI analysis of 118 countries shows that some countries are exposing their populations to risk by looking backwards rather than forwards. Based on an assessment of talent readiness for technology, GTCI finds that nine countries are particularly well positioned. Listed in order of their GTCI ranking, these are Switzerland, Singapore, the United Kingdom, Denmark, the Netherlands, Ireland, Canada, New Zealand, and the United Arab Emirates.[48] From a regional perspective, Singapore is Asia's clear leader, while Malaysia demonstrates stronger talent readiness for technology than the Republic of Korea (South Korea), though the technological infrastructure of the latter is superior; China is in a reasonably robust position on talent readiness for technology, closely followed by Viet Nam. Elsewhere, Chile leads in Latin America while Botswana leads in Africa.

Message 7: Cities and regions are showing the way. For individuals as for companies, the 'talent location' equation is now less and less focused on 'to which country to go'—locations are increasingly envisaged and compared with a specific city in mind. Physical infrastructure (such as airports or highways) continues to matter for cities that want to be seen as global hubs, but soft infrastructure (such as internet broadband connectivity) is of growing importance as more services can be delivered online. The expansion of global information networks is allowing all kinds of talents to export and/or transport themselves to attractive cities, combining a high quality of living with good career prospects. In this new landscape, cities and regions around the world are becoming increasingly active in developing their own strategies to attract, grow, and retain talent. Hence it is to be expected that, in the near future, some of the best and most innovative talent competitiveness practices will come from cities.

Table 1

Global Talent Competitiveness Index 2017 rankings

COUNTRY	SCORE	OVERALL RANK	INCOME GROUP	REGIONAL GROUP	REGIONAL GROUP RANK
Switzerland	74.55	1	High income	Europe	1
Singapore	74.09	2	High income	Eastern, Southeastern Asia and Oceania	1
United Kingdom	69.40	3	High income	Europe	2
United States of America	69.34	4	High income	Northern America	1
Sweden	69.14	5	High income	Europe	3
Australia	69.06	6	High income	Eastern, Southeastern Asia and Oceania	2
Luxembourg	68.66	7	High income	Europe	4
Denmark	68.59	8	High income	Europe	5
Finland	68.56	9	High income	Europe	6
Norway	68.01	10	High income	Europe	7
Netherlands	67.80	11	High income	Europe	8
Ireland	67.58	12	High income	Europe	9
Canada	67.16	13	High income	Northern America	2
New Zealand	67.15	14	High income	Eastern, Southeastern Asia and Oceania	3
Iceland	65.79	15	High income	Europe	10
Belgium	65.24	16	High income	Europe	11
Germany	64.94	17	High income	Europe	12
Austria	63.70	18	High income	Europe	13
United Arab Emirates	62.49	19	High income	Northern Africa and Western Asia	1
Estonia	61.72	20	High income	Europe	14
Qatar	61.09	21	High income	Northern Africa and Western Asia	2
Japan	60.72	22	High income	Eastern, Southeastern Asia and Oceania	4
Czech Republic	60.17	23	High income	Europe	15
France	59.93	24	High income	Europe	16
Israel	58.53	25	High income	Northern Africa and Western Asia	3
Malta	57.43	26	High income	Europe	17
Slovenia	56.41	27	High income	Europe	18
Malaysia	56.22	28	Upper-middle income	Eastern, Southeastern Asia and Oceania	5
Korea, Rep.	55.89	29	High income	Eastern, Southeastern Asia and Oceania	6
Cyprus	55.70	30	High income	Northern Africa and Western Asia	4
Portugal	55.40	31	High income	Europe	19
Latvia	54.50	32	High income	Europe	20
Lithuania	54.42	33	High income	Europe	21
Chile	54.11	34	High income	Latin, Central America and the Caribbean	1
Spain	53.90	35	High income	Europe	22
Barbados	53.53	36	High income	Latin, Central America and the Caribbean	2
Slovakia	52.87	37	High income	Europe	23
Poland	52.32	38	High income	Europe	24
Costa Rica	52.14	39	Upper-middle income	Latin, Central America and the Caribbean	3
Italy	51.51	40	High income	Europe	25
Hungary	51.27	41	High income	Europe	26
Saudi Arabia	50.36	42	High income	Northern Africa and Western Asia	5
Greece	50.21	43	High income	Europe	27
Montenegro	49.72	44	Upper-middle income	Europe	28
Croatia	49.22	45	High income	Europe	29

(continued on next page)

Table 1 *(continued)*

Global Talent Competitiveness Index 2017 rankings

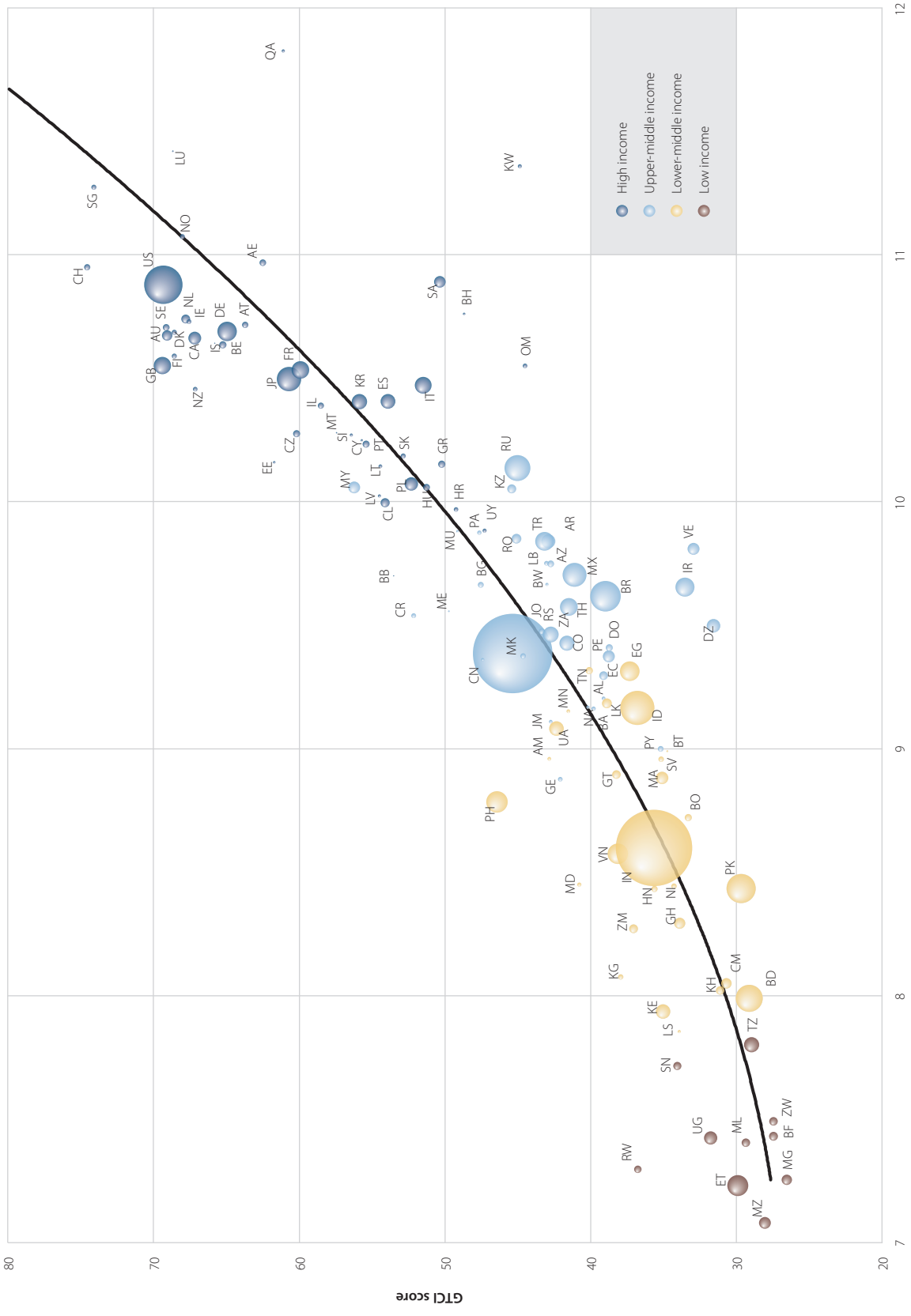
COUNTRY	SCORE	OVERALL RANK	INCOME GROUP	REGIONAL GROUP	REGIONAL GROUP RANK
Mauritius	49.15	46	Upper-middle income	Sub-Saharan Africa	1
Bahrain	48.70	47	High income	Northern Africa and Western Asia	6
Panama	47.63	48	Upper-middle income	Latin, Central America and the Caribbean	4
Bulgaria	47.56	49	Upper-middle income	Europe	30
Macedonia, FYR	47.42	50	Upper-middle income	Europe	31
Uruguay	47.28	51	High income	Latin, Central America and the Caribbean	5
Philippines	46.42	52	Lower-middle income	Eastern, Southeastern Asia and Oceania	7
Kazakhstan	45.43	53	Upper-middle income	Central and Southern Asia	1
China	45.34	54	Upper-middle income	Eastern, Southeastern Asia and Oceania	8
Romania	45.09	55	Upper-middle income	Europe	32
Russian Federation	45.03	56	Upper-middle income	Europe	33
Kuwait	44.86	57	High income	Northern Africa and Western Asia	7
Jordan	44.64	58	Upper-middle income	Northern Africa and Western Asia	8
Oman	44.51	59	High income	Northern Africa and Western Asia	9
Serbia	43.38	60	Upper-middle income	Europe	34
Turkey	43.16	61	Upper-middle income	Northern Africa and Western Asia	10
Lebanon	43.02	62	Upper-middle income	Northern Africa and Western Asia	11
Botswana	43.00	63	Upper-middle income	Sub-Saharan Africa	2
Argentina	42.89	64	Upper-middle income	Latin, Central America and the Caribbean	6
Armenia	42.84	65	Lower-middle income	Northern Africa and Western Asia	12
Azerbaijan	42.76	66	Upper-middle income	Northern Africa and Western Asia	13
South Africa	42.75	67	Upper-middle income	Sub-Saharan Africa	3
Jamaica	42.74	68	Upper-middle income	Latin, Central America and the Caribbean	7
Ukraine	42.34	69	Lower-middle income	Europe	35
Georgia	42.10	70	Upper-middle income	Northern Africa and Western Asia	14
Colombia	41.63	71	Upper-middle income	Latin, Central America and the Caribbean	8
Mongolia	41.53	72	Lower-middle income	Eastern, Southeastern Asia and Oceania	9
Thailand	41.50	73	Upper-middle income	Eastern, Southeastern Asia and Oceania	10
Mexico	41.11	74	Upper-middle income	Latin, Central America and the Caribbean	9
Moldova, Rep.	40.79	75	Lower-middle income	Europe	36
Namibia	40.20	76	Upper-middle income	Sub-Saharan Africa	4
Tunisia	40.09	77	Lower-middle income	Northern Africa and Western Asia	15
Bosnia and Herzegovina	39.81	78	Upper-middle income	Europe	37
Ecuador	39.13	79	Upper-middle income	Latin, Central America and the Caribbean	10
Albania	39.12	80	Upper-middle income	Europe	38
Brazil	38.99	81	Upper-middle income	Latin, Central America and the Caribbean	11
Sri Lanka	38.88	82	Lower-middle income	Central and Southern Asia	2
Peru	38.76	83	Upper-middle income	Latin, Central America and the Caribbean	12
Dominican Republic	38.73	84	Upper-middle income	Latin, Central America and the Caribbean	13
Guatemala	38.22	85	Lower-middle income	Latin, Central America and the Caribbean	14
Viet Nam	38.13	86	Lower-middle income	Eastern, Southeastern Asia and Oceania	11
Kyrgyzstan	37.94	87	Lower-middle income	Central and Southern Asia	3
Egypt	37.33	88	Lower-middle income	Northern Africa and Western Asia	16
Zambia	37.05	89	Lower-middle income	Sub-Saharan Africa	5
Indonesia	36.81	90	Lower-middle income	Eastern, Southeastern Asia and Oceania	12

Table 1 *(continued)*

Global Talent Competitiveness Index 2017 rankings

COUNTRY	SCORE	OVERALL RANK	INCOME GROUP	REGIONAL GROUP	REGIONAL GROUP RANK
Rwanda	36.76	91	Low income	Sub-Saharan Africa	6
India	35.65	92	Lower-middle income	Central and Southern Asia	4
Honduras	35.62	93	Lower-middle income	Latin, Central America and the Caribbean	15
Paraguay	35.19	94	Upper-middle income	Latin, Central America and the Caribbean	16
El Salvador	35.17	95	Lower-middle income	Latin, Central America and the Caribbean	17
Morocco	35.09	96	Lower-middle income	Northern Africa and Western Asia	17
Kenya	35.02	97	Lower-middle income	Sub-Saharan Africa	7
Bhutan	34.74	98	Lower-middle income	Central and Southern Asia	5
Nicaragua	34.29	99	Lower-middle income	Latin, Central America and the Caribbean	18
Senegal	34.07	100	Low income	Sub-Saharan Africa	8
Lesotho	33.92	101	Lower-middle income	Sub-Saharan Africa	9
Ghana	33.89	102	Lower-middle income	Sub-Saharan Africa	10
Iran, Islamic Rep.	33.54	103	Upper-middle income	Central and Southern Asia	6
Bolivia, Plurinational St.	33.29	104	Lower-middle income	Latin, Central America and the Caribbean	19
Venezuela, Bolivarian Rep.	32.94	105	Upper-middle income	Latin, Central America and the Caribbean	20
Uganda	31.75	106	Low income	Sub-Saharan Africa	11
Algeria	31.57	107	Upper-middle income	Northern Africa and Western Asia	18
Cambodia	31.10	108	Lower-middle income	Eastern, Southeastern Asia and Oceania	13
Cameroon	30.68	109	Lower-middle income	Sub-Saharan Africa	12
Ethiopia	29.90	110	Low income	Sub-Saharan Africa	13
Pakistan	29.67	111	Lower-middle income	Central and Southern Asia	7
Mali	29.36	112	Low income	Sub-Saharan Africa	14
Bangladesh	29.12	113	Lower-middle income	Central and Southern Asia	8
Tanzania, United Rep.	28.95	114	Low income	Sub-Saharan Africa	15
Mozambique	28.06	115	Low income	Sub-Saharan Africa	16
Zimbabwe	27.45	116	Low income	Sub-Saharan Africa	17
Burkina Faso	27.45	117	Low income	Sub-Saharan Africa	18
Madagascar	26.55	118	Low income	Sub-Saharan Africa	19

Figure 3
GTCI scores versus GDP per capita



Note: GDP per capita in PPP$ and population data (represented by the size of the bubbles) are drawn from the World Bank's World Development Indicators database. The trend line is a polynomial of degree two ($R^2 = 0.77$).

Figure 3 *(continued)*

GTCI scores versus GDP per capita: ISO-2 country codes

CODE	COUNTRY
AE	United Arab Emirates
AT	Austria
AU	Australia
BB	Barbados
BE	Belgium
BH	Bahrain
CA	Canada
CH	Switzerland
CL	Chile
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
ES	Spain
FI	Finland
FR	France
GB	United Kingdom
GR	Greece
HR	Croatia
HU	Hungary
IE	Ireland
IL	Israel
IS	Iceland
IT	Italy
JP	Japan
KR	Korea, Rep.
KW	Kuwait
LT	Lithuania
LU	Luxembourg

CODE	COUNTRY
LV	Latvia
MT	Malta
NL	Netherlands
NO	Norway
NZ	New Zealand
OM	Oman
PL	Poland
PT	Portugal
QA	Qatar
SA	Saudi Arabia
SE	Sweden
SG	Singapore
SI	Slovenia
SK	Slovakia
US	United States of America
UY	Uruguay
AL	Albania
AR	Argentina
AZ	Azerbaijan
BA	Bosnia and Herzegovina
BG	Bulgaria
BR	Brazil
BW	Botswana
CN	China
CO	Colombia
CR	Costa Rica
DO	Dominican Republic
DZ	Algeria
EC	Ecuador
GE	Georgia

CODE	COUNTRY
IR	Iran, Islamic Rep.
JM	Jamaica
JO	Jordan
KZ	Kazakhstan
LB	Lebanon
ME	Montenegro
MK	Macedonia, FYR
MU	Mauritius
MX	Mexico
MY	Malaysia
NA	Namibia
PA	Panama
PE	Peru
PY	Paraguay
RO	Romania
RS	Serbia
RU	Russian Federation
TH	Thailand
TR	Turkey
VE	Venezuela, Bolivarian Rep.
ZA	South Africa
AM	Armenia
BD	Bangladesh
BO	Bolivia, Plurinational St.
BT	Bhutan
CM	Cameroon
EG	Egypt
GH	Ghana
GT	Guatemala
HN	Honduras

CODE	COUNTRY
ID	Indonesia
IN	India
KE	Kenya
KG	Kyrgyzstan
KH	Cambodia
LK	Sri Lanka
LS	Lesotho
MA	Morocco
MD	Moldova, Rep.
MN	Mongolia
NI	Nicaragua
PH	Philippines
PK	Pakistan
SV	El Salvador
TN	Tunisia
UA	Ukraine
VN	Viet Nam
ZM	Zambia
BF	Burkina Faso
ET	Ethiopia
MG	Madagascar
ML	Mali
MZ	Mozambique
RW	Rwanda
SN	Senegal
TZ	Tanzania, United Rep.
UG	Uganda
ZW	Zimbabwe

ENDNOTES

1 The expression *Industry 4.0* was coined by the German government in 2011 to capture the digitalisation of manufacturing and smart, data-driven production, and it was used as the logo that year for the Hannover Fair. The term is now widely used to denote the Fourth Industrial Revolution of robotics, big data, and artificial intelligence. The other three industrial revolutions were those of mechanisation, mass production and computerisation. Schwab (2016) gives three reasons why today's transformation represents more than a prolongation of the Third Industrial Revolution but rather the arrival of a Fourth and distinct one: the velocity of change, the reach of such changes (disrupting almost every industry in every country) and the scope of transformations (disrupting entire systems of production, management and governance).

2 In order to analyse the types of jobs most affected by technology and automation, research often categorises jobs as cognitive or manual and, more importantly, as routine or non-routine (e.g., Autor et al., 2003; Brynjolfsson & McAfee, 2014). The routine jobs—both cognitive (say, payroll clerk) and manual (say, assembly line worker)—are being automated faster than the non-routine ones; and this applies to both cognitive (say, financial analyst) and manual tasks (chambermaid). In the occupational statistics, the share of non-routine analytical and interactive job tasks (which require expert thinking and complex communication skills) is increasing. In the United States, this share has been increasing steadily since 1960, while the share of routine cognitive and manual tasks began to decline in the early 1970s, coinciding with the introduction of computers and automated production processes (Autor & Price, 2013). In general, jobs that involve originality, social intelligence, and interaction with complex objects in unstructured environments are less likely to become automated (Deming 2015).

3 Forbes and Associated Press use software designed by artificial intelligence specialists to computerise the production of certain types of articles (alongside their traditional journalists).

4 See, for instance, the estimation presented in the report *Technology at work v2.0: The future Is not what it used to be,* produced by Oxford Martin School at Oxford University and Citi Global Perspectives & Solutions (2016).

5 See Marcolin et al. (2016).

6 This is discussed in the *Wall Street Journal* article, America's dazzling Tech Boom has a downside: Not enough jobs, 12 October 2016.

7 Mortimer (1772, p. 72).

8 The 'lump of labour fallacy' is described in Autor (2014).

9 Three-quarters of all industrial robots operate in four sectors: computers and electronic goods, home appliances and components, transportation equipment, and machinery (see http://www.ft.com/cms/s/0/dd793a7c-2c92-11e6-a18d-a96ab29e3c95.html#axzz4AsrFoY2s).

10 Harnessing the full growth potential of digital technology is thus predicated not just on investments in skills and infrastructure but also on reforming regulatory barriers by overcoming vested interests in order to encourage all firms to compete by investing in these new technologies. See World Bank (2016).

11 See Lorentz et al. (2015).

12 Autor et al. (2003) were among the first to study how computerisation alters job skill demands. On the one hand, digitalisation can substitute for workers in performing cognitive and manual tasks that can be accomplished by following explicit rules; on the other hand, it complements workers in performing non-routine problem-solving and complex communications tasks. Therefore, their model implies measurable changes in the composition of job tasks. Computerisation is associated with reduced labour input on routine tasks, whether they are manual or cognitive, and increased labor input of nonroutine cognitive tasks (Autor & Price, 2013).

13 The polarisation of jobs has been well documented for the US economy (see Autor et al., 2006; Autor & Dorn, 2013). Technology is partly responsible. Advances in ICTs have directly changed job demands in US workplaces while simultaneously facilitating the globalisation of production by making it increasingly feasible and cost-effective for firms to source, monitor, and coordinate complex production processes at disparate locations worldwide. The globalisation of production has in turn increased competitive conditions for US manufacturers and US workers, eroding employment at unionised establishments and decreasing the capability of unions to negotiate favourable contracts, attract new members, and penetrate new establishments. Autor (2015) predicts that that employment polarisation will not continue indefinitely, even in the context of rampant automation. A significant stratum of middle-skill jobs combining specific vocational skills with foundational middle-skills levels of literacy, numeracy, adaptability, problem solving, and common sense will persist in coming decades.

14 There is also the challenge of how to distribute the gains of technology between capital and labour. American tech workers are getting a smaller piece of the economic pie created from what they produce. As of 2014, employee compensation in computer and electronic-parts making was equal to 49% of the value of the industry's output, down from 79% in 1999, according to the US Commerce Department (see America's dazzling Tech Boom has a downside: Not enough jobs, *Wall Street Journal,* 12 October 2016).

15 See, for instance, Hidalgo (2015).

16 Take, for example, the financial services sector that is visibly in the upheaval of this transformation. Financial technology, known as *Fintech,* is a new economic industry consisting of smaller players that use technology to make financial services more efficient, upsetting the established banks and insurance companies. Mobile payment systems are at the heart of the new economy, in Kenya and India as well as Denmark and the United States. Person-to-person lending upsets retail banking, while crowdfunding encroaches on corporate banking. Nimble new players are able to access cloud computing and vast amounts of data to rival big incumbents in the provision of many services, including payments, investment management, and lending, among others. And they do that while remaining 'light' in terms of the infrastructure they need. Those firms that have the talent to make sense of all the data surrounding their competitive environment and convert it into actionable information will have the edge.

17 In several chapters of the present report, attention is given to some of the labour market frameworks and policies that appear to work well.

18 The modern era of globalisation started in the 1970s with the 'unbundling' of goods that were entirely domestically produced, when parts of the value chain were offshored. It then intensified in the 1980s when production stages that were originally housed in a single factory were dispersed across borders. Globalisation is not a linear process. Interdependence across borders is co-determined by many processes that evolve, and technological change is one of them. Technology and globalisation cannot be discussed in isolation. Firms are increasingly integrated with other firms, customers, suppliers, governments, and organisations in other locations, thereby creating a multi-level and multi-dimensional arena of cooperation and interdependence. New technologies and practices are more easily introduced across borders in an interdependent world.

19 See America's dazzling Tech Boom has a downside: Not enough jobs, *Wall Street Journal,* 12 October 2016, using data from the US Labor Department statistics.

20 Twentieth century trade involved the selling of goods made in factories in one nation to customers in another. Twenty-first century trade involves continuous, two-way flows of things, people, training, investment, and information that used to take place within factories and offices in one country. Advances in telecommunications and information technology have made global value chains in goods possible by allowing for the segmentation of production into units that can be dispersed geographically and yet remain connected. Services inputs such as transport, telecoms, logistics, distribution, marketing, and design provide the 'link' or the 'glue' at each point of the value chain, without which a finished product could not be realised.

21 World Economic Forum (2012), *The shifting geography of global value chains: Implications for developing countries and trade policy,* Geneva: WEF Global Agenda Council on the Global Trade System.

22 These trends mirror those occurring in the world of work, where we no longer think about jobs but about tasks. At the micro level, tasks are being performed by the most competent people and teams, no matter their job or position within the organisation chart. At the macro level of countries, tasks are being performed by the countries that have a comparative advantage at different stages of the value chain.

23 See http://www.ft.com/cms/s/0/7eaffc5a-289c-11e6-8b18-91555f2f4fde.html#axzz4LMb5cDoZ

24 The next generation of miniaturised, complex products with short life-cycles will require a level of assembly adaptability, precision, and reliability that exceeds human capabilities.

25 The benefits of international technology diffusion can be achieved only with the presence of modern institutional and governance structures, and innovation systems that facilitate absorptive capacity. See Fu et al. (2011).

26 While inequality is rising within most countries, notably the high-income ones, global inequality of incomes (i.e., across countries) has been falling, particularly since 2000 (Milanovic, 2016). The economic surges of China, India, and some other nations have been among the most egalitarian developments in history.

27 See Fu et al. (2011).

28 Although the economics of automated manufacturing close to the consumer may be clear for high value added and fashionable goods, it may still favour production in low-cost countries for goods that are staples.

29 These technologies facilitate monitoring, controlling, tracking, and the like, moving to 'smart production'.

30 Yet country differences in the adoption of digital technologies still persist. For example, the share of firms using online banking would be below 20% in several middle-income countries, but more than 80% in others (World Bank, 2016). The World Bank provides many other examples: the share of retail firms that sell their products online varies substantially across Latin American countries with a similar GDP per capita.

31 The internet is encouraging more cross-border exchanges of goods and services, allowing consumers and firms to bypass national borders. But cross-border issues—such as barriers to data flows and uncoordinated regimes for intellectual property rights—are impairing the growth of internet firms and robbing consumers of gains from increased digital trade. This has also meant that many start-ups from smaller countries with relatively modest domestic markets, particularly in Europe, are moving their businesses to the United States as soon as they achieve a certain scale (World Bank, 2016).

32 See Baldwin (2011).

33 See World Bank (2016).

34 See Mokyr et al. (2015).

35 Economic projections point to a need for approximately 1 million more STEM professionals than the United States will produce at the current rate over the next decade if that country is to retain its historical preeminence in science and technology. See http://www.bls.gov/opub/mlr/2015/article/stem-crisis-or-stem-surplus-yes-and-yes.htm

36 See Lewin et al. (2009).

37 See http://gelookahead.economist.com/clusters-of-excellence/

38 The internet can also facilitate market entry. Internet firms can start and scale up quickly with relatively little staffing or capital investment. Cloud computing—the leasing of computing and data storage services—reduces start-up costs and allows firms to add capacity as the need arises, which also reduces risk to investors.

39 The black swan theory, or theory of black swan events, is a metaphor that describes an event that comes as a surprise, has a major effect, and is often inappropriately rationalised after the fact with the benefit of hindsight; the theory was developed by Nassim Nicholas Taleb (2007).

40 According to the World Economic Forum, soft-connectivity factors include: technological innovation and diffusion (in government, in business, and through public-private linkages); education and training systems; innovative ecosystems involving small and medium-sized enterprises; entrepreneurial culture; hubs for intellectual property, including data storage; 'liveability'—quality-of-life factors—to attract and retain talent; relationships that foster trust and affinity leading to commercial and financial interactions; and an 'open society' where ideas flow. See World Economic Forum (2016).

41 See Venables (2001).

42 The internet makes it easier for headquarters to transmit information, supervise their factories, and coordinate the supply chain across borders, encouraging firms to outsource not only manufacturing but also service tasks.

43 See Leamer & Storper (2001).

44 For example, the Heidrick & Struggles' Global Talent Index and, more recently, the World Economic Forum's Human Capital Index.

45 INSEAD built on its expertise and experience in developing two other global indices, now widely recognised by the international community, respectively in the domain of information technology (the *Global Information Technology Report*'s Networked Readiness Index, now in its 16th year of existence), and innovation (the Global Innovation Index, or GII, whose 9th annual edition was launched in August 2016). For additional details, see INSEAD's Global Indices page (http://global-indices.insead.edu).

46 See Cappelli & Keller (2014); Stahl et al. (2012).

47 The method and results of this audit are the subject of Chapter 7 in this report.

48 This assessment was based on measures of (1) the readiness for technology of the educational system, (2) the readiness of the employment system, (3) the connectedness of stakeholders, and (4) seven technological competences (see Chapter 6 in this report for details).

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Statistical Annex to Chapter 1

OVERVIEW

The statistics in this section analyse country performance in the GTCI 2017 in terms of the overall score and also in terms of its pillars and sub-pillars. Performance data are broken down in different ways: by top performers (the top 15 GTCI score leaders) and by region and income-group country categories (high, upper-middle, lower-middle, and low income).[1]

Figure 1 presents the dispersion of GTCI scores by income group and region. Regarding the former, although scores are widely dispersed among high-income countries, even the group's poor performers are well above countries in the other income groups (the worst performer of the high-income group is above the median of countries in the upper-middle-income group). Regarding regions, the performance of countries in Eastern, Southeastern Asia and Oceania is very heterogeneous. Europe also shows a large heterogeneity, with large performance differences between the top (Switzerland) and the bottom (Albania).

European countries continue to lead the GTCI rankings, with 16 of them in the top 25. Switzerland maintains its position at the top, and this year the index sees three non-European countries make up the top 10, led by Singapore (2nd), the United States (4th), and Australia (6th). If we consider the top 25, six additional non-European countries make the grade: Canada (13th), New Zealand (14th), the United Arab Emirates (19th), Qatar (21st), Japan (22nd), and Israel (25th).

The non-European leaders of the GTCI ranking can be broadly classified into two groups: economies that have long had favourable immigration policies (the United States, Canada, Australia, New Zealand, and Israel), and economies that have a clear focus on becoming 'talent hubs' (Singapore, the United Arab Emirates, and Qatar).

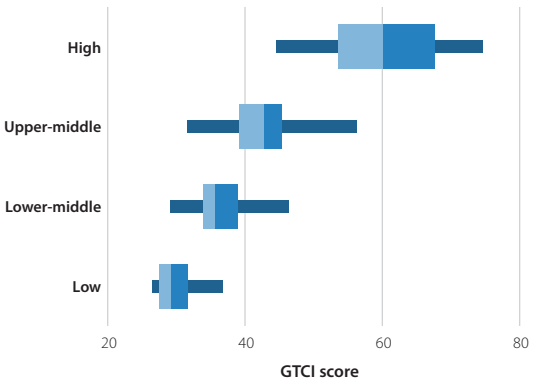
The large differences across countries in GTCI scores are driven by differences in performance in particular pillars. Countries differ substantially in the Retain pillar whereas they are more similar in the Grow pillar (see Figure 2). In other words, the performance of countries in retaining talents differs much more than their capacity in growing them.

The heatmap of Figure 3 on page 24 presents the overall rankings in the GTCI and those of each pillar, coloured by the quartile to which the rankings of each of the 118 countries belong. The 29 countries that make up the top 25% of the overall GTCI scores (the fourth quartile) are shown in the darkest shade

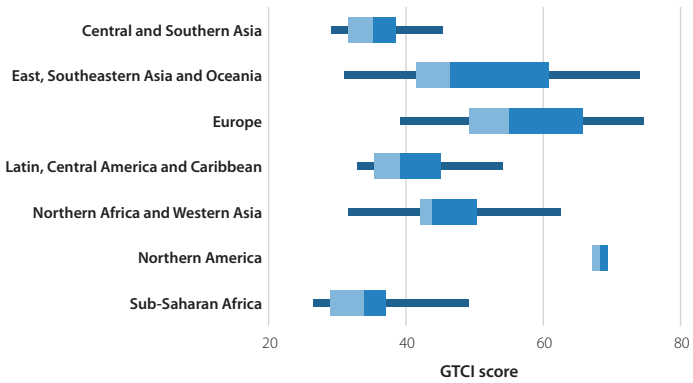
Figure 1

Country dispersion of GTCI scores

By income group



By region



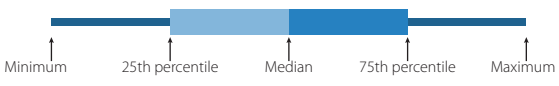
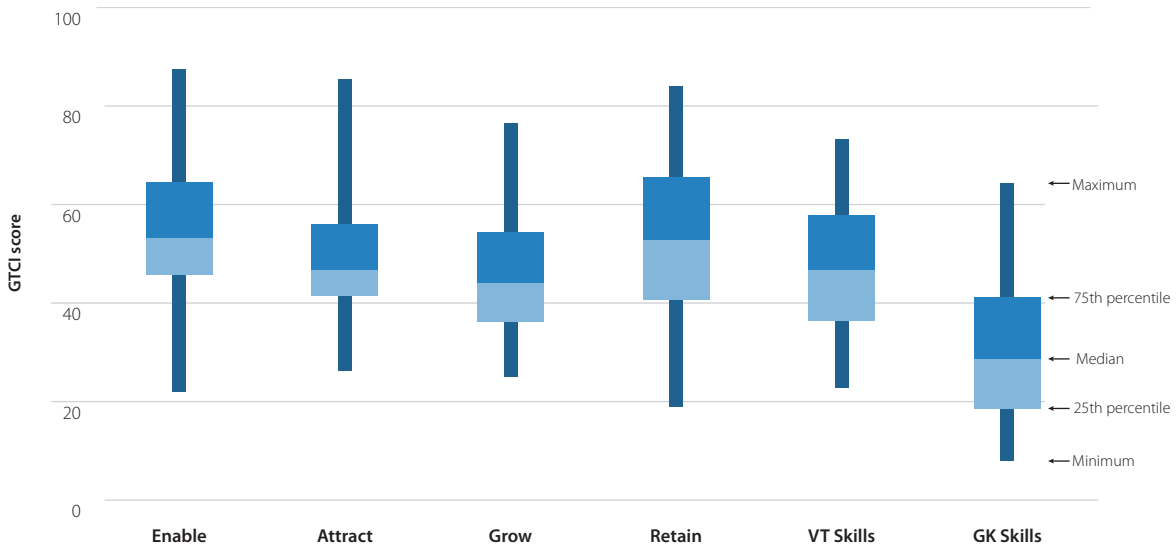


Figure 2
Dispersion of country scores for each pillar



Note: GK Skills = Global Knowledge Skills; VT Skills = Vocational and Technical Skills.

and clearly dominate many of the pillars, particularly Enable (with the exception of France, which ranks 34th in this pillar, and Slovenia, at 42nd) and Retain. This figure also shows that one pillar where the top GTCI performers do not clearly dominate is Vocational and Technical Skills (VT Skills).

TOP 15 COUNTRIES IN THE GTCI 2017

In general, countries within the top 15 in overall GTCI score show a strong performance in each of the six pillars of the GTCI model. Some high-performing countries just outside the top 15 lead in some pillars. Germany (17th overall) is the leader in Vocational and Technical Skills, and the Czech Republic (23rd) consistently ranks highly in this domain. The United Arab Emirates (19th) and Qatar (21st) are strong magnets of talent, as shown by their high rankings in the Attract pillar. Estonia (20th) is a top performer in Global Knowledge Skills.

Switzerland and Singapore continue to occupy the first two positions in the GTCI, as in previous editions. Switzerland excels at retaining domestically developed talent, particularly by offering an ideal economic environment in terms of its Regulatory, Market, and Business and Labour Landscapes (as shown by its ranking in the Enable pillar in Table 1). Singapore is also a leader in the Enable pillar, which facilitates the city-state in becoming the best performer in attracting talent from abroad.

Although sometimes switching positions, the group of countries that make up the top 15 is quite stable. Germany and Austria slip a few positions outside this group, while Ireland makes it into the top 15 this year. The group of countries that form the top 25 is virtually unchanged. Since few methodological changes were made to the GTCI model with respect to the 2015–16 edition, the changes in ranking from last year to this one can be considered reliable (though one should take into account the inclusion of nine new countries in the GTCI sample, mostly in middle- or lower-income groups).

Switzerland (1st) is at the top overall by virtue of its strong performance across all six pillars of the GTCI model. Switzerland performs consistently well across the Enable (2nd), Retain (1st), and Vocational and Technical Skills (3rd) pillars and their constituent sub-pillars. Performance in the Attract pillar (5th) is strong, with the country showing an excellent capacity to attract and retain global talent (5th in the External Openness sub-pillar), although the Internal Openness sub-pillar (15th) shows a relatively poorer performance—there is good social mobility (2nd), but gender equality variables such as Female graduates (83rd) and Business opportunities for women (25th) lag behind.

Singapore (2nd) is the top performer across the Enable and Attract pillars, with uniformly high scores across their underlying sub-pillars—only the variable Tolerance of immigrants shows relatively poorer performance. Two dimensions in which Singapore has room for improvement are Access to Growth Opportunities (19th) and the Innovation output variable (6.2.1).

The United Kingdom (3rd) ranks consistently around the top 10 in all pillars except Vocational and Technical Skills (33rd), which contrasts markedly with the pool of Global Knowledge Skills (2nd). The United Kingdom is an attractor of talent with its good External Openness (7th), though we shall see in the future whether Brexit alters this. This is complemented by flexible labour markets and strong sustainability to retain talent. Internal Openness (23rd), by contrast, has room for improvement—particularly in the indicators related to gender equality, which are still lagging behind.

The United States (4th) continues to stand out as a top performer in the Grow pillar (2nd), as a consequence of its high ranking in Formal Education (2nd), its leading network of universities, and also its Access to Growth Opportunities (3rd). This allows it to have an outstanding pool of Global Knowledge Skills (3rd). Although the United States is not among the countries with a large stock of migrants, at least as a percentage of the total

population, it remains a highly attractive country to immigrants, as noted in the GTCI 2015–16, since the country is one of the best performers in terms of Brain gain (6th). One dimension that requires attention is the development of Vocational and Technical Skills (20th)—although labour productivity is high, the number of people who have the skills needed to be technicians is rather small given the size of the country.

Sweden (5th) performs consistently well across all six pillars, belonging to the top 15 in each of them. In particular, Sweden excels at retaining talent (4th in the Retain pillar). With strong Formal Education and, above all, excellent access to Lifelong Learning (3rd), the country can count on a well-balanced pool of both Vocational and Technical Skills (10th) and Global Knowledge Skills (11th). Even though Sweden is not one of the top attractors of talent in terms of External Openness (28th) despite its Lifestyle advantages (3rd), it is a top country in terms of Internal Openness (2nd) with an exemplary Tolerance of minorities. One of the dimensions that shows room for improvement is the Business and Labour Landscape sub-pillar (35th)—particularly in its Labour Market Flexibility component.

Australia (6th) is one of the top countries in the Attract pillar (6th), the result of combining External Openness (8th) with good Internal Openness (11th), and in the Global Knowledge Skills pillar (5th). Formal Education (4th) is among the best in the world, although Lifelong Learning has room for improvement; Vocational and Technical Skills (25th) could also improve.

Luxembourg has slipped in the rankings from 3rd to 7th place, but remains a top country in the Attract pillar (2nd), the result of combining strong External Openness (3rd) with good Internal Openness (5th). As a small country that has built an international reputation as a centre of finance and industry, it also excels at retaining its domestic talent (3rd in this pillar). Despite the strong attraction of knowledge workers, the business environment could progress in Labour Market Flexibility (Business and Labour Landscape is 60th), reflecting the fact that over half its native population works for the state. As is often the case in a small country, Formal Education (46th) does not figure at the top, particularly in terms of the top global universities.

Denmark (8th) is a top performer in the Grow (3rd) and Enable (3rd) pillars. Formal Education (6th) is among the best in the world, as is Access to Growth Opportunities (2nd). Danish people can count on excellent personal rights and access to decision making in the workplace. All sub-pillars of Enable are strong because Denmark combines a strong Regulatory and Market Landscape (10th and 7th, respectively) with a flexible labour market that does not neglect social protection. Both Attract and Retain belong to the top 15 but there is still room to advance, given the excellent economic environment of the country.

Finland (9th) is the best in Formal Education (1st). The country ranks highly in the Grow pillar (4th) as a consequence, even though Lifelong Learning and Access to Growth Opportunities are not in the top 10. Although the pool of Global Knowledge Skills (18th) can still be improved, the educational system is one of the world's best at matching the skills of people with the needs of the economy (it is ranked 1st in the Employability sub-pillar). The Enable pillar (6th) is also solid, led by a very strong Regulatory Landscape (2nd). Although Finland exhibits robust Internal Openness (4th), with high Tolerance of minorities and strong Social mobility, External Openness (40th) is not among the best and the country can still do much more to attract global talent.

Table 1

Countries with highest scores, by pillar

PILLAR	TOP RANKING COUNTRIES
Enable	Singapore, Switzerland, Denmark
Attract	Singapore, Luxembourg, Qatar
Grow	Netherlands, United States, Denmark
Retain	Switzerland, Norway, Luxembourg
Vocational and Technical Skills	Germany, Finland, Switzerland
Global Knowledge Skills	Singapore, United Kingdom, United States

Norway (10th) shows a pattern similar to that of other Nordic countries: strong in Formal Education (11th) and indeed across the Grow pillar (10th), and with an enviable Lifestyle (4th). This helps to retain some of the best domestic talent (Norway ranks 2nd in the Retain pillar). However, it is not among the top countries for attracting foreign talent, as shown by its performance in External Openness (30th). Nonetheless, Norway offers wide-ranging opportunities to its own citizens by performing in an exemplary way in terms of Internal Openness (3rd)—its Social Diversity and Gender Equality indicators rank among the best in the world. Even though Norway can count on an excellent Regulatory Landscape (3rd), it has room for improvement in its Business and Labour Landscape, with challenges in terms of Labour Market Flexibility. In general, Norway relies on a solid pool of Vocational and Technical Skills (6th) but it still can advance its Global Knowledge Skills (22nd).

The Netherlands (11th) is the world's top country in the Grow pillar (1st). This is the result of a strong combination of Formal Education (3rd), Lifelong Learning (7th), and Access to Growth Opportunities (1st). The Netherlands falls just short of the top 10 because, even though the country displays a fairly balanced and consistent performance on the Enable (15th), Attract (17th), and Retain (13th) pillars, its rankings in these are slightly behind the top countries. Similarly, the pools of Vocational and Technical Skills and Global Knowledge Skills are strong but slightly behind the top countries (11th and 15th, respectively). Another dimension for which the Netherlands can still improve is the Business and Labour Landscape (43rd)—particularly in terms of Labour Market Flexibility (where, as mentioned above, Denmark is a European model).

Ireland (12th) is a top 10 country in the Enable (10th) and Attract (9th) pillars. This is reflected in its leading position in FDI and technology transfer and its good ability to attract foreign talent (8th in Brain gain). In the Grow pillar, Ireland is a top performer in Lifelong Learning (5th) but still has room to improve in Formal Education (31st). The country's pools of Vocational and Technical Skills and Global Knowledge Skills are well balanced, but it could improve at retaining its domestic talent (20th in the Retain pillar).

Canada (13th) ranks among the top 10 in the Enable (7th) and Attract (7th) pillars. Regarding the former, the country

Figure 3

Heatmap: Rankings on GTCI overall and by pillar

COUNTRY	GTCI RANKING	ENABLE	ATTRACT	GROW	RETAIN	VT SKILLS	GK SKILLS
Countries ABOVE the median in the overall GTCI score							
Switzerland	1	2	5	5	1	3	7
Singapore	2	1	1	13	7	8	1
United Kingdom	3	8	11	7	5	33	2
United States of America	4	11	16	2	8	20	3
Sweden	5	9	13	8	4	10	11
Australia	6	17	6	9	14	25	5
Luxembourg	7	21	2	17	3	24	12
Denmark	8	3	15	3	15	17	14
Finland	9	6	21	4	9	2	18
Norway	10	13	14	10	2	6	22
Netherlands	11	15	17	1	13	11	15
Ireland	12	10	9	14	20	18	13
Canada	13	7	7	12	21	26	16
New Zealand	14	4	8	11	28	34	8
Iceland	15	19	22	15	6	27	9
Belgium	16	20	18	6	19	21	21
Germany	17	14	20	20	11	1	26
Austria	18	16	19	16	12	12	31
United Arab Emirates	19	12	4	40	10	14	54
Estonia	20	23	32	25	23	23	4
Qatar	21	18	3	47	17	13	70
Japan	22	5	51	19	16	32	23
Czech Republic	23	26	30	24	18	5	30
France	24	34	26	18	25	7	24
Israel	25	25	67	35	27	19	6
Malta	26	29	33	32	24	52	10
Slovenia	27	42	53	26	33	15	20
Malaysia	28	22	35	31	39	16	41
Korea, Republic	29	24	70	21	48	35	19
Cyprus	30	41	37	37	36	29	17
Portugal	31	33	27	27	22	50	35
Latvia	32	32	34	45	32	38	25
Lithuania	33	28	47	29	31	49	29
Chile	34	30	43	22	37	46	34
Spain	35	43	41	23	30	48	32
Barbados	36	27	12	38	51	60	50
Slovakia	37	45	45	44	38	9	45
Poland	38	36	59	34	42	22	43
Costa Rica	39	46	25	30	49	62	36
Italy	40	62	64	28	41	31	39
Hungary	41	38	49	72	34	30	38
Saudi Arabia	42	37	38	59	35	41	57
Greece	43	70	57	49	26	40	33
Montenegro	44	68	52	62	57	4	48
Croatia	45	64	87	36	46	28	44
Mauritius	46	35	42	70	29	37	78
Bahrain	47	31	10	54	50	82	90
Panama	48	80	23	82	52	61	37
Bulgaria	49	60	84	55	43	47	42
Macedonia, FYR	50	44	79	42	53	44	64
Uruguay	51	51	28	41	44	92	67
Philippines	52	59	62	65	66	43	40
Kazakhstan	53	58	61	90	45	45	65
China	54	52	100	39	71	81	27
Romania	55	65	82	53	56	56	60
Russian Federation	56	81	107	57	60	58	28
Kuwait	57	54	24	80	47	72	93
Jordan	58	61	46	95	58	63	52
Oman	59	39	29	92	40	80	100

(continued on next page)

Figure 3 *(continued)*

Heatmap: Rankings on GTCI overall and by pillar

COUNTRY	GTCI RANKING	ENABLE	ATTRACT	GROW	RETAIN	VT SKILLS	GK SKILLS
Countries BELOW the median in the overall GTCI score							
Serbia	60	89	95	66	69	42	51
Turkey	61	56	110	58	62	74	49
Lebanon	62	91	75	68	72	53	46
Botswana	63	48	39	51	90	89	69
Argentina	64	99	88	33	61	73	62
Armenia	65	72	77	109	63	51	47
Azerbaijan	66	67	80	101	55	36	80
South Africa	67	71	44	48	101	59	63
Jamaica	68	49	40	73	92	64	73
Ukraine	69	103	94	64	54	66	53
Georgia	70	50	91	103	59	57	74
Colombia	71	57	76	52	85	79	68
Mongolia	72	63	65	71	80	83	59
Thailand	73	55	66	43	79	100	71
Mexico	74	73	78	50	86	68	72
Moldova, Rep.	75	88	98	77	68	71	61
Namibia	76	53	36	86	99	84	75
Tunisia	77	102	104	84	64	67	55
Bosnia and Herzegovina	78	96	111	63	67	39	98
Ecuador	79	93	83	46	81	88	84
Albania	80	77	74	75	70	70	108
Brazil	81	78	73	56	77	111	76
Sri Lanka	82	66	90	104	76	55	95
Peru	83	74	55	76	89	90	82
Dominican Republic	84	69	56	85	84	91	86
Guatemala	85	79	60	61	91	103	85
Viet Nam	86	83	96	88	87	98	56
Kyrgyzstan	87	95	102	89	74	54	97
Egypt	88	104	116	102	65	69	58
Zambia	89	76	31	105	102	76	105
Indonesia	90	84	105	87	93	65	91
Rwanda	91	40	54	91	97	109	107
India	92	94	114	74	104	86	66
Honduras	93	100	72	69	94	85	110
Paraguay	94	108	68	81	78	112	92
El Salvador	95	75	99	67	95	99	115
Morocco	96	97	101	99	73	107	83
Kenya	97	87	48	94	111	97	88
Bhutan	98	47	97	108	82	108	116
Nicaragua	99	86	89	100	96	75	118
Senegal	100	98	50	97	103	102	99
Lesotho	101	92	81	83	109	78	114
Ghana	102	82	71	78	108	101	109
Iran, Islamic Rep.	103	107	118	93	83	87	77
Bolivia, Plurinational St.	104	117	103	79	98	93	79
Venezuela, Bolivarian Rep.	105	118	115	60	88	77	89
Uganda	106	85	63	112	113	105	96
Algeria	107	113	112	113	75	96	102
Cambodia	108	90	108	96	100	114	113
Cameroon	109	111	92	107	107	115	87
Ethiopia	110	109	106	111	105	106	103
Pakistan	111	115	117	110	106	95	81
Mali	112	112	85	106	114	110	101
Bangladesh	113	101	113	114	110	113	94
Tanzania, United Rep.	114	110	58	98	116	117	111
Mozambique	115	106	69	116	115	116	106
Zimbabwe	116	114	109	115	112	104	112
Burkina Faso	117	105	86	118	117	118	104
Madagascar	118	116	93	117	118	94	117

Note: The darkest colour means the country belongs to the 4th quartile (i.e., to the top 25% of best performers in the given pillar); the other three colours represent (from darker to lighter) countries in the 3rd, 2nd, and 1st quartile. GK Skills = Global Knowledge Skills; VT Skills = Vocational and Technical Skills.

Table 2

Countries with highest GTCI scores by income and regional groups

COMPARISON GROUP	TOP 3 OF THE GROUP
By region	
Central and Southern Asia	Kazakhstan, Sri Lanka, Kyrgyzstan
Eastern, Southeastern Asia and Oceania	Singapore, Australia, New Zealand
Europe	Switzerland, United Kingdom, Sweden
Latin, Central America and the Caribbean	Chile, Barbados, Costa Rica
Northern America	United States, Canada
Northern Africa and Western Asia	United Arab Emirates, Qatar, Israel
Sub-Saharan Africa	Mauritius, Botswana, South Africa
By income group	
High-income countries	Switzerland, Singapore, United Kingdom
Upper-middle-income countries	Malaysia, Costa Rica, Montenegro
Lower-middle-income countries	Philippines, Armenia, Ukraine
Low-income countries	Rwanda, Senegal, Uganda

performs consistently well across the Regulatory (9th), Market (19th), and Business and Labour (10th) Landscapes. In terms of attracting businesses and people, Canada shows a good balance between External Openness (10th) and Internal Openness (6th). The country shows solid Lifelong Learning (12th) and Access to Growth Opportunities (10th), but it can still upgrade its Formal Education (17th), particularly by enhancing its pool of Vocational and Technical Skills (26th).

New Zealand (14th) ranks among the top 10 in the Enable (4th), Attract (8th), and Global Knowledge Skills (8th) pillars. The country performs consistently well in the Enable sub-pillars: Regulatory Landscape (3rd), Market Landscape (20th), and Business and Labour Landscape (8th). The educational system is strong (it ranks in the top 20 in both Formal Education and Lifelong Learning), but it is mainly the Access to Growth Opportunities (5th) that leads to its high ranking in the Grow pillar. One of the main challenges holding New Zealand back is its poor showing in the pool of Vocational and Technical Skills (34th).

Iceland (15th) demonstrates a strong performance in Global Knowledge Skills (9th), with a good pool of higher competences and the ability to innovate. Iceland achieves this without neglecting the pool of Vocational and Technical Skills (27th). Although the country has a desirable Lifestyle (6th), which translates into a strong Retain pillar score (6th), it still has room for improvement in terms of talent attraction—it is ranked 22nd in the Attract pillar. The consistently strong Regulatory, Market, and Business and Labour Landscapes ensure a solid ranking in the Enable pillar (19th).

ANALYSIS BY INCOME AND REGIONAL GROUPS

As shown in Table 2, the talent leaders of Europe—Switzerland and the United Kingdom—take the top places in the high-income countries, along with Singapore, the East Asian leader. The regions that do not have countries within the highest quartile in the overall GTCI index (i.e., the top 29 countries) are Central and Southern Asia, Sub-Saharan Africa, and Latin, Central America and the Caribbean. The case of Chile deserves particular attention: it has the highest ranking within its region and for years it topped the group of upper-middle-income countries. Starting last year Chile was classified as a high-income country (following the UN classification).

Income Groups

Bearing in mind the strong positive correlation between GTCI scores and GDP per capita, analysing the relative positions of economies within their respective income groups brings additional insights. A cursory glance at the pillar-specific performance by income groups (see Figure 4) highlights the observation that differences are more significant on the Output side (most noticeably for the Global Knowledge Skills pillar) than on the Input side. This is perhaps not surprising. High-income countries rely more on innovation, entrepreneurship, and collaborative partnerships for growth—a reliance that is reflected in knowledge workers with professional, managerial, and global leadership skills—than do lower-income countries.

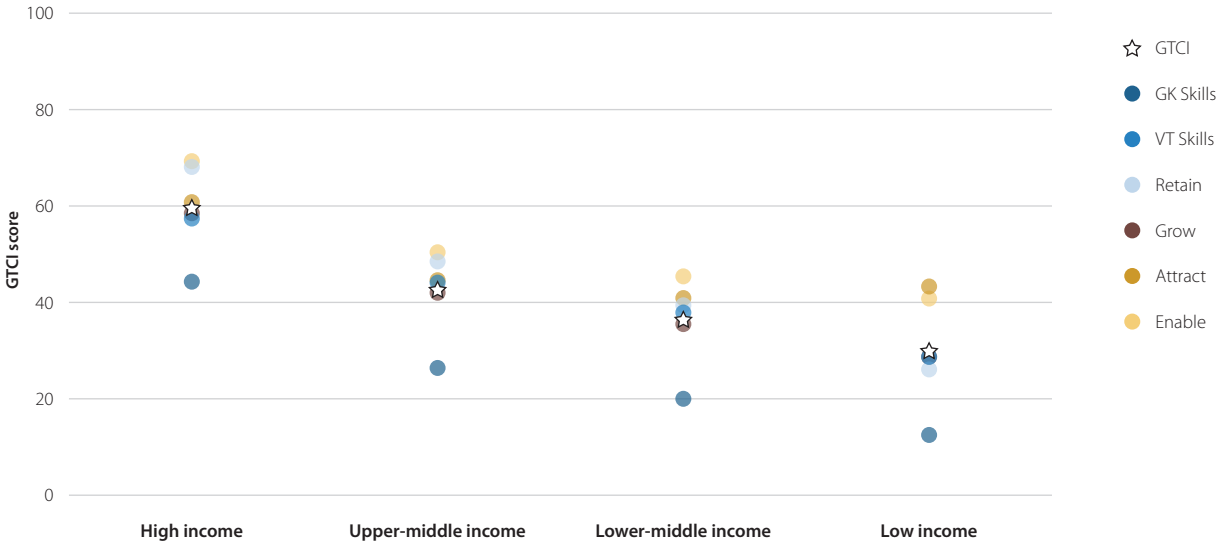
Unsurprisingly, the high-income group dominates the GTCI rankings again this year, with a virtual stranglehold on the top 25th percentile of the list (i.e., the fourth quartile, comprising the 29 countries in the heatmap shown in Figure 3), ranging from Switzerland (1st) all the way down to the Republic of Korea (South Korea, 29th). Switzerland is the most consistent high performer, never once dropping out of the top 10, regardless of the pillar in question.

The only high-income countries that are not part of the top 50 are Uruguay (51st), **Kuwait** (57th), and **Oman** (59th). The latter two are particularly affected by a weak Grow pillar, which mainly translates into a poor pool of Global Knowledge Skills. Countries that were classified in the high-income group last year and that have been downgraded to the upper-middle-income group are **Argentina** (64th), the Russian Federation (56th), and the **Bolivarian Republic of Venezuela** (Venezuela, 105th), all of which continue performing poorly. These three countries are particularly affected by a relatively poor performance in the Enable pillar—showing weaker regulatory and market landscapes, especially in Venezuela.

Table 3 on page 24 tabulates the better-performing countries (top 10) in each pillar by income group. Most economies display a good balance between the Input and Output subindices. One pillar where not all developed countries are consistently good is the Vocational and Technical Skills pillar (see the heatmap in Figure 3). Although **Germany** (17th) and Switzerland (1st) are clear leading countries in terms of their vocational educational systems, some Eastern European countries exhibit high performance in the Vocational and Technical Skills pillar: **Montenegro** (44th in the GTCI), the **Czech Republic** (23rd), and **Slovakia** (37th). By contrast, the United Kingdom (3rd), Australia (6th), and New Zealand (14th) do comparatively much better on the Global Knowledge Skills pillar than on the Vocational and Technical Skills pillar, highlighting their economies' structural

Figure 4

Average pillar scores, by income group



Note: The figure shows the average scores for each pillar of all countries within each group. GK Skills = Global Knowledge Skills; VT Skills = Vocational and Technical Skills.

shift towards knowledge jobs and services but perhaps leaving gaps in the technical/vocational area.

We look now at the two best performers of the upper-middle-income group and the lower-middle-income group, both of which are seeking to advance into the corresponding next income group.

Malaysia (28th) is the top-ranked country in the group of upper-middle-income countries and it belongs to the fourth quartile of top performing countries (see Figure 3). It is ranked above many high-income countries such as South Korea (29th), Portugal (31st), and Spain (35th). Malaysia performs particularly well in the Enable pillar (22nd) and the pillar of Vocational and Technical Skills (16th), both of which are part of the top quartile. The Attract pillar (37th) is held back by relatively poor performance in terms of Internal Openness (62nd)—there is ample room for improvement in terms of Tolerance of minorities. By contrast, Malaysia does relatively better on External Openness (27th), where it is positioned in the top quartile of countries. The Stock of migrants is not yet large relative to the total population, although the country has been able to attract some foreign talent and receives a high Brain gain ranking. The attraction of talent is explained by the excellent performance of the country in variables related to management practices and growth opportunities: Employee development (3rd), Relationship of pay to productivity (4th), and Delegation of authority (10th). **Costa Rica** (39th) is the next in the rankings of upper-middle-income countries, coming in above high-income countries such as Italy (40th), Hungary (41st), and Saudi Arabia (42nd).

The Philippines (52nd) is the top-ranked lower-middle-income country, ranking above several upper-middle-income countries such as China (54th) and the Russian Federation (56th), and even above some high-income countries such as Kuwait (57th) and Oman (59th). Its greatest strength is its good pool of both Vocational and Technical Skills (43rd) and Global Knowledge Skills (40th). The next lower-middle-income country in the rankings is **Armenia** (65th), which performs better than many upper-middle-income countries such as South Africa (67th), Colombia (71st), Thailand (73rd), and Mexico (74th).

Within the group of upper-middle-income countries, **BRICS countries** are not getting stronger. In recent years, we have witnessed a cooling off in the growth of emerging markets, and the big emerging countries are among those that had decelerated the most. Indeed, we note the relative decline in the talent competitiveness of the BRICS, especially in **Brazil** (81st versus 67th in 2015–16) where scores decline all round, particularly in terms of growing talent—the pool of Global Knowledge Skills (76th) is still limited compared with developed countries, even though universities in Brazil rank high in quality. **China** (54th versus 48th in 2015–16) and **India** (92nd versus 89th in 2015–16) slip somewhat. Although China attains an impressive 4th place in the sub-pillar of Talent Impact and is solid in the Grow pillar—mainly supported by good Formal Education (23rd) and Lifelong Learning (20th), the shortage of Vocational and Technical Skills shows up clearly. China also still has ample room for improvement in the Attract pillar (100th). India counts on a relatively solid pool of Global Knowledge Skills (66th), at least compared with other emerging markets, but the country is not able to retain, let alone attract, talent (where it ranks 104th and 114th, respectively). This is not likely to improve until India boosts performance in its Regulatory (94th) and Market (99th) Landscapes. The **Russian Federation**'s overall ranking (56th versus 53rd in 2015–16) remains almost the same. The country counts on a solid pool of Global Knowledge Skills (28th)—the result of a fine system of Formal Education (30th). But its biggest challenge continues to be the attraction of talent (ranked 107th in this pillar). This may

Table 3

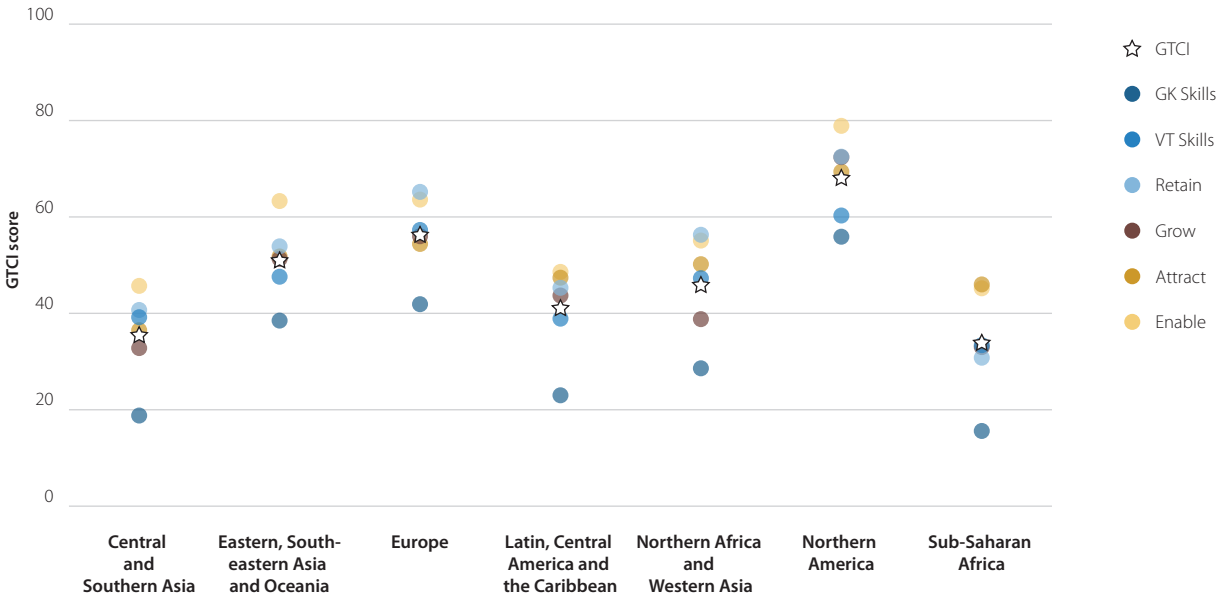
Best performers by income group

GTCI	ENABLE	ATTRACT	GROW	RETAIN	VOCATIONAL AND TECHNICAL SKILLS	GLOBAL KNOWLEDGE SKILLS
High income (46 countries)						
Switzerland (1)	Singapore (2)	Singapore (2)	Netherlands (11)	Switzerland (1)	Germany (17)	Singapore (2)
Singapore (2)	Switzerland (1)	Luxembourg (7)	United States of America (4)	Norway (10)	Finland (9)	United Kingdom (3)
United Kingdom (3)	Denmark (8)	Qatar (21)	Denmark (8)	Luxembourg (7)	Switzerland (1)	United States of America (4)
United States of America (4)	New Zealand (14)	United Arab Emirates (19)	Finland (9)	Sweden (5)	Czech Republic (23)	Estonia (20)
Sweden (5)	Japan (22)	Switzerland (1)	Switzerland (1)	United Kingdom (3)	Norway (10)	Australia (6)
Australia (6)	Finland (9)	Australia (6)	Belgium (16)	Iceland (15)	France (24)	Israel (25)
Luxembourg (7)	Canada (13)	Canada (13)	United Kingdom (3)	Singapore (2)	Singapore (2)	Switzerland (1)
Denmark (8)	United Kingdom (3)	New Zealand (14)	Sweden (5)	United States of America (4)	Slovakia (37)	New Zealand (14)
Finland (9)	Sweden (5)	Ireland (12)	Australia (6)	Finland (9)	Sweden (5)	Iceland (15)
Norway (10)	Ireland (12)	Bahrain (47)	Norway (10)	United Arab Emirates (19)	Netherlands (11)	Malta (26)
Upper-middle income (35 countries)						
Malaysia (28)	Malaysia (28)	Panama (48)	Costa Rica (39)	Mauritius (46)	Montenegro (44)	China (54)
Costa Rica (39)	Mauritius (46)	Costa Rica (39)	Malaysia (28)	Malaysia (28)	Malaysia (28)	Russian Federation (56)
Montenegro (44)	Macedonia, FYR (50)	Malaysia (28)	Argentina (64)	Bulgaria (49)	Azerbaijan (66)	Costa Rica (39)
Mauritius (46)	Costa Rica (39)	Namibia (76)	China (54)	Kazakhstan (53)	Mauritius (46)	Panama (48)
Panama (48)	Botswana (63)	Botswana (63)	Macedonia, FYR (50)	Costa Rica (39)	Bosnia and Herzegovina (78)	Malaysia (28)
Bulgaria (49)	Jamaica (68)	Jamaica (68)	Thailand (73)	Panama (48)	Serbia (60)	Bulgaria (49)
Macedonia, FYR (50)	Georgia (70)	Mauritius (46)	Ecuador (79)	Macedonia, FYR (50)	Macedonia, FYR (50)	Lebanon (62)
Kazakhstan (53)	China (54)	South Africa (67)	South Africa (67)	Azerbaijan (66)	Kazakhstan (53)	Montenegro (44)
China (54)	Namibia (76)	Jordan (58)	Mexico (74)	Romania (55)	Bulgaria (49)	Turkey (61)
Romania (55)	Thailand (73)	Montenegro (44)	Botswana (63)	Montenegro (44)	Lebanon (62)	Serbia (60)
Lower-middle income (27 countries)						
Philippines (52)	Bhutan (98)	Zambia (89)	Guatemala (85)	Ukraine (69)	Philippines (52)	Philippines (52)
Armenia (65)	Philippines (52)	Kenya (97)	Ukraine (69)	Armenia (65)	Armenia (65)	Armenia (65)
Ukraine (69)	Mongolia (72)	Guatemala (85)	Philippines (52)	Tunisia (77)	Kyrgyzstan (87)	Ukraine (69)
Mongolia (72)	Sri Lanka (82)	Philippines (52)	El Salvador (95)	Egypt (88)	Sri Lanka (82)	Tunisia (77)
Moldova, Rep. (75)	Armenia (65)	Mongolia (72)	Honduras (93)	Philippines (52)	Indonesia (90)	Viet Nam (86)
Tunisia (77)	El Salvador (95)	Ghana (102)	Mongolia (72)	Moldova, Rep. (75)	Ukraine (69)	Egypt (88)
Sri Lanka (82)	Zambia (89)	Honduras (93)	India (92)	Morocco (96)	Tunisia (77)	Mongolia (72)
Guatemala (85)	Guatemala (85)	Armenia (65)	Moldova, Rep. (75)	Kyrgyzstan (87)	Egypt (88)	Moldova, Rep. (75)
Viet Nam (86)	Ghana (102)	Lesotho (101)	Ghana (102)	Sri Lanka (82)	Moldova, Rep. (75)	India (92)
Kyrgyzstan (87)	Viet Nam (86)	Nicaragua (99)	Bolivia, Plurinational St. (104)	Mongolia (72)	Nicaragua (99)	Bolivia, Plurinational St. (104)

Note: Numbers in parentheses are overall GTCI ranks.

Figure 5

Average pillar scores, by regional group



Note: The figure shows the average scores for each pillar of all countries within each group. GK Skills = Global Knowledge Skills; VT Skills = Vocational and Technical Skills.

strengthen if the Regulatory Landscape (96th) and the Business and Labour Landscape (80th) in the country improve.

Overall, a challenge for countries such as China and India is to attract talent from abroad, particularly in the context of large emigration rates of high-skilled people (with India being more at risk of brain drain despite the connection with the diasporas working in the information technology sector). **South Africa** (67th) also faces a challenge in retaining talent, which is particularly affected by its unattractive Lifestyle (where it ranks 114th in terms of Personal Safety). It is worth adding that South Africa ranks particularly poorly on Labour-employer cooperation (109th) and Business-government relations (93rd).

The low-income countries in the GTCI sample come in last, ranging from the 91st position held by **Rwanda** (the best performer of this income group) to the 118th position **(Madagascar).** There are 10 countries of the GTCI sample that are classified as low-income countries (many low-income countries do not have enough data available to be included in the GTCI computations).

Regional Groups

Regions are composed of very heterogeneous countries. For example, Sub-Saharan Africa includes ten low-income countries, with Rwanda (91st) as the highest ranked among them; five lower-middle-income countries; and four upper-middle-income countries, which occupy the highest ranking in the region. Northern America, on the other hand, includes only high-income countries (the United States and Canada), which show smaller differences in terms of development and GDP per capita. Figure 5 shows how regions perform across the various pillars of the GTCI model. Table 4 on pages 30–32 then lists the top 10 performers by regional group. Below are some highlights for the best countries in each region:

Northern America (2 countries): Both Northern American economies, the United States (4th) and Canada (13th), feature in the top 15 high performers of this year's GTCI. The countries are fairly evenly matched in the Enable pillar (Canada at 7th; the United States at 11th), with good Regulatory and Market Landscapes—Canada performs better in the Regulatory Landscape (Canada: 9th; the United States: 22nd) whereas the United States outperforms Canada in the Market Landscape (Canada: 19th; the United States: 5th). Although Canada is slightly better at attracting talent (7th versus 16th in the Attract pillar), particularly given its high tolerance of immigrants and minorities, the United States ranks higher in the Retain pillar. Given the leading position of the United States in the Grow pillar (2nd, compared with 12th for Canada), it has been able to create a stronger pool of Global Knowledge Skills (3rd, compared with 16th in Canada).

Europe (38 countries): Seven European countries are within the top 10 high performers group in this year's GTCI. The Netherlands, Ireland, and Iceland (all described above) join in the top 15. Yet performance in this region is heterogeneous. In general, smaller European countries tend to perform better than larger ones: for example, the Benelux countries (**Belgium,** the Netherlands, and Luxembourg) all rank higher than larger European economies such as Germany and France. **France** (24th) exhibits a solid Grow pillar (18th), given the quality of its higher education institutions. The country lags behind particularly in the Enable pillar (34th)—its Business and Labour Landscape has room for improvement, especially in terms of Labour Market Flexibility. Among other big economies, **Italy** (40th) has the lowest overall performance, ranking lower than many Eastern European countries. Although it can count on excellent clusters (a world-class performer here), Italy's performance is affected by the Regulatory Landscape (57th) and, above all, the Business and Labour

Table 4

Ten best performers by regional group

GTCI	ENABLE	ATTRACT	GROW	RETAIN	VOCATIONAL AND TECHNICAL SKILLS	GLOBAL KNOWLEDGE SKILLS
Northern America (2 countries)						
United States of America (4)	Canada (13)	Canada (13)	United States of America (4)	United States of America (4)	United States of America (4)	United States of America (4)
Canada (13)	United States of America (4)	United States of America (4)	Canada (13)	Canada (13)	Canada (13)	Canada (13)
Latin, Central America and the Caribbean (20 countries)						
Chile (34)	Barbados (36)	Barbados (36)	Chile (34)	Chile (34)	Chile (34)	Chile (34)
Barbados (36)	Chile (34)	Panama (48)	Costa Rica (39)	Uruguay (51)	Barbados (36)	Costa Rica (39)
Costa Rica (39)	Costa Rica (39)	Costa Rica (39)	Argentina (64)	Costa Rica (39)	Panama (48)	Panama (48)
Panama (48)	Jamaica (68)	Uruguay (51)	Barbados (36)	Barbados (36)	Costa Rica (39)	Barbados (36)
Uruguay (51)	Uruguay (51)	Jamaica (68)	Uruguay (51)	Panama (48)	Jamaica (68)	Argentina (64)
Argentina (64)	Colombia (71)	Chile (34)	Ecuador (79)	Argentina (64)	Mexico (74)	Uruguay (51)
Jamaica (68)	Dominican Republic (84)	Peru (83)	Mexico (74)	Brazil (81)	Argentina (64)	Colombia (71)
Colombia (71)	Mexico (74)	Dominican Republic (84)	Colombia (71)	Paraguay (94)	Nicaragua (99)	Mexico (74)
Mexico (74)	Peru (83)	Guatemala (85)	Brazil (81)	Ecuador (79)	Venezuela, Bolivarian Rep. (105)	Jamaica (68)
Ecuador (79)	El Salvador (95)	Paraguay (94)	Venezuela, Bolivarian Rep. (105)	Dominican Republic (84)	Colombia (71)	Brazil (81)
Europe (38 countries)						
Switzerland (1)	Switzerland (1)	Luxembourg (7)	Netherlands (11)	Switzerland (1)	Germany (17)	United Kingdom (3)
United Kingdom (3)	Denmark (8)	Switzerland (1)	Denmark (8)	Norway (10)	Finland (9)	Estonia (20)
Sweden (5)	Finland (9)	Ireland (12)	Finland (9)	Luxembourg (7)	Switzerland (1)	Switzerland (1)
Luxembourg (7)	United Kingdom (3)	United Kingdom (3)	Switzerland (1)	Sweden (5)	Montenegro (44)	Iceland (15)
Denmark (8)	Sweden (5)	Sweden (5)	Belgium (16)	United Kingdom (3)	Czech Republic (23)	Malta (26)
Finland (9)	Ireland (12)	Norway (10)	United Kingdom (3)	Iceland (15)	Norway (10)	Sweden (5)
Norway (10)	Norway (10)	Denmark (8)	Sweden (5)	Finland (9)	France (24)	Luxembourg (7)
Netherlands (11)	Germany (17)	Netherlands (11)	Norway (10)	Germany (17)	Slovakia (37)	Ireland (12)
Ireland (12)	Netherlands (11)	Belgium (16)	Ireland (12)	Austria (18)	Sweden (5)	Denmark (8)
Iceland (15)	Austria (18)	Austria (18)	Iceland (15)	Netherlands (11)	Netherlands (11)	Netherlands (11)

(continued on next page)

Landscape (102nd)—Labour-employer cooperation is among the lowest in the world. Italy has ample room for improvement in terms of its External Openness in attracting talent from abroad.

Eastern, Southeastern Asia and Oceania (13 countries): Singapore (2nd) is the flag bearer of performance in the region. Next comes Australia (6th) and New Zealand (14th); the performance of these three countries has been described above. This region shows wide variety in terms of performance. **Japan** (22nd) has a solid overall performance, although it dipped slightly with respect to last year's edition (19th position). One of its main challenges is the Attract pillar (51st); Japan is far behind the top three countries of this region, and even middle-income countries such as Malaysia attract more foreign talent. **Indonesia** (90th) has a long way to go to catch up on all the pillars, yet the country is increasingly perceived by business leaders as being attractive to high-skilled people, scoring high on potential Brain gain (even though the stock of migrants in the country is still small). **Thailand** (73rd) also needs to catch up across the

Table 4 *(continued)*

Ten best performers by regional group

GTCI	ENABLE	ATTRACT	GROW	RETAIN	VOCATIONAL AND TECHNICAL SKILLS	GLOBAL KNOWLEDGE SKILLS
Northern Africa and Western Asia (18 countries)						
United Arab Emirates (19)	United Arab Emirates (19)	Qatar (21)	Israel (25)	United Arab Emirates (19)	Qatar (21)	Israel (25)
Qatar (21)	Qatar (21)	United Arab Emirates (19)	Cyprus (30)	Qatar (21)	United Arab Emirates (19)	Cyprus (30)
Israel (25)	Israel (25)	Bahrain (47)	United Arab Emirates (19)	Israel (25)	Israel (25)	Lebanon (62)
Cyprus (30)	Bahrain (47)	Kuwait (57)	Qatar (21)	Saudi Arabia (42)	Cyprus (30)	Armenia (65)
Saudi Arabia (42)	Saudi Arabia (42)	Oman (59)	Bahrain (47)	Cyprus (30)	Azerbaijan (66)	Turkey (61)
Bahrain (47)	Oman (59)	Cyprus (30)	Turkey (61)	Oman (59)	Saudi Arabia (42)	Jordan (58)
Kuwait (57)	Cyprus (30)	Saudi Arabia (42)	Saudi Arabia (42)	Kuwait (57)	Armenia (65)	United Arab Emirates (19)
Jordan (58)	Georgia (70)	Jordan (58)	Lebanon (62)	Bahrain (47)	Lebanon (62)	Tunisia (77)
Oman (59)	Kuwait (57)	Israel (25)	Kuwait (57)	Azerbaijan (66)	Georgia (70)	Saudi Arabia (42)
Turkey (61)	Turkey (61)	Lebanon (62)	Tunisia (77)	Jordan (58)	Jordan (58)	Egypt (88)
Sub-Saharan Africa (19 countries)						
Mauritius (46)	Mauritius (46)	Zambia (89)	South Africa (67)	Mauritius (46)	Mauritius (46)	South Africa (67)
Botswana (63)	Rwanda (91)	Namibia (76)	Botswana (63)	Botswana (63)	South Africa (67)	Botswana (63)
South Africa (67)	Botswana (63)	Botswana (63)	Mauritius (46)	Rwanda (91)	Zambia (89)	Namibia (76)
Namibia (76)	Namibia (76)	Mauritius (46)	Ghana (102)	Namibia (76)	Lesotho (101)	Mauritius (46)
Zambia (89)	South Africa (67)	South Africa (67)	Lesotho (101)	South Africa (67)	Namibia (76)	Cameroon (109)
Rwanda (91)	Zambia (89)	Kenya (97)	Namibia (76)	Zambia (89)	Botswana (63)	Kenya (97)
Kenya (97)	Ghana (102)	Senegal (100)	Rwanda (91)	Senegal (100)	Madagascar (118)	Uganda (106)
Senegal (100)	Uganda (106)	Rwanda (91)	Kenya (97)	Ethiopia (110)	Kenya (97)	Senegal (100)
Lesotho (101)	Kenya (97)	Tanzania, United Rep. (114)	Senegal (100)	Cameroon (109)	Ghana (102)	Mali (112)
Ghana (102)	Lesotho (101)	Uganda (106)	Tanzania, United Rep. (114)	Ghana (102)	Senegal (100)	Ethiopia (110)

(continued on next page)

different pillars, but it does boast a relatively good performance in the Grow pillar (43rd)—particularly in the Lifelong Learning sub-pillar (21st). Although the Republic of Korea (South Korea, 29th) makes it into the top quartile of this year's rankings, it is the lowest-ranking high-income country in the region. Despite being the top country in dimensions such as Tertiary enrolment (2nd) and the Market Landscape (1st)—with world-class R&D investments—the country has major room for improvement in the Attract pillar (70th).

Northern Africa and Western Asia (18 countries): The United Arab Emirates (UAE, 19th), **Qatar** (21st), and **Israel** (25th) are all part of the high-performing 25th percentile of countries (i.e., the top quartile comprising 29 countries). The two Gulf Cooperation Council (GCC) nations perform relatively better in the Input pillars. They are good at attracting foreign workers (Qatar comes in at 3rd and the UAE at 4th in the Attract pillar) and at creating the proper context for the operation of businesses by having a solid Enable pillar (Qatar is 18th; the UAE is 12th). Israel performs better in the Output pillars and, in particular, it is a top country in terms of Global Knowledge Skills (6th)—a dimension where the GCC countries lag behind. The Northern African countries of the GTCI sample have the lowest performance in the region in the overall GTCI score (**Tunisia** is 77th; **Egypt** is 88th; **Morocco,** 96th; **Algeria,** 107th). Two countries have particular potential to host creative talent. **Turkey** (61st) is relatively solid in terms of Global Knowledge Skills (49th) and also has a relatively strong Enable pillar (56th)—at least compared with other middle-income countries. Its main weakness is that it does not

Table 4 *(continued)*

Ten best performers by regional group

GTCI	ENABLE	ATTRACT	GROW	RETAIN	VOCATIONAL AND TECHNICAL SKILLS	GLOBAL KNOWLEDGE SKILLS
Eastern, Southeastern Asia and Oceania (13 countries)						
Singapore (2)	Singapore (2)	Singapore (2)	Australia (6)	Singapore (2)	Singapore (2)	Singapore (2)
Australia (6)	New Zealand (14)	Australia (6)	New Zealand (14)	Australia (6)	Malaysia (28)	Australia (6)
New Zealand (14)	Japan (22)	New Zealand (14)	Singapore (2)	Japan (22)	Australia (6)	New Zealand (14)
Japan (22)	Australia (6)	Malaysia (28)	Japan (22)	New Zealand (14)	Japan (22)	Korea, Rep. (29)
Malaysia (28)	Malaysia (28)	Japan (22)	Korea, Rep. (29)	Malaysia (28)	New Zealand (14)	Japan (22)
Korea, Rep. (29)	Korea, Rep. (29)	Philippines (52)	Malaysia (28)	Korea, Rep. (29)	Korea, Rep. (29)	China (54)
Philippines (52)	China (54)	Mongolia (72)	China (54)	Philippines (52)	Philippines (52)	Philippines (52)
China (54)	Thailand (73)	Thailand (73)	Thailand (73)	China (54)	Indonesia (90)	Malaysia (28)
Mongolia (72)	Philippines (52)	Korea, Rep. (29)	Philippines (52)	Thailand (73)	China (54)	Viet Nam (86)
Thailand (73)	Mongolia (72)	Viet Nam (86)	Mongolia (72)	Mongolia (72)	Mongolia (72)	Mongolia (72)
Central and Southern Asia (8 countries)						
Kazakhstan (53)	Bhutan (98)	Kazakhstan (53)	India (92)	Kazakhstan (53)	Kazakhstan (53)	Kazakhstan (53)
Sri Lanka (82)	Kazakhstan (53)	Sri Lanka (82)	Kyrgyzstan (87)	Kyrgyzstan (87)	Kyrgyzstan (87)	India (92)
Kyrgyzstan (87)	Sri Lanka (82)	Bhutan (98)	Kazakhstan (53)	Sri Lanka (82)	Sri Lanka (82)	Iran, Islamic Rep. (103)
India (92)	India (92)	Kyrgyzstan (87)	Iran, Islamic Rep. (103)	Bhutan (98)	India (92)	Pakistan (111)
Bhutan (98)	Kyrgyzstan (87)	Bangladesh (113)	Sri Lanka (82)	Iran, Islamic Rep. (103)	Iran, Islamic Rep. (103)	Bangladesh (113)
Iran, Islamic Rep. (103)	Bangladesh (113)	India (92)	Bhutan (98)	India (92)	Pakistan (111)	Sri Lanka (82)
Pakistan (111)	Iran, Islamic Rep. (103)	Pakistan (111)	Pakistan (111)	Pakistan (111)	Bhutan (98)	Kyrgyzstan (87)
Bangladesh (113)	Pakistan (111)	Iran, Islamic Rep. (103)	Bangladesh (113)	Bangladesh (113)	Bangladesh (113)	Bhutan (98)

attract foreign talent (its Attract pillar ranks a low 110th). **Jordan** (58th) can be highlighted as a place to which corporations may gravitate, with a relatively high score for Global Knowledge Skills (52nd). Unlike Turkey, Jordan does increasingly attract foreign talent (it has become a technology and start-up hub for its region). Yet Jordan still faces challenges regarding its reputation. Although it currently has a large migrant population, with skilled workers among the many refugees, and it does well in attracting International students (19th), the perception of business leaders is mixed when it comes to its Brain gain attractiveness. **Saudi Arabia** (42nd) performs even better than some European countries—such as Greece (43rd) and Bulgaria (49th)—but it still lags behind the regional leaders.

Latin, Central America and the Caribbean (20 countries): Chile (34th) is the top performer of the region, particularly given its strong Grow pillar (22nd). Although its stock of migrant population is still rather low, Chile is increasingly considered a country that is attractive to foreign talent. This is especially the case given recent policies intended to attract foreign entrepreneurs (Santiago, the capital, is increasingly called 'Chilecon Valley'). Such success is likely to continue given the good business environment prevalent in the country (Enable pillar: 30th). The country can also count on a solid pool of Global Knowledge Skills (34th) and is able to retain a large share of its talent, given a good Lifestyle by regional standards. **Costa Rica** (39th) and **Panama** (48th) stand out for their strong Attract pillars (25th and 23rd, respectively). These countries have become hubs in Central America. **Uruguay** (51st) is another country with a strong Attract pillar (28th), in addition to its relatively good Grow pillar (41st). None of the other countries in the region exhibit an impressive performance or even a performance corresponding to their level of development. Brazil and Mexico, the two largest economies of the region, are below the median in terms of GTCI score. Brazil has been discussed above (in the BRICS section). **Mexico** (74th) counts on a relatively good Grow pillar (50th), with solid Lifelong Learning. But the country faces a big challenge in retaining its talent (it ranks 86th in this pillar)—a challenge that is more likely to be met once Mexico improves in terms of Lifestyle

(84th in this sub-pillar), particularly by offering more security to its citizens.

Central and Southern Asia (8 countries): Despite this group only having eight countries represented in the GTCI, it has the largest potential pool of human capital of all the regions: more than 1.7 billion people live in Central and Southern Asia, with India leading the way (with a population of over 1.25 billion). Unfortunately, the region's talent performance is not good. **Kazakhstan** (53rd) is one of two upper-middle-income countries (the other is the **Islamic Republic of Iran,** 103rd) and it clearly dominates this group. Kazakhstan ranks above the median of performance in the GTCI sample (mainly supported by its relatively good Enable pillar, ranked 58th) but is an outlier: second place is taken by **Sri Lanka** (82nd) and third by **Kyrgyzstan** (87th), which are well below in terms of ranking. Kazakhstan is able to attract foreign businesses and some talent, fuelled by its oil industry and an eagerness to diversify its economy (Attract pillar: 61st). Yet the country is lagging behind in the Grow pillar (90th)—particularly because Lifelong Learning and Access to Growth Opportunities are immature. Without doubt, the improvement of India would have the greatest impact in terms of the pool of talent not only in this region but also globally. As discussed in the BRICS section, India (92nd) has been able to create a stable pool of Global Knowledge Skills but it has suffered in the Retain pillar (104th). Although diasporas have been engaged successfully in some industries, a great deal of talent continues to leave the country, and thus India still experiences a brain drain.

Sub-Saharan Africa (19 countries): Four upper-middle-income countries of this group occupy the highest rankings: **Mauritius** (46th), **Botswana** (63rd), South Africa (67th), and **Namibia** (76th). Only Mauritius is above the median GTCI score, supported by a solid Enable pillar (35th in the rankings); the Regulatory Landscape of the country is particularly good (26th). This edition of the GTCI has improved coverage of many countries in this region, which often show data limitations: big economies such as Nigeria are still not covered, but Mauritius was covered this year after being absent in the previous editions. In general, talent performance is not good in this region, although Botswana and South Africa continue to lead this group.

ENDNOTE

1 Countries are grouped according to the World Bank Income Classifications. Economies are divided based on their gross national income (GNI) per capita, calculated using the World Bank Atlas method. The groups are: low income; lower-middle income; upper-middle income; and high income. Regional groups are based on United Nations Regional Classifications: Europe; Northern America; Latin, Central America and the Caribbean; Central and Southern Asia; Eastern, Southeastern Asia and Oceania; Northern Africa and Western Asia; and Sub-Saharan Africa.

CHAPTER 2

The Skills Imperative: Shaping the Future of Work through Talent and Technology

Alain Dehaze
The Adecco Group

When the first steam locomotive rolled out more than two centuries ago, ladies were warned that travelling at more than 30 kilometres per hour could endanger their health. Today we have become used to breakneck technological change. But the uncertainty and fears prompted by innovation in the world of work can still be strong, and the demand for new skills to master them as acute.

We now live in a world of ambiguity and unpredictable change, where a host of complex and highly entrenched factors are shaping the labour market. In today's global and volatile economy, a contingent workforce has become essential to meet businesses' growing need for flexibility. The advance of technology and digitalisation is triggering a profound automation of work, with the impact shifting from routine and repetitive functions to 'knowledge workers'. Demographics, in the form of longer life expectancy and lower birth rates, is transforming employment requirements and leading to more open borders and greater labour mobility in the effort to meet skills gaps and productivity issues. The sociology of work is also changing, as employees become more mobile and flexible: they are turning increasingly into independent contractors, while 'jobs for life' become rarer and the workplace becomes ever more diverse. And regulatory constraints can increase complexity, while we have seen countries that innovate and reduce bureaucracy benefitting from significant competitive advantages.

THE ROLE OF TECHNOLOGY

Against this background, this chapter focuses on the advance of technology and hyper-connectivity, because together they are creating once-unimaginable innovations and opportunities. Technology, in fact, is one of the most disruptive developments in the world of work, and is having some of the fastest consequences. Of course technological advancement interacts with factors such as economics, demographics, and regulation, and strict demarcations will not always be possible because their consequences often blur and overlap. For example, demographics and ageing are expanding the need for healthcare; technology and artificial intelligence can help respond to this need, creating new opportunities for labour.

Some studies estimate that rising automation has put up to one job in two at risk.[1] The Organisation for Economic Co-operation and Development (OECD) argues more cautiously that across 21 of its 35 member states only 9% of jobs are automatable on average.[2] Whatever the precise number, however, there is little doubt that the inexorable rise of artificial intelligence will boost the use of robotics, which is now reaching take-off threshold in many industries. According to one projection, the share of tasks performed by robots will climb from a global average of around 10% across all manufacturing industries to about 25% by 2025.[3]

The onward march of the robots will vary by industry and economy. Studies place Canada, Japan, South Korea, the United Kingdom, and the United States among the leaders. By contrast, Austria, Belgium, France, Italy, and Spain are relative laggards. Some, such as Thailand and China, are taking up robots more enthusiastically than might be expected, considering their relatively low wages. That may be because, even in these contexts, the savings offered by using robots instead of employees are alluring. Average labour costs in manufacturing in 2025, adjusted for inflation and other costs and productivity-boosting developments, may be 33% lower in South Korea and 18% to 25% lower in China, Germany, the United States, and Japan than they otherwise would have been.[4]

As the use of robots becomes entrenched in manufacturing, for example, human manufacturing tasks will turn more complex. The capacity of workers to master new skills and the availability of programming and automation talent will become more important—the presence of workers with these skills will replace low labour costs as an essential element of manufacturing competitiveness. That suggests fundamental shifts in the skills that workers will need to succeed in advanced manufacturing roles.

The good news is that technology might be killing jobs, but not work, thanks to sector shift. In 1900, 41% of the US workforce worked in farming. By 2000, that had sunk to just 2%, mostly as a result of the arrival of machines. While the entire developed world has shifted from agriculture to manufacturing and, more and more, to services, the number of jobs has always climbed.[5]

Recent studies suggest that six out of ten young people entering the world of work by 2025 will go into professions that do not exist today.[6] Just think of all the new opportunities being created by the internet of things and the rise of 'smart' products. Apart from creating wholly new positions, engineers and information technology (IT) specialists will almost certainly find themselves collaborating ever more closely at each stage of the product development and manufacturing process. In software, Modis (the global leader in IT staffing services) forecasts show sharply increasing demand for programmers, software engineers, analysts, web software developers, data scientists, user experience designers, interface designers, and health IT professionals by 2024 (Figure 1).[7] In engineering, a surge in positions that need to be filled is expected for quality, mechanical, and manufacturing engineers, as well as for civil engineers, who will cooperate with IT specialists to design the smart cities of today and tomorrow.

The increasing use of big data is also spurring demand for specialists able to manipulate and interpret the flood of raw numbers now obtainable. Cloud-based databases, in particular, have changed the world for many businesses, creating new opportunities for professionals with advanced degrees in statistics and computer engineering, such as data modelling analysts, data scientists, data warehouse managers, and data security analysts.

Overall, a Modis study projecting to 2017 forecast a 12% rise in demand for tech workers by 2024 in the United States, compared with projected growth of just 6.5% in all other industries. That translates to 488,500 new tech jobs in the period—and commensurate salary hikes reflecting surging demand.[8]

AGEING AND HEALTHCARE IN THE DIGITAL AGE

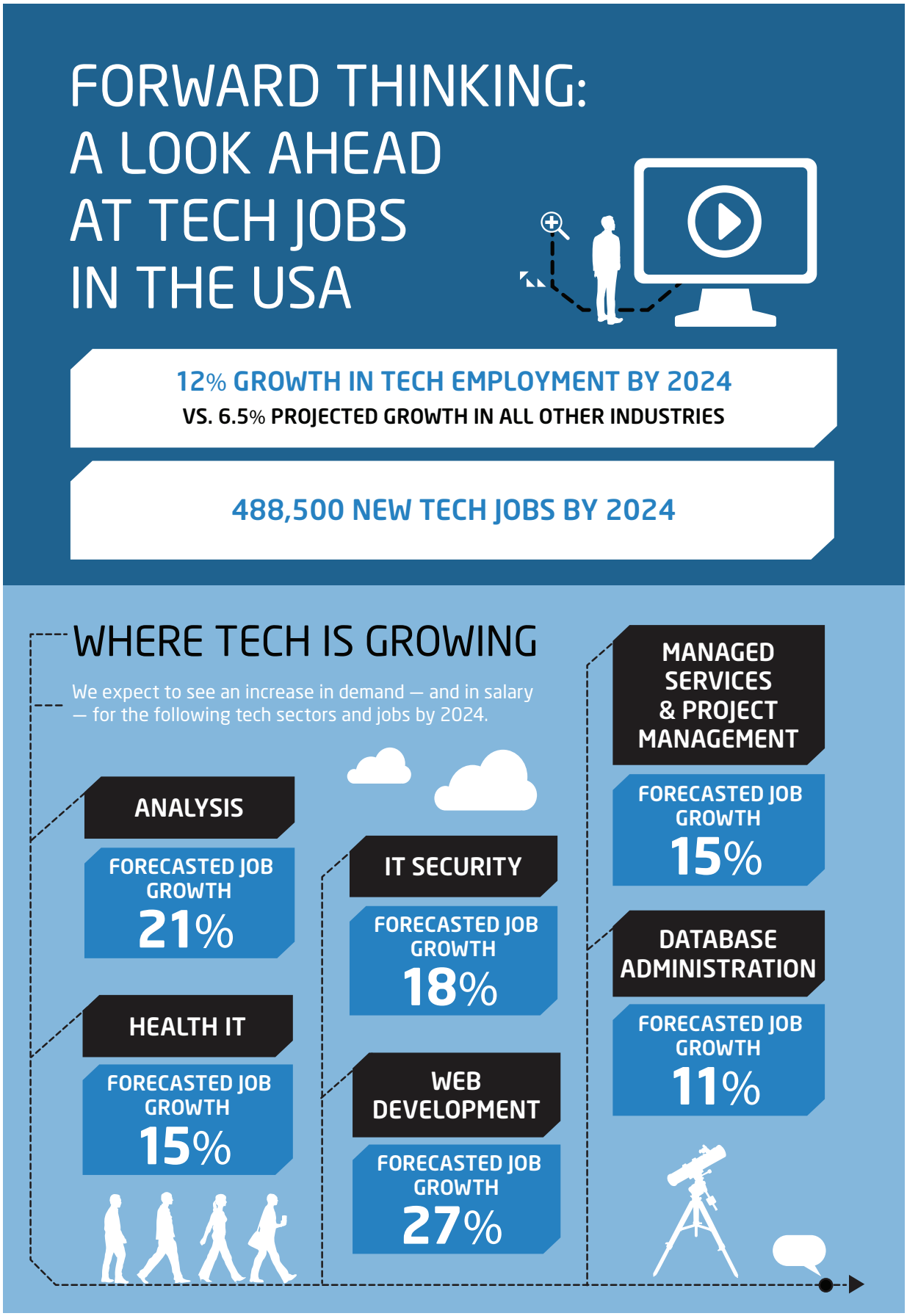
One area where the impact of technology is being particularly felt is healthcare. Moreover, health and ageing trends will have major implications for labour. By 2030, people over age 65 will be the fastest growing slice of the population globally, resulting in rising needs for personal care and medical backup. Such demographic changes will trigger new positions and specialisations in health and personal care especially. The World Health Organization puts the likely staff shortage at about 7 million worldwide.[9]

Digitalisation and the internet of things are overlapping with medicine. New jobs, such as bioinformatics technician and nuclear medicine technologist, will develop rapidly at the intersection of healthcare and technology. Professions that need cross-fertilisation and a combination of medical, digital, and statistics skills—such as data scientists and bioinformatics technicians—will also be in much greater demand.

Thanks to rapid progress in genetics and genomics, the rise of connectivity in healthcare, along with ever-more personalised medicine, is prompting a revolution in conventional treatments. Diagnostic and therapeutic decisions will increasingly be taken by computers, with physicians becoming 'bio-counsellors' who provide a sympathetic ear and help patients with their maladies in the broadest terms, predicts Guy Vallancien, a French surgeon. He underlines what is expected to be soaring demand for soft skills and 'the human touch' in an ever-more automated medical world.[10] Some figures highlight the expected boom in connected medicine. In 2014, the digital health market was valued at €2.7 billion. Although the worldwide number of 'connected' objects is currently estimated to be around 15 billion, it is forecast to skyrocket to between 50 billion and 80 billion by 2020. Already more than 100,000 health-based apps are available.[11]

Advances in artificial intelligence will play a prominent role. Artificial intelligence will help to analyse patients' symptoms, cross-referencing these against cohorts of other patients and accelerating diagnosis and prescription of personally appropriate treatments. Over time, doctors' training will change to focus increasingly on working with machines. All that will trigger massive changes in medical training and ways to work. The likely rise in outpatient treatment through technological progress will prompt increasingly mobile healthcare, with specialists visiting patients at home, while 24-hour cover is provided via real-time video and data links. Although doctors will remain the prime

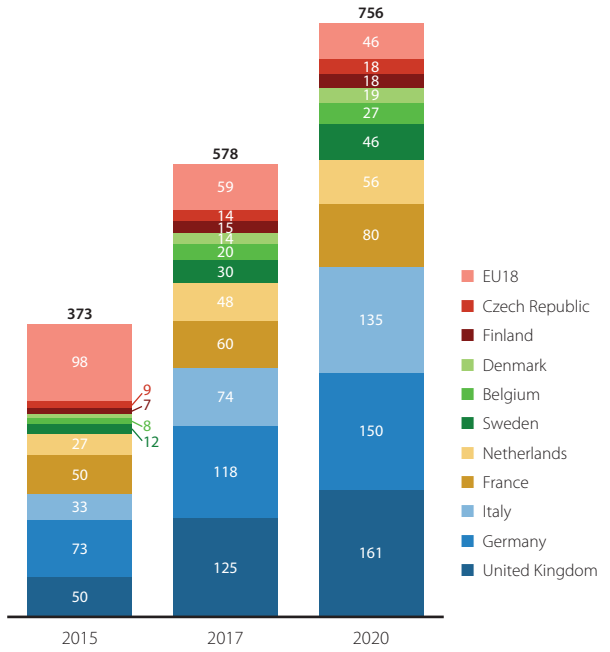
Figure 1



Source: Modis. (2016). Tech jobs on the rise. Modis: IT Infographics, available at http://www.modis.com/it-insights/infographics/top-it-jobs-of-2017/

Figure 2

Forecast of ICT professional vacancies, 2015–20 (1,000s)



Source: Empirica 2015, in European Commission (2016), A new skills agenda for Europe: Skills and digitisation. #EU SkillsAgenda Factsheet.

caregivers, demand will rise for a new breed of professionals, at the intersection of medicine and IT, with medical skills short of those of a full physician but sufficient for supervising, monitoring, and remote care. And as technology helps with the improvement of data analysis and diagnostics, time and space is freed up for doctors and all healthcare personnel to improve personal treatments—tailored and personalised cures—highlighting the continued need for the human touch even in an era of ever-increasing automation.

THE SKILLS DILEMMA

Together, demographics, the pace of technology, and globalisation will deepen a problem that already exists today: the skills dilemma. Currently, the skills needed to fill the new positions fostered by technology are not available. This gap is not being addressed adequately. The European Commission has forecast a shortfall by 2020 of 756,000 information and communication technologies (ICT) professionals (Figure 2).[12] It also estimates that 90% of jobs will require some digital competence, as this is vital for innovation, growth, employment and competitiveness.[13]

Public-private alliances should play a critical role in addressing such disparities. The European Commission has already launched a skills agenda to improve the understanding and development of skills in Europe.[14] Paramount in this agenda is the role of investment in education, which today means lifelong learning as a primary way to upskill mature workers, secure their employability, and fight unemployment.

It is also crucial to revolutionise the school system to better bridge the transition from education to work. Here the private sector can also play a role, cooperating with governments and education institutions to boost young people's employability and shape professional profiles that are able to meet the markets' needs. A key example is the development of the apprenticeship system in new contexts and countries—a model that has proved its worth over decades in countries where it is established.

It is essential that young job seekers combine formal education with practice as early as possible. Already they have a host of opportunities—beginning with internships, apprenticeships, and temporary work. These experiences will help them to strengthen their resumés and develop key soft skills, which are expected to be decisive advantages over those competing robots.

Companies have also multiple options for joining forces and making an impact in education. For example, the Adecco Group is part of the Global Apprenticeships Network (GAN), a body I chair that brings together local stakeholders to develop and implement work-based learning systems tailored to the situation of particular countries. So far, such national networks have been established in Argentina, Colombia, Indonesia, Spain, Turkey, and Mexico. At least five more countries are under consideration for the programme.

Adecco Group subsidiaries are also active in education and training efforts to help close the skills gap. In Italy, Modis is in the second year of its Young Digital initiative, a partnership with the Minister of Labour and within the Youth Guarantee framework. Modis has made a commitment to train 1,000 young people through 12-week intensive ICT boot camps as its contribution to reduce the digital mismatch. More broadly, Adecco Italy has so far placed more than 7,000 young people within the Youth Guarantee scheme. TecnicaMente is another initiative with which Adecco Italy is involved. Launched in 2014 to boost school-work continuity, it targets technical institutes. In 2015, 41 institutes and 1,200 students were put into contact with 250 potential employers by presenting innovative projects. The scheme helps develop skills through student-company cooperation as projects progress, and gives potential employers access to the best candidates in technical disciplines.

In Germany, since 2011, the Adecco Group's euro engineering (ee) has organised the 'ee campus', a career entry programme for young engineers. This programme is designed to educate young engineers in modern techniques in electrical, mechanical, and chemical engineering. Eight ee campus cycles have been run so far, with more than 153 graduates.

In France, in September 2015, Adecco Group introduced the Grande Ecole de l'Alternance. The objective of Adecco Group, France, is to train 10,000 apprentices in three years, driving the development of skills that improve youngsters' employability and better serve the needs of French companies.

The focus in France has been to act on skills shortages via specific tripartite training programmes between Adecco, schools and institutes, and private-sector employers. Adecco Group, France, sources young candidates, places them at companies, and manages their training in partnership with specialised schools and institutes while the companies provide the workplace experience.

Examples include locomotive drivers placed with Eurotunnel, and web and applications developers with Microsoft.

This emphasis on technical competence should not be interpreted as an undervaluation of soft skills. The Adecco Group believes firmly in the adage of 'hiring for attitude and training for skills'. Even a cutting-edge technology group such as Google argues that, of the five attributes required by all employees, expertise comes last.[15] More important are learning ability, emergent leadership, humility, and ownership. Because we live in an age of uncertainty and continuous change, hard skills also need to change continuously. Thus it is of primary importance that successful workers have soft skills that allow them to navigate the inevitable change and deal with complexity.

This approach very much concurs with the experience of Adecco and the findings of the attitude research conducted in 2016 by Le Fonds de Formation pour les Intérimaires.[16] That study shows the top five soft skills for youth were: having the right attitude; flexibility; good oral communication abilities; the capacity to present oneself professionally; and being punctual. Some 46% of youngsters were not hired because they had the wrong attitude. And no less than 30% failed because they did not arrive on time.

Further important soft skills include an ability to adapt to very different and fast-evolving business conditions, an eagerness to learn continuously and improve, networking and active collaboration skills, creativity, conflict management skills, and an ability to influence. Last, but definitely not least, young people must embrace mobility, which is a boost to both hard and soft skills. In this context, mobility includes searching for international experience, developing international networks, and nurturing foreign language skills.

HUMAN RESOURCES 4.0

The radical transformation of the labour market sketched out above inevitably leads to another point: changes to companies' human resources (HR) practices, including new ways to hire and train staff. Although the human factor—empathy, understanding, creativity—will remain irreplaceable, technology and big data will transform HR work.

Most obviously, technology will improve the quality and efficiency of search and match in recruitment. Research shows that 59% of companies currently give up their search after two months if they are not successful—wasting precious time and resources.[17] Technology should greatly improve that. But there will also be a significant impact through creating new HR management systems exploiting the value of hyper-connectivity, such as 'smart working' and the remote management of a dispersed workforce.

Such developments are already underway. In France, for example, since 2015 Adecco has harnessed a software-based digital recruiting system for professional staffing. Developed by Talentoday, with which Adecco partners, the system is based on machine learning. Put more simply, it uses an algorithm, developed with the Massachusetts Institute of Technology (MIT), to analyse all available profiles (over 3 million of them, split by profession, seniority/experience, etc.) based on demography, personality, motivation, and engagement. Following the data trawl, the system provides a predictive analysis that helps to match candidates' profiles with the exact demands of the potential employer and its corporate culture. The system enables a transition from a recruiter's 'gut feeling' to a data-driven, fact-based screening and matching process. The technology additionally assists HR management and talent-development practices. It helps, for example, employees' career development by supporting HR departments in devising accurate training modules and programmes based on the employees' strengths and weaknesses and their motivational levers.

The scheme also rests on recruitment research by the Adecco Group,[18] which finds that traditional recruitment could be hampered by misalignments between candidates and recruiters on values, management style, or motivational drivers. CVs and interviews should be supplemented by more detailed assessments of candidates' personalities and drivers. Through a tailor-made one-day Assessment Center procedure, Adecco Group's professional staffing agencies, such as Spring and Badenoch & Clark, invite employment psychologists to join the recruiters to obtain a broader view of candidates' abilities. Using a 'real life' setting, the process goes far beyond discussing candidates' previous jobs to look into everything from their listening skills and ability to understand clients' needs to their empathy and negotiating competence. By including approaches to problem solving, priority setting, and managerial style, this assessment procedure allows a deeper evaluation of candidates' profiles to match the company's culture as well as the needs of the specific job position and seniority.

NEW PARADIGMS IN WORKFORCE MANAGEMENT

New paradigms are clearly emerging in the work environment. The factors mentioned have shaped the current millennial generation of workers, whose attitudes differ in many ways from those of their predecessors—for example, in the multi-career approach and in the importance they place on work-life balance.

In a world where technology and the internet make information virtually uncontrollable, potentially unlimited, and always accessible to those possessing the right skills, a clear shift in workplace conventions is now perceived: from hierarchy to network, from respect for the status quo to respect for the content, and for a more collaborative attitude in general. The recognised leader is no longer the one who rules by authority or seniority, but the network member best able to influence others, share knowledge, coordinate teams, and catalyse strengths. Put another way, this is a process of moving from ownership and control to sharing, and from a formal planning environment to one based more on experiment, quick reaction, and chance.

The impact of hyper-connectivity and mobility spawns a diffused work-life blend, resulting in the desire for greater autonomy: work moves outside the confines of traditional working hours and spaces with employees having total control over their schedule and environment. That is part of a broader trend towards an increasingly dispersed workforce, leaving companies free to tap into an international pool of top talent, while workers can compete and gain from access to the global labour market, expanding their opportunities and prospects.

Even for the more traditionally minded worker, an office desk is no longer a must. Although there is still some resistance in certain countries and companies, the idea of remote 'smart' working is gaining ground. The Adecco Group Work Trends Study shows that 55% of job seekers would appreciate working more from home—and would also value trying out other forms of work flexibility, such as co-working offices. The research also shows that 87% of recruiters felt the advantages of smart working—such as the possibility of organising one's working time independently and of improving one's work-life balance by reducing the time and cost of commuting—outweigh any disadvantages for job seekers, such as perceived isolation, less interaction with colleagues, and difficulty in sharing corporate culture.[19]

This combination of economic, demographic, technological, and sociological factors lies behind the progressive evolution of the traditional labour contract form. The paradigm is shifting from 'the salary man' to individuals hiring out their talents for specific projects, a move from the value attributed to a fixed contract to a search for employability 'boosts'. In this new environment, training, investment in professional development, and continuous learning and upskilling are becoming ever-more desirable values for a new generation of workers envisaging a multi-career professional life.

That view is underlined by research by Adecco Italy, published in May 2016, showing a fascinating change even in a country where, until very recently, a job-for-life was the highest aspiration. Now job seekers seem to be growing much more positive about flexibility. The research shows, for example, that 57.6% of job seekers thought people working for themselves had better opportunities for self-development.[20]

THE REGULATORS' CHALLENGE

Policymakers need to capitalise on the opportunities afforded by the global economy. They need to simplify red tape, reduce bureaucracy, and cut non-wage labour costs. They must also foster the development of new forms of work while investing in active policies against unemployment and insecurity. The latter should include training and incentives to work and to entrepreneurship, such as help with start-ups.

Admittedly, establishing and then implementing such policies can prove quite a challenge for regulators, caught as they are between the need to boost competitiveness and the requirement to preserve social stability and equality. But more complex regulation—in the form of stifling bureaucracy and market rigidities—will not help. Just look at France, a country known for its regulatory zeal, which has of late looked more to simplifying its rules to improve its global competitiveness.

In determining effective policies and reforms able to boost competitiveness, public-private partnerships can also assist by investing in the right training and sustainable solutions to protect workers, developing employability and securing companies' flexibility. Consider the recent innovation achieved with the CDI intérimaire (open-ended agency work contracts) scheme in France,[21] or the staff leasing project that contributed to providing 5,000 permanent jobs in Italy in 2015. Essentially, under such schemes workforce solutions providers, such as Adecco, can hire permanent personnel. The latter remain on the provider's payroll, gain security, and are made available to companies when required. In this way, such contracts guarantee companies flexibility, with workers available at virtually a moment's notice, but also flexible should the market circumstances change. In France, where Adecco is the market leader in agency work, with a 47% share, the company has been behind no less than 3,400 CDI intérimaire contracts since March 2014, while 7,000 have been provided in the whole French labour market. Since summer 2015, we have seen an acceleration in contracts thanks to new legislation, meaning we are currently signing up between 300 and 400 additional candidates a month on a group basis, confirming the goal of 15,000 for Adecco by the end of 2018 and 20,000 for the entire industry by end 2017. Beyond providing flexibility, such schemes protect workers and adhere to the principle of continuous learning by offering the opportunity for training and upskilling between assignments.

IN CONCLUSION

The time has come to start talking about Human Resources 4.0. Robotisation and hyper-connectivity are driving an epochal change in our lives and in the world of work, creating a host of new jobs in the labour market but also highlighting the fact that many of the new skills required to capitalise on such opportunities are not yet adequately on tap. Meanwhile, it is evident that companies' organisation and management styles are facing a paradigm shift, moving towards network setting, knowledge sharing, and international mobility. Finally, public-private alliances are decisive: they play a vital role in developing the skills needed to drive the progress of our companies and countries, and to foster sustainable solutions that secure protection to workers and boost businesses' competitiveness. Employers, regulators—all of us—should make sure we can meet the challenge together.

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CHAPTER 3

Ten New Work Orthodoxies for the Second Machine Age

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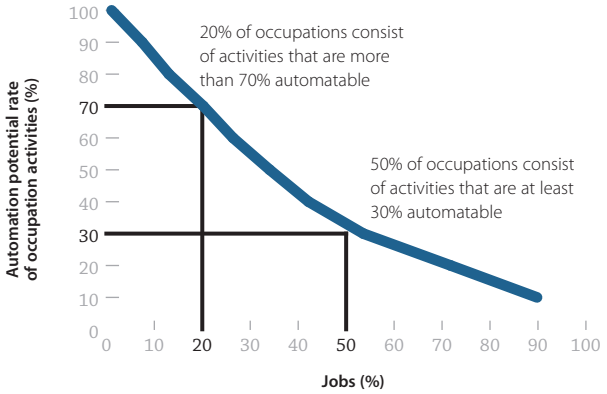
The foundations of the ways we work have been shaken over the past two decades by several trends. These include the shift of employment from manufacturing and primary industries into service sectors; high levels of unemployment, particularly among the young; a growing gap in wages between the very top earners and the bottom half of earners; and the increased polarisation of labour-market opportunities between high- and low-skill jobs.[1]

Digitalisation is now adding new opportunities for both workers and companies and is simultaneously adding new stresses to the traditional ways we work. Digital platforms such as Toptal, Upwork, and LinkedIn are matching talent with needs in the labour market and, in the process, are emerging as sources for global contracting services. At the same time, humanoid machines such as Honda's ASIMO robot have captured both media attention and the public imagination—and they are stirring existential anxieties about the future of human labour itself.[2] Think tanks and organisations such as the World Economic Forum are forecasting the likelihood of major job substitution by automation based on artificial intelligence.[3] Some academic studies, notably by Frey and Osborne (2013) and Bowles (2014), estimate that close to 50% of US and European jobs could be at risk of becoming automated, although other studies put that figure much lower.[4]

Whatever the estimates, it is crucial to examine a number of core hypotheses about how we work and whether that may change. Many predictions about the impact of automation remain rooted in current orthodoxies about the workplace. This chapter anticipates 10 changes in these tenets that are likely to influence the analysis of how the labour market can evolve. These changes are grouped into three categories of changing orthodoxies: those about the nature of occupations, those about labour supply, and those about labour demand. The most common of these orthodoxies are that most jobs are performed by full-time salaried employees in companies; that institutions such as unions bargain with firms to set wages and employment and work practices; that the level of educational attainment is a good predictor of whether or not someone will be hired; that career

Figure 1

Automation potential of US occupations



Source: Chui, M., Manyika, J., & Miremadi, M. (2015). Four fundamentals of workplace automation. *McKinsey Quarterly,* November 2015.
Note: *Automation potential* refers to the technical feasibility of automation from adapting currently existing technologies.

tracks within firms are driven by hierarchical organisational practices; and that occupations consist of a bundling of tasks that fit the traditional industrial workflow of companies.[5]

In the second machine age,[6] these and other orthodoxies are likely to evolve dramatically. As one example, consider how the conventional notion of 'a job exclusive to one firm' in the software industry has changed with digitalisation: TopCoder, one of the largest platforms using crowdsourcing for software development, has built a community of more than 750,000 engineers working on tasks often external to their own enterprise job.[7] Recent research by the McKinsey Global Institute (MGI) has sized the number of people engaged in 'independent work'—those who are self-employed, freelancers, or working on short-term contracts. It finds that at least 25% of the working-age population in the United States and Europe is already engaged in this type of activity as a primary or secondary source of income.[8]

Likewise, the long-established view of a job as 'a fixed bundle of tasks' has been redefined in many occupations.[9] Lower-value tasks that used to be carried out by high-priced engineers, doctors, and lawyers are being performed instead by mid-skill workers. This enables the most valuable talent to focus on what it does best. Similarly, consider that most TV advertising inventory used to be sold upfront, at the start of the season, based on the convention that published programme grids were a good proxy for audience and sales. With digitalisation, media are shifting to automated programmatic advertising sales that have much higher trading frequency than the one-off upfront seasonal sales. The traditional paradigm of sales is no longer about TV audiences but about smart, targeted advertising and about multiscreen sales opportunities beyond TV. For those working in media, automation may lead to a reduction in jobs devoted to the mechanical placement of ads—but, at the same time, it may also create new tasks such as new analytic, yield-management functions and the bundling of traditional and digital advertising inventory.

WORK ORTHODOXIES CHALLENGED

Only by considering the change in orthodoxies can one anticipate the evolution of the way we work. The following 10 changes in labour market orthodoxies, while not exhaustive, are likely to influence how the labour market could evolve.

Changing orthodoxies about the nature of occupations

Two orthodoxies affect the nature of occupations: the idea that occupations comprise a series of bundled tasks, and the idea that they are performed as rigid, well-defined jobs. Digitalisation is changing both these conventions.

1. From 'bundled' occupations to 'unbundled' and 're-bundled' ones. Digitalisation's first important transformation is the way it can unbundle and re-bundle tasks that constitute traditional job occupations. This trend began in earnest 20 years ago with the rise of outsourcing, which was followed by offshoring. It continues as companies look critically at which tasks of the highest-skill talent can be shifted to other workers—whether those are in-house employees, independent contractors, or employees of a contracting firm. With digitalisation, it is important to examine not just occupations in their entirety but also the constituent activities that make up these occupations, for two reasons. First, as research by MGI suggests, the distribution of automatable activities follows a Pareto distribution, with 20% of occupations having 70% or more of their activities automatable—although there are only about 5% of all US job occupations for which virtually all activities can be fully automated (Figure 1).[10] (These percentages refer to the technical feasibility of automating activities by adapting currently available technologies.) Second, with digitalisation, some tasks can be re-bundled with other tasks to form new types of occupations and jobs. For instance, manufacturing in most developed countries has witnessed a wave of offshoring to lower-cost countries as a way to remain competitive. Robotic process automation will not only act as a virtual workforce for many routine tasks, but may lead to a reverse trend—re-shoring—because new human jobs will need to be deployed close to robots in order to handle exceptions, complexity, and new services in process automation. Willcocks' work, for example, suggests that for every 100 jobs lost, 65 new ones could be created, making the full substitution effect of automation much smaller than sometimes claimed.[11]

2. From rigid occupations to more project-based work. A typical work notion is that a person is plugged into an organisation to fulfil a job that is well defined and rigid until she or he moves into a new occupation, often within the same organisation. To represent this structure, an organisation chart is drawn with lines and boxes. Of course, companies sometimes restructure their organisations to improve efficiency and cut costs, following mergers and so on. The organisation chart is then redrawn, but still with well-defined jobs. But increasingly these rigid organisation charts are morphing into an approach to work that is more project-based. Companies that take this approach can match the best person with the right project and increase productivity substantially as a result. For example, 3M—a

US producer of office supplies and other products—created an integrated technology platform for workforce planning that increased internal mobility for employees and boosted productivity by 4%.[12] Media production or new information technology (IT) developments are typically project-based; this approach is likely to become a new norm for the way companies work with digitalisation. Work by MGI looking at companies using digital social tools shows that one critical benefit of those tools is that they enable greater work agility. Indeed, 66% of companies with strong digital adoption of these tools expect that their workflow will become more project-based than function-based, and that teams in the future will self-organise. The consequence of this shift will be a very different organisation with different jobs and functions, and with a much shorter time frame for projects or work carried out than currently is the case within traditional organisations.[13]

Changing orthodoxies about labour supply

Six orthodoxies underpin labour supply in developed economies. They are that the best jobs are salaried ones in companies, that labour supply is typically time-inelastic, that it is rarely mobile, that a person's education is a reliable indicator of his or her work potential, that people work for wages, and that official unions represent workers. The digital era is challenging and, in some cases, transforming those orthodoxies.

3. From salaried jobs to the rise of independent workers. Today, non-salaried forms of employment in Europe and the United States are already large—and they are growing. MGI research finds that roughly 25% to 30% of the working-age population is engaged in some form of independent work. They include self-employed people and freelancers who earn the majority of their income outside of a salaried job, as well as an even larger number of people—including students, retired people, and caregivers—who earn supplemental income through independent work.[14] Digitalisation will be an important force in favour of work outside the boundary of firms. Digitalisation technologies make it easier to switch to self-employment. They provide the tools for a 'business in a box', incorporating a website to create a retail presence; a global distribution platform to cover multiple markets; cloud technologies to outsource back-office solutions; and artificial intelligence tools to support sales, customer care, and so on. Online digital platforms such as TaskRabbit and Uber allow people to engage in freelance work, even without having to acquire special tools, or to do so for only a few tasks. MGI estimates that 4% of employment is already driven by a labour- and capital-based sharing economy.[15] Digital platforms could also bring new workers into the labour pool. For example, older Americans have powered the 'gig economy' in the United States, according to one study.[16]

4. From employer-determined to worker-determined hours. A common assumption in the past has been that labour supply is relatively time-inelastic. Evidence for this can be found in many countries; implementing reforms for more flexible and longer work hours can be difficult. Attempts to do so sometimes prompt labour strife and strikes. But what are the true personal preferences of workers? MGI sought to test this recently with a survey that asked 16,000 European citizens in eight countries about their willingness to make trade-offs between social security and leisure in return for higher incomes and more consumption. The result was that, rather than wanting to work less, people were actually willing to work about 1.8 hours more per week in order to secure and enhance their revenue.[17] Digitalisation enables such aspirations to become reality. A large share of workers on digital work platforms worldwide already perform more than one job, often freelancing on the side to supplement their primary jobs as salaried employees. A new labour force survey of France, Germany, Spain, Sweden, the United Kingdom, and the United States finds that around 25% of people in traditional jobs would prefer to be independent workers with autonomy and control over their hours, and a similar share of people who are inactive would work if they could find flexible hours.[18] According to a recent study by Katz and Krueger (2016), the majority of Uber drivers in the United States, for instance, use the platform to earn supplemental income; many are students and retirees.

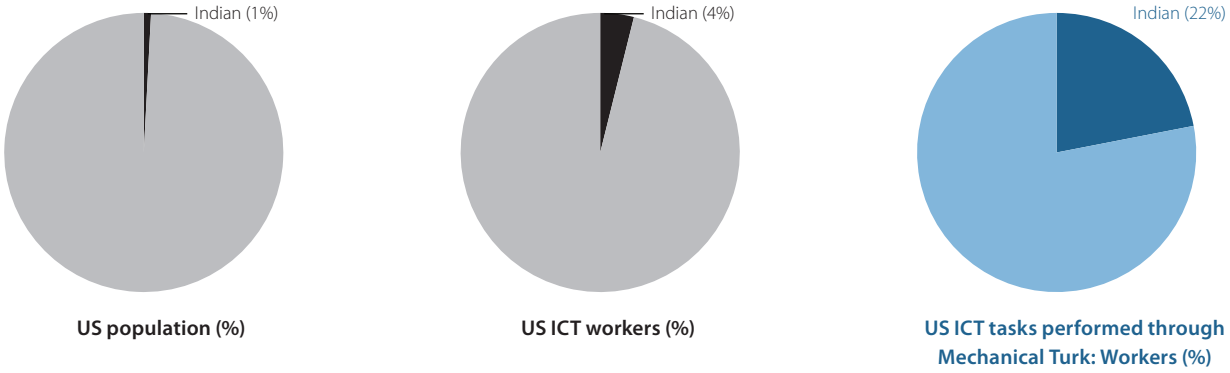
It is possible to envisage many people with a range of skills shifting from a single job to multiple independent forms of work. Already some academics supplement their work with consulting, private classes, or writing activities and medical doctors in hospitals can build secondary practices that are privately owned, and so on. Tracking such activity could require new tools, including ways to measure the number of people who work for multiple employers as well as the number of workers who are independent because they want to be rather than because they are unable to find more opportunities for salaried employment.

5. From local to more global supply. Individual mobility is relatively low. The current share of the world's population living and working abroad amounts to less than 5% of the labour force worldwide—a number that changed little between 1980 and 2010. Even in the United States, a famously footloose society, the rate of mobility among workers has been declining: up until the 1980s, one in five Americans moved every year; today it is closer to one in ten, a decline that began in 1990.[19] Likewise, within countries, labour markets tend to be relatively local, with only a small percentage of people working more than 50 kilometres from their homes. Digitalisation will change this as global platforms facilitate the matching of people from far away. Jobs will go to people, rather than people to jobs. A typical example of this change is Amazon's Mechanical Turk—which characterises itself as 'an online marketplace that gives businesses and developers access to an on-demand, scalable workforce'.[20] Although only 4% of workers in information and communication technologies (ICT) in the United States are Indian-born, 20% of ICT tasks sent out for completion in the United States are performed by Indian 'turkers' (Figure 2).[21] Such platforms can be controversial because they raise concerns about downward pressure on wages, but they can also create opportunities for skilled workers—including those in developed countries—and potentially reduce costs to companies; these savings could be passed on to consumers.

6. From education markers to initiative takers. A traditional view has been that education—especially in the fields of science, technology, engineering, and mathematics (STEM)—acts as an effective marker of talent for job hiring. Digital platforms and applications enable a far richer set of information

Figure 2

Global digital labour platforms and cross-border labour: The example of Amazon Mechanical Turk



Source: Mechanical Turk application program interface, US migration database, US statistics, retrieved April 2016.

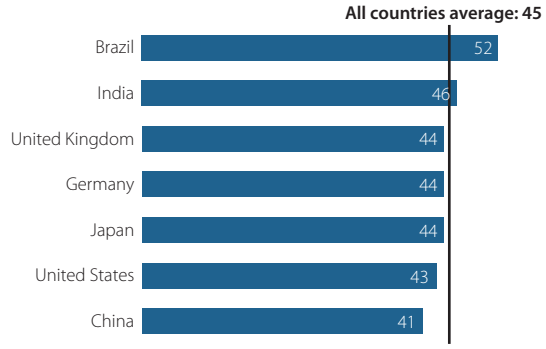
signals to potential employers. Lund et al. (2016), for instance, report that Catalyst DevWorks, which provides software and engineering services, evaluated hundreds of thousands of IT systems managers and found no correlation between college degree and professional success. In reality, the ability to perform a job depends on many factors besides education; these range from a capacity for teamwork to the ability to supervise and, in some cases, even physical strength. Those factors of course depend, albeit imperfectly, on certain skills. A professional choreographer, for example, needs more physical strength than an ability to monitor equipment, while a software engineer needs less physical strength than an ability to take the initiative, and so on. Digitalisation changes this equation. With the rise of automation, creativity and taking the initiative will become critical markers for a job and a good wage. Those features are becoming less and less correlated with education, (even STEM education), as pinpointed by recent research by MacCrory et al. (2016). Online work platforms will become a more effective way of measuring abilities than more typical markers, such as the level of educational attainment, because they provide data about the skills, networks, and careers of job-seekers, as well as recommendations from previous employers and colleagues. Recent work by MGI suggests that online platforms induce people to reengage in the workforce while also improving the matching of jobs and workers, both within and between firms. In total, the matching ability can create up to 1 percentage point more of employment, effectively reducing the natural unemployment rate in many developed economies.[22] A LinkedIn survey found that a substantial proportion of respondents who had switched jobs said their use of online talent platforms had cut their search time and broadened or improved their job options (Figure 3).

7. Value exchange: From work for wages only to participation for other compensation. The typical value exchange orthodoxy of labour is that, for the most part, people work in a company in exchange for a salary. Non-monetary elements other than wages may exist, including job satisfaction, but do not seem relevant. Digitalisation is changing the nature of the value exchange, with many workers using digital platforms as a way to participate and contribute their time, energy, or ideas for non-monetary value. A large proportion of users posting on YouTube do so for peer recognition or the chance to become famous by attracting a large crowd to view their creations, while a growing number post online just for the fun of it.[23] Indeed, non-financial motivation or 'free work' has been an important motor for the growth of the internet in general; think of sites such as Wikipedia that depend almost entirely on volunteers. In the corporate world, 35% of new products introduced at Procter & Gamble came from co-creation on its Connect + Develop platform—and the largest number of contributors were retired former P&G employees eager to spend a few hours contributing to their former employer without remuneration.[24] A Toptal survey in 2016 of recent college graduates found that flexibility and control of hours were more important to job seekers than salary.[25] The benefits of such contributions to those making them are hard to measure, but they are nonetheless real.

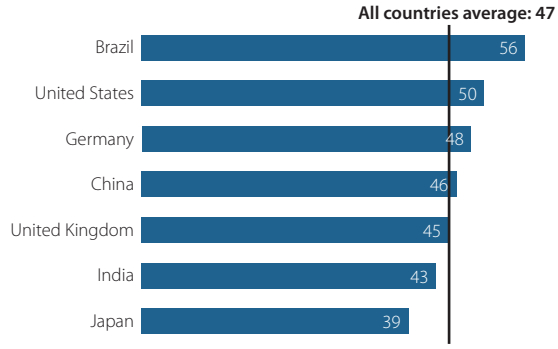
8. From unions to communities. Unions have long been the representative body for most workers, engaging on their behalf in bargaining over work practices with employers. In recent years, however, trade unions have been challenged. The share of workers represented by unions in Organisation for Economic Co-operation and Development (OECD) member nations fell from 34% in 1979 to 17% in 2014. Union membership in the United States dropped from a peak of 21 million in 1979 to 14.5 million in 2014, while in the United Kingdom the decline was almost 50%—from nearly 12 million members in 1979 to under 6.5 million in 2013.[26] Although there are multiple causes for this erosion of membership, unions will continue to be a statutory fixture in many countries as key partners for employers' associations and governments, not just for wage-setting but also for issues ranging from professional training to unemployment insurance. But digitalisation will probably have some impact on the institutionalisation of workers' representation. As already noted, the diver-

Figure 3
Online talent platforms and labour market frictions

Percent reduction in transition time
(6,924 respondents)



Percent of survey respondents who say online platforms broaden or improve job options (5,750 respondents)



Source: Manyika, J., Lund S., Robinson, K., Valentino, J., & Dobbs, R. (2015). *A labor market that works: Connecting talent with opportunity in the digital age.* McKinsey Global Institute, June. Available at http://www.mckinsey.com/global-themes/employment-and-growth/connecting-talent-with-opportunity-in-the-digital-age

sity and multiplicity of work preferences is increasing with on-demand and other types of work. For the union management trying to represent the 'median' union worker, this makes the job of representing people engaged in such varied work forms increasingly difficult. At the same time, online communities are flourishing as social meeting web-spaces for users and peer community members. These could become a new reference for labour organisations. Fruit pickers are a case in point. In the past, fruit pickers had to seek employment on their own during fruit season. Now they organise themselves via online communities and present their joint forces directly to employers. For example, Australia's Fruitpickingjobs.com.au not only enables pickers to join forces, but it also helps with visa applications, accommodation, and other services.

Changing orthodoxies about labour demand

The final two orthodoxies affect the nature of labour demand: the idea that capital is pitted against labour and the notion that jobs are created by companies. Once again, digitalisation is changing both these conventions.

9. From capital against labour to capital working with labour. Economic models of production often assume substitution between capital and labour as production factors. With digitalisation and automation, the companies creating the most jobs are also those that are seeking new skills and digitally savvy workers. The skills most in demand on LinkedIn tend to be in areas of cloud and distributed computing, big data, data marketing analytics, cybersecurity, and user interface design.[27] These talents in turn tend to be complementary to new forms of digital capital deployed. For instance, the return on investment in big data capital architecture and systems is higher than the cost of capital *if* companies invest in complementary big data talent (both analytic specialists and business people able to make sense of these new analytics).[28] This complementarity is far from being fulfilled today, however. MGI estimates that the United States alone could face a shortage in 2018 of between 140,000 and 190,000 people with deep analytical skills and a further 1.5 million managers and analysts with the know-how to use the analysis of big data to make effective decisions.[29] In Europe, roughly half of the workforce currently is reported to have insufficient digital literacy—if true, this creates a major dilemma for companies seeking to invest in new forms of digital capital.[30]

10. From jobs created by companies to jobs driven by an ecosystem. In the recent past, companies were the basis of hiring decisions. The performance of firms guided the opportunity to expand output and, with this expansion, new jobs and new capital investment. With digitalisation, a common firm strategy has been to serve as a platform interacting among multiple firms. Successful firms are at the centre of digital platforms with multiple multi-market contacts, which constitute a new ecosystem offering many more jobs than within a single firm. Apple's introduction of the iTunes store gave birth to a major mobile application industry, creating more than 1 million additional jobs in both the United States and in Europe.[31] Likewise, the YouTube platform has given rise to the presence of multichannel networks aggregating micro-channels into cohesive targeted marketing propositions for advertisers. For e-commerce, major players such as Amazon, Rakuten, and Alibaba provide distribution and hosting platforms for millions of small and medium-sized enterprises and workers to sell their products and services worldwide; these smaller companies thereby entrust their fate to companies that organise new digital ecosystems rather than companies that employ them directly.

FILTERING A NEW FUTURE

How work will evolve in the second machine age is a complex question. *'Prediction is very difficult, especially if it's about the future',* to quote the great Danish physicist Niels Bohr. But one thing we can predict is that new orthodoxies will change the notion of work and the current way of organising it. In this changing en-

vironment, job tasks will be increasingly re-bundled, and capital and labour may complement one another rather than substitute for one another. Workers will be represented by more agile communities, along with unions. The ability to take initiative and to exhibit resilient learning over time may become the new core labour skills. For companies, emerging new forms of more flexible labour provide a significant opportunity to improve agility by tailoring the workforce to operational needs at any given time.

For workers with the necessary skills, freelance or contingent jobs may bring greater satisfaction and freedom to shape a career and work-life balance at will. But in this second machine age, the critical challenge for workers and policymakers alike will be how to identify and acquire the needed skills that automation will not be able to replace.

For the moment, the new orthodoxies must still be tested before they can be used to make accurate predictions about the future of work. As a first step, these orthodoxies need to be understood, and taken into account, before making claims that all our jobs are on the line.

ENDNOTES

1 See Autor & Dorn (2013). In Europe, the European Centre for the Development of Vocational Training (Cedefop) has shown that sectors with a low proportion of high-skill workers tend to recruit fewer high-skill people in the future, creating a sectoral polarisation in the UK economy. See Cedefop (European Centre for the Development of Vocational Training), (2011), *Labor-market polarisation and elementary occupations in Europe,* Luxembourg, Publications of the European Union.

2 More information about Honda's robot ASIMO (an acronym for Advanced Step in Innovative Mobility) can be found at http://asimo.honda.com/. Among media highlights, Adidas is building a fully automated factory in Germany to produce shoes, but the capacity of this plant will still be less than 1% of its full production in China. Likewise, Foxconn is claiming to replace 50,000 workers by robots in Asia; those robots, however, cost $35,000 each, or a multiple of human salary, so the equation is still in favour of humans. See Reboot: Adidas to make shoes in Germany again—but using robots, *The Guardian,* 25 May 2016, available at https://www.theguardian.com/world/2016/may/25/adidas-to-sell-robot-made-shoes-from-2017; and Apple supplier Foxconn replaces 60,000 humans with robots in China, *Marketwatch,* 28 May 2016.

3 The World Economic Forum has predicted that more than 5 million jobs could be lost to robots in 15 major developed and emerging economies over the next five years (World Economic Forum, 2016).

4 Bowles (2014); Frey & Osborne (2013); see also Arntz et al. (2016).

5 This chapter builds on research on labour-related issues by the McKinsey Global Institute, including Dobbs et al. (2012); Manyika et al. (2015); Manyika et al. (2013); and Manyika, Lund, et al. (2011).

6 The 'second machine age' is a reference to the seminal book by Erik Brynjolfsson and Andrew McAfee entitled *The second machine age: Work, progress and prosperity in a time of brilliant technology.* See Brynjolfsson & McAfee (2014).

7 LaToza & van der Hoek (2016).

8 See Manyika et al. (2016).

9 Lund et al. (2012).

10 Bughin (2016a), (2016b); Chui et al. (2015), (2016); Spence & Manyika (2015).

11 Willcocks (2016).

12 World Economic Forum (2012).

13 Bughin et al. (2016).

14 See Manyika et al. (2016).

15 Manyika et al. (2015).

16 Katz & Krueger (2016).

17 Labaye et al. (2015).

18 See Manyika et al. (2016).

19 Molloy et al. (2014); Manyika, Lund, et al. (2011).

20 This characterisation is from Amazon's Mechanical Turk's welcome page, available at https://www.mturk.com/mturk/welcome

21 Bughin (2016c).

22 Manyika et al. (2015). The report estimates that the use of an online talent platform can improve profit by up to 2.75%. This estimate includes not only better matching in hiring and in new functions within firms, it also includes greater participation of people in the workforce.

23 Bughin (2007), (2015).

24 Huston & Sakkab (2006).

25 Toptal is a platform that connects employers with top talent. See Toptal Survey: Recent grads care more about money than using their degree-or job flexibility, Toptal Press Release, 24 May 2016.

26 OECD.Stat database, statistics on union members and employees. See also Why trade unions are declining. Blog post, The Economist explains, 28 September 2015, available at http://www.economist.com/blogs/economist-explains/2015/09/economist-explains-19

27 EPSC (European Political Strategy Centre), (2016), The future of work: Skills and resilience for a world of change, *EPSC Strategic Note 13,* European Political Strategy Centre, 10 June.

28 Bughin (2016b), (2016d).

29 Manyika et al. (2011).

30 European Commission, (2014), *Measuring digital skills across the EU: EU wide indicators of digital competence,* European Commission, available at https://ec.europa.eu/digital-single-market/en/news/measuring-digital-skills-across-eu-eu-wide-indicators-digital-competence

31 Apple, (2016), Record-breaking holiday season for the App store. Press Release, 6 January 2016, available at http://www.apple.com/pr/library/2016/01/06Record-Breaking-Holiday-Season-for-the-App-Store.html

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CHAPTER 4

Digitalisation Initiatives and Corporate Strategies: A Few Implications for Talent

Liri Andersson
this fluid world

Bruno Lanvin and Ludo Van der Heyden
INSEAD

The enhanced capability and affordability of technology caused by digital innovation is leading to fundamental changes in how business is conducted, organisations are managed, and consumers behave. For decades, a large proportion of 'traditional' organisations and businesses have engaged in *digital initiatives* aimed at exploring what business opportunities digitalisation offers and how best to capitalise on them.[1]

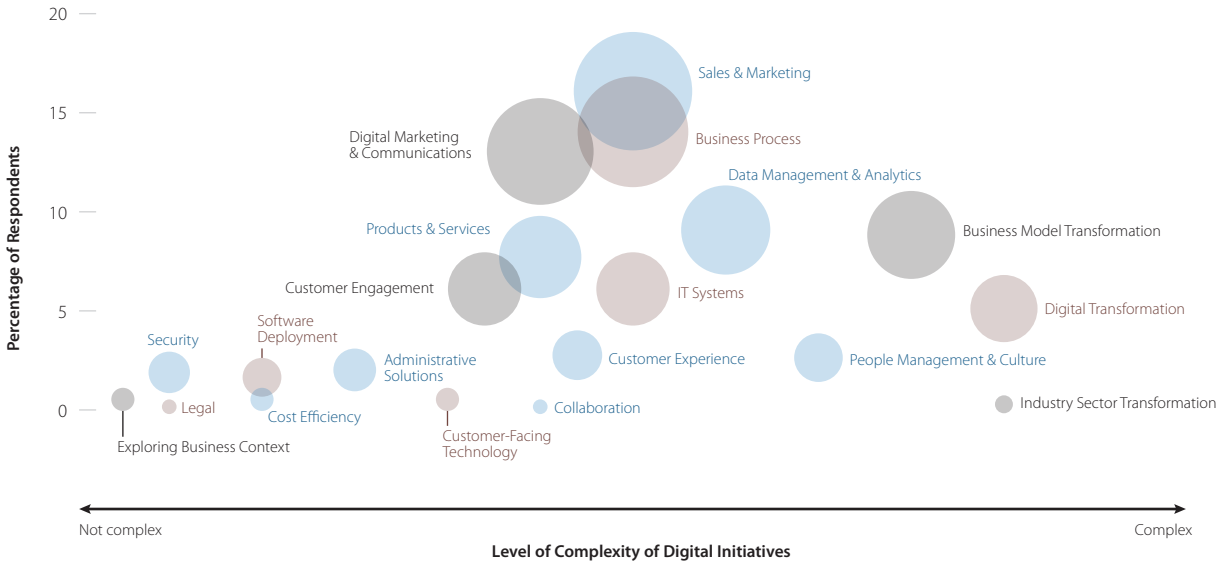
Although this report focuses largely on digital transformation and how technological change affects talents, jobs, employment, and work, it is important to recognise that, for a large majority of organisations—and their leaders—the agenda remains very focused on other dimensions of digitalisation. While many analysts, media, and international organisations try to define the horizons and possibilities of 'Industry 4.0' and determine how whole industries could shift to new grounds, business leaders have to cope with the down-to-earth difficulties of handling a variety of digital initiatives and decide whether and how they should be implemented.

This chapter, largely based on a recent global study carried out by Andersson and Van der Heyden,[2] attempts to bring back this micro-economic dimension of digitalisation and identify some of its consequences to the talent and employment scene.

Until clarity about the meaning of digital and the impact of digitalisation is reached, many talent-related questions remain fully or partially unanswered: What role does technology alone play in digitalisation? Is digitalisation in enterprise underpinned by the edification of a supportive corporate culture that can make it productive, engaging, and sustainable? Are the talent needs and gaps correctly identified? And are current management and leadership approaches relevant, and if not, how do these need to be tweaked?

One thing is clear: the mix of talent needed by organisations to face the major paradigm shift brought about by digitalisation goes far beyond having a competent chief information officer and chief technology officer, supported by a host of tech-savvy staffers. It encompasses what the European Commission

Figure 1
Clusters of Digital Initiatives by Level of Complexity



Source: Adapted from Andersson and Van der Heyden (2016).

has, for a number of years, labelled 'e-skills'[3]—that is, an unprecedented combination of advanced technical skills (e.g., in big data and business analytics) on one hand, and high-level softer skills on the other hand (the ability to lead multicultural cross-border teams; to re-think marketing and branding strategies in an era of social networking; to foster digital innovation and platform-based business models; and to reorganise functions such as procurement, sales, or even payroll around digital tools).

ORGANISATION OF THIS CHAPTER

The chapter begins by reviewing how enterprises define *digital*. It then delves into the question of whether companies engage in digital initiatives, and if they do, how they execute that engagement—whether they truly seek digital transformation, and what the implications of this search are for the talent and competence equation. The question of ownership of these digital initiatives leads to an examination of the nature of approaches—that is, whether the approaches are internal or external. The chapter then reviews the extent of the success of digital initiatives and what exactly those initiatives contain, before identifying the drivers of that success, and the implications for talent and competences.

DIGITAL AS DEFINED BY ENTERPRISE

Although the use of the term *digital* is widespread, the range of uses highlights the extent to which the definition of digital varies from one organisation to another in terms of type and complexity of the engagement. Asked about their most important digital-related initiative and how complex their various initiatives have been, respondents to the Andersson and Van der Heyden study offered reactions that could be grouped into 21 different categories with different levels of complexities (see Figure 1; see also Annex 1 for details about these categories).

It is clear that the term *digital* currently defies definition. Each organisation's digital journey is individual, with no clear destination in sight. There is no one-size-fits-all way to 'do' digital, nor indeed any 'right way' to do digital. Furthermore, no corporate digital solution has emerged against which to benchmark or to copy.

The lack of a clear definition of the meaning of the term suggests that issues concerning the required competences, capabilities, talent, and resources (including human resources) are surrounded by a similar veil of ambiguity. Subsequent sections of this chapter explore aspects of this lack of definition and its possible consequences for digitalisation and the current context of ambiguity.

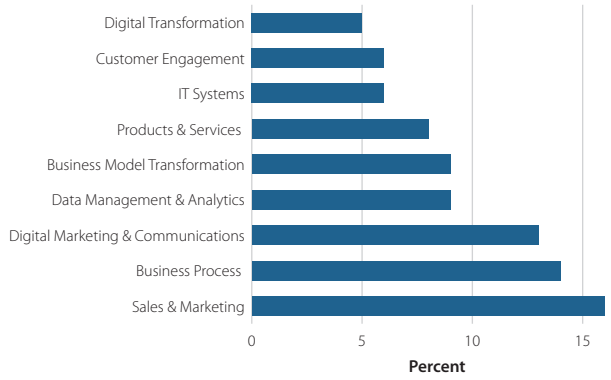
REASONS TO ENGAGE IN DIGITAL INITIATIVES

More complex initiatives that span different functions and the value chain are less common. For example, findings from Andersson and Van der Heyden's study show that 9% of organisations were engaging in what they termed business model transformation and 5% in digital transformation (Figure 2).

Contrary to common expectations, companies are not driven by the desire to 'go digital'. Rather they focus on using digital solutions to achieve specific business objectives.

The digital initiatives in which they engage are problem-driven, prompted by external or internal business needs or aspirations. And even if triggered by external forces, they are likely to be incorporated into a firm's existing way of doing business, rather than developed as standalone digital initiatives. This is explained in part by a desire to get more out of digital initiatives

Figure 2
Categories of Main Digital Initiatives



Source: Adapted from Andersson and Van der Heyden (2016).

by insisting on a strong business rationale, and in part by the change-management objective of reducing internal resistance and fear.

In reality, the principal reasons cited by firm managers for engaging in digital initiatives are to improve engagement with consumers and increase efficiency (see Figure 3).

The focus on using digital solutions to achieve business objectives rather than as an enterprise-wide digital transformation has talent implications. It is not enough to recruit digitally savvy people: firms need to ensure that their present workforce has the right competencies and understanding to incorporate digital approaches in their day-to-day activities. This thinking and these approaches must take place across the value chain as part of the way firms innovate, produce, provide services, and manage their organisations and teams.

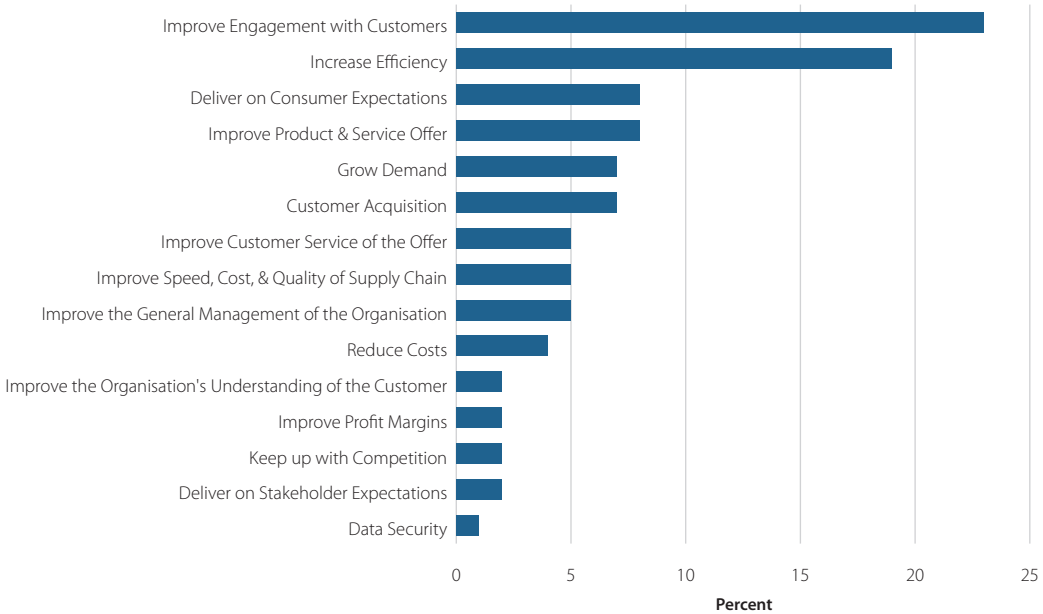
WHO OWNS DIGITAL INITIATIVES?

The survey conducted by Andersson and Van der Heyden found that digital initiatives are mostly launched and managed by different functional areas inside the organisation. The initiatives may cut across different functions but—and this came as a surprise—they are rarely company-wide or mandated from the top. Because something grows organically from business needs and is launched by company functions rather than top management, there is a greater chance that it will work because it has been incorporated into the flow of business as usual. This has the advantage of ensuring that digital is fully integrated into business operations and objectives rather than misaligned with traditional activities of a business.

Because digital initiatives are so engrained in business, it is not sufficient to hire digitally savvy staff or to appoint a head of digital or a digital director to the board. All aspects of talent need to be reconsidered in the context of a digital (business) world. These include considerations of what is actually talent in this environment compared with what was talent in the old environment: what talent is needed, and who and how talent is hired (and from where).

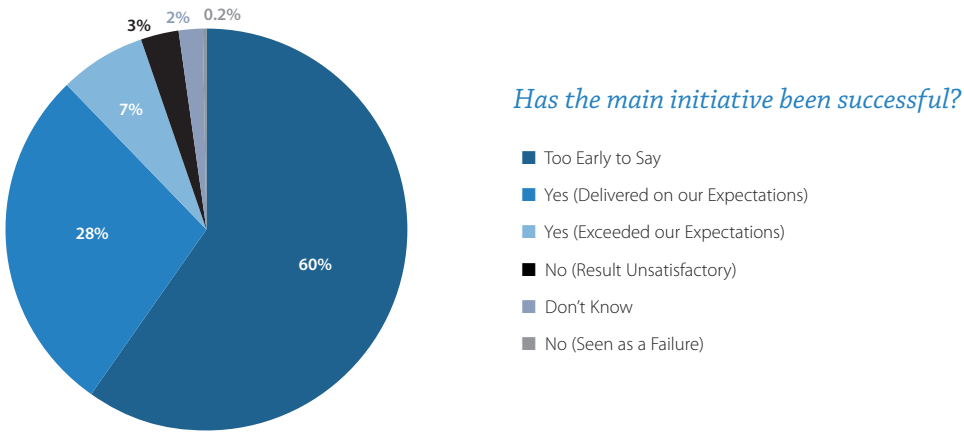
Awareness and understanding of the impact of digital (on the business environment, the business itself, and the organisation) is needed among board members, the leadership team, and throughout the organisation. Only then can a company be sure to choose well among the vast number of digital options that underpin the promise of customisation and embark on appropriate change initiatives.

Figure 3
Reasons to Engage in Digital Initiatives



Source: Adapted from Andersson and Van der Heyden (2016).

Figure 4
Level of Success of Digital Initiatives



Source: Adapted from Andersson and Van der Heyden (2016).

This need for the entire organisation to be involved in understanding digital initiatives is further highlighted by the fact that the impact of digital initiatives should not be underestimated. Even a basic digital adjustment can necessitate widespread changes to an organisation's purpose, product, structure, people, and processes. It is not only about getting the implementation right, but also about taking the appropriate change management steps to support the emergence of a new business order brought about by engaging with digital effort. Spillover effects of a digital solution on the wider organisation need to be managed, which in turn requires a delicate balance of skills, competences, and talents across the organisation.

COMPETENCES VS TALENTS: INTERNAL VS EXTERNAL APPROACHES TO DIGITALISATION

The digital activities explored by the survey and reported in Andersson and Van der Heyden (2016) were mostly problem-led or solution-driven, designed to solve specific business or organisational challenges, or to capitalise on a particular business opportunity.

The companies surveyed tend to seek external help from so-called digital experts before acting in the digital space—which is not surprising given the wide array of applications available and the limited experience of internal experts. But beware: 'expert advice' often has embedded expert bias. External experts are susceptible to bias in the way they frame problems and solutions—typically in favour of options with which they are familiar—rather than customising them in a way that truly meets the company's needs and addresses its business challenges and opportunities.

Hence, in order for the company to be successful and for digitalisation to be effective, prior to investing in specific digital solutions, there must be internal cooperation and external collaboration with key partners to identify the business problems and opportunities that digital solutions can address.

This requirement raises an important talent-related issue: should digital strategies (if such strategies are required) or digital activities be managed internally or externally, or should they be managed by a combination of both? How should and could management, which does not have the required digital skills but does have business understanding, be supported in the short term (during the transition period) versus the long term, and by whom (new hires, other departments in the firm, independent contractors, consulting firms, collaboration with other players)? How should learning the skills needed to succeed in a digitally enabled world be managed, and what key performance indicators (KPIs) are appropriate?

This issue in turn raises the question of the relevance of a head of digital, and also what role such a head should play if recruited: define a business vision for digital in the organisation, collaborate with human resources recruiting and training, or execute and implement digital initiatives?

MEASURING THE SUCCESS OF DIGITALISATION

Has digitalisation delivered on expectations? Have digital initiatives contributed to business objectives? Have these digital initiatives proven successful? And if so, what is the main driver of their success?

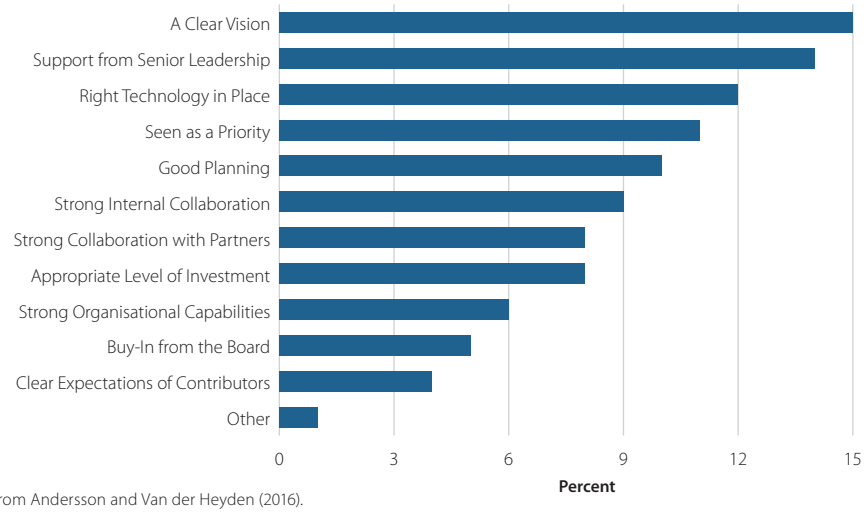
The survey in the Andersson and Van der Heyden study reveals that most respondents felt it was 'too early' to say whether their digital initiatives had been successful (see Figure 4).

One of the main findings of the survey presented in that study is that digital success is not just about the technology. Only 12% of respondents cited 'having the right technology in place' as a critical success factor. Although success was primarily perceived as being rooted in leadership and management (see Figure 5), many respondents felt that leadership and management got insufficient attention.

When asked what digital initiatives their organisation should focus on (but had so far overlooked), 'people management and

Figure 5

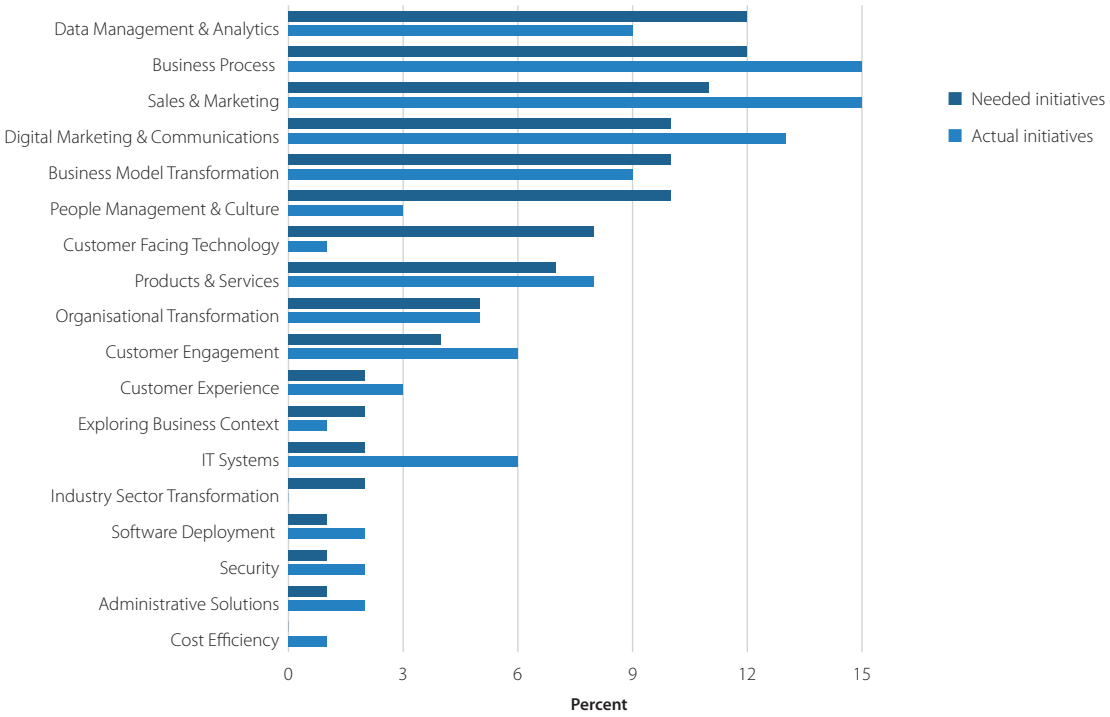
Reasons for the Success of Digital Initiatives



Source: Adapted from Andersson and Van der Heyden (2016).

Figure 6

Digital Initiatives in which Organisations Engage: Needed Compared to Actual



Source: Adapted from Andersson and Van der Heyden (2016).

culture' was the category with the greatest gap between initiatives needed and those actually implemented (see Figure 6).

Of the respondents to that survey, 10% (27% at management level) felt that their organisation's main digital initiative should be in the area of people management and culture, compared with 3% for whom that area was already the main initiative. This finding suggests that when it comes to digital initiatives, too little effort is put into the people, organisational, and cultural aspects of the initiative.

The study finds that only 33% of respondents agree or strongly agree with the statement that 'We have put the majority of our employees through digital training'.

With the evolution of digital methods, technology and processes are no longer perceived as the main drivers of success. To

succeed, organisations need a stronger focus on people, management, and culture. The findings of the Andersson and Van der Heyden study suggest that these aspects are typically addressed too late, potentially because digital leadership is excessively tech-driven and left to experienced professionals. Ironically, the need for traditional change management capabilities is increasingly important in a digitally enabled world.

MEASURING DIGITAL INITIATIVES

What is the right way to measure engagement in digital? Digital initiatives are rarely seen as separate projects with their own specific KPIs. Generally the impact of a digital initiative is measured on corporate or business KPIs, consistent with the previous observation that 'going digital' is rarely the key driver. Business metrics used include competitive benchmarking, customer satisfaction, impact on sales, increased leads, improved customer experience, and so on.

But how then can the success of transformational digital initiatives be determined? By definition, this cannot be done using digital measurements alone, because business performance metrics have greater validity in this context. Intermediate proxy measures such as the impact on people and behaviours should be considered.

This raises the question of how people's performance should be measured in relation to digital initiatives, because standalone digital KPIs or digital-related management objectives are neither realistic nor useful. How does a digital initiative get incorporated in measurement to ensure that people own the role they play in pushing the digital agenda?

CONCLUSIONS

Insights from the work floor are critically important to understand the potential talent implications of both digital initiatives and digital strategies. Although the GTCI's approach is primarily macroeconomic in nature, the views gathered from studies such as the one presented here offer insights on the microeconomic, industry, and company-specific dimensions of the technology-talent equation:

- When it comes to digital initiatives most companies are still in a 'digital fog': most approaches are still in an exploratory phase, and 'digital' is not clearly defined. This lack of clarity results in difficulties linking digital initiatives to a general digital strategy that organisations could adopt and implement, and difficulties determining what kind of talents and skills they would need to do so successfully. However, the few companies that are able to make such choices effectively would appear to benefit from a clear competitive advantage.

- As of now, 'digital is business and business is digital'. With this reality in mind, it is clear that the responsibility for digital cannot be delegated to one person or even one specific department. Instead it has to be the responsibility and priority of the whole organisation and all its members, including at board level. Digital tactics must become embedded in what a company does and how it does it. A direct consequence of this is that digitalisation must be considered at all levels—from the plant floor to the board. Current practice, however, does not provide the context for this need for comprehensive, all-embracing consideration to be effectively addressed. The board, in view of the choices to be made, ought to have access to deeper digital information and competence so as to allow for knowledgeable digital decision making.

- Digitalisation allows for the possibility of customising an organisation and its strategies, processes, products, and services to a much greater degree than has previously been possible. Hence a majority of business leaders consider that the talents and competences suitable to one organisation should not be seen as necessarily relevant to another firm—rather the contrary, in fact—because tailoring talent and competencies allows an organisation to define a clear competitive advantage in its quest to sustain uniqueness.

- There is a need to design strategies that are suitable for a digital context. This calls for strategic and organisational skills that are both broad and specific. Digital thinking as an all-encompassing disruptor of business could not possibly fall under the domain of a digital specialist, but would instead fall under the responsibility of general management and the board. However, particular digital initiatives could very well fall under the responsibility of a specialist, as such initiatives have technical aspects associated with them.

- For those organisations that have a board, it is fair to say that digital skills are in limited supply across boards of directors. The question is whether these skills should be developed through 'learning by doing', training, recruiting new talent, enhancing diversity across boards, or collaborating with consultants—or a combination of all these methods.

- It is likely that the ideal talent equation in the digital age will be company- and target segment–specific rather than business- or even industry-specific. Once digital skills are more prevalent across firms, businesses will be in a significantly better position to design strategies that are relevant in a digital age, and to manage the inevitable accompanying changes.

From a micro-economic point of view, it hence appears that it is still too early to advance from the current state of digital fog directly to normative and prescriptive talent recommendations at the enterprise level. Yet, the broader (macro) perspective considered in other parts of this report show that digital technologies have started to create tectonic waves across entire industries such as transport (uberisation), as well as banking, insurance, and health, among others, calling for urgent adjustments

in talent strategies. These two logics—the micro logic that includes talent considerations and constraints, and the macro logic of competitive impact—are bound to collide at some point and will need to be reconciled. The earlier their respective values are recognised, the more likely it will be that digital transformation and job creation will be seen as two sides of the same coin. In any case, business organisations and business leaders will be at the centre of this effort. For the same reason, digitalisation will be at the centre of the concerns of business leaders in the years to come.

ENDNOTES

1 *Traditional organisations* are defined here as organisations or businesses whose core activity is not digital by nature or by initial design.

2 Detailed findings of this work are published in the report *The* Real *Impact of Digital - As Seen from the 'Virtual Coalface': Eleven Insights and Ten Recommendations for the 21st Century Derived from the 2016 Global Digital Research Survey,* (2016), Andersson, L. & Van der Heyden, L., Fontainebleau, Singapore, and Abu Dhabi: INSEAD and this fluid world. The full report is available at http://centres.insead.edu/corporate-governance-initiative/meeting-reports/index.cfm. The study investigates digital strategies both quantitatively (through an online survey) and qualitatively (through follow-up interviews). Some 1,160 managers, executives, and board members representing a wide range of organisations, industries, functions, and regions were involved. The aim of this research was to shed light on the reality of digital in today's workplace, how it is defined by the business community, the implication of digital technologies for companies, how it is being incorporated into organisations, what managers and their boards expect of digital, and how it is truly changing the way business is conducted.

3 See for example the European Commission (EC)'s e-skills Manifesto, available at http://eskills4jobs.ec.europa.eu/manifesto, and most recently the EC's Grand Coalition for Digital Jobs, available at https://ec.europa.eu/digital-single-market/en/grand-coalition-digital-jobs

Annex 1

Cluster Definitions

Administrative Solutions
Initiatives aimed at digitalising the organisation's administrative activities

Business Model
Strategic initiatives aimed at changing the organisation's business model, from its operating model to its infrastructure, including what it sells, to whom, and how it goes to market

Business Process
Initiatives aimed at digitalising and automating an organisation's internal processes to achieve efficiencies

Collaboration
Implementation of digital platforms aimed at facilitating collaboration with suppliers, partners, and/or customers

Cost Efficiencies
Digital initiatives aimed at reducing an organisation's costs

Customer Engagement
Initiatives primarily focused on allowing an organisation to engage more frequently, or differently, with consumers using digital as a facilitator

Customer Experience
Implementation of new initiatives, processes, and digital platforms and tools aimed at creating, managing, and/or measuring cross-channel customer experiences

Customer-Facing Technology
Implementation or updating of customer-facing technologies

Data Management & Analytics
Initiatives aimed at facilitating the gathering and manipulation of internal or external data to improve an organisation's strategic decision making

Digital Marketing & Communications
The use of various digital techniques, channels, and platforms to build a brand, communicate and/or promote an organisation and its products or services

Digital Transformation
A fundamental transformation of the organisation across the value chain and its functions, impacting the business model and all touch-points with consumers, suppliers, and collaborators

Industry Sector
Initiatives aimed at digitalising an industry sector

IT Systems
Implementation of information technology business systems

Legal
Initiatives aimed at handling legal realities brought about by digital

Organisational Management & Culture
Initiatives aimed at addressing organisational, management, and/or cultural issues

Product Innovation
Initiatives aimed at innovation of new digital products and/or services

Products & Services
Initiatives aimed at digitalising an organisation's offer in terms of its products and/or services

Sales & Marketing
Creation of new digital sales & marketing initiatives, or digitalising the organisation's existing sales, marketing, and customer service processes (excluding communications)

Security
Initiatives aimed at increasing an organisation's security in relation to technology

Software Deployment
Implementation of software or digital tools

System Integration
Initiatives aimed at integrating an organisation's systems and/or tools

Source: Adapted from Andersson and Van der Heyden (2016).

CHAPTER 5

Telecommuting and Technology-Mediated Work Platforms: A Double-Edged Sword for the Advancement of Female Executives at Work

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Human Capital Leadership Institute (HCLI)

Workplace diversity has preoccupied business leaders for decades, and ensuring ethnic and gender diversity at work continues to be a top priority for companies today. In 2015, McKinsey & Company published a report suggesting that companies that pay more attention to diversity issues are more likely to be financially successful than companies that do not,[1] thus providing initial evidence that it makes financial sense for companies to commit themselves to diverse leadership in senior management.

Of all the different types of diversity needed in the workplace, achieving gender parity in senior management remains the top concern for companies.[2] This is evident in the amount of attention that researchers and practitioners are paying to the issue. Yet, despite the best efforts of companies to support the career advancement of women, female workers continued to be under-represented in senior management.[3] In 2012, approximately 16% of C-suite executives in Fortune 500 companies were women; today, that figure stands at 17%.[4] In Singapore, the Diversity Action Committee (DAC) released a report in October 2016 stating that as of June 2016, women held 9.7% of directorships in all publicly listed companies on Singapore's Stock Exchange (SGX).[5] Although this figure is higher than the 8.8% in 2014, it is rather dismal given that it is still significantly lower than the ambitious 35% to 40% target set by the Scandinavian countries.[6]

CAN TECHNOLOGY HELP WOMEN GET AHEAD?

To better understand issues surrounding the development of female executives and why women's progress in the workplace is so slow, the Human Capital Leadership Institute (HCLI) and the National University of Singapore (NUS) Business School embarked on a study to examine some of the possible underlying reasons that limit the career progression of women. Based on an extensive literature review and in-depth qualitative interviews with 30 senior female executives from multinational corporations that are operating in Singapore, we identified four underlying reasons that explain why women continue to advance slowly in their careers despite the extensive work done by companies to build awareness around the topic and the initiatives that have been implemented to effect change. These are:

- Adverse evaluations that result from unconscious biases that exist in workplaces.

- Lack of an effective internal strategic network, which limits the corporate visibility of women to senior executives and career sponsors.

- Gendered expectations about women that result in a catch-22 leadership situation where there are conflicting beliefs among stakeholders about the 'right leadership style' that female executives should adopt at work.

- The need to balance career aspirations with family responsibilities.

Among these factors, the need to balance career aspirations with family responsibilities was repeatedly cited by our interviewees as the top explanation for why successful female executives routinely opt for a career slowdown during the important mid-career stage. A major reason contributing to their decision to slow their career can be attributed to the strong social norms surrounding the role of women in families. In spite of progress made to ensure social equality and non-gendered social roles, women—particularly those from Asia—are still explicitly expected to be the primary caregiver at home. In fact, in some societies such as the Straits-born Chinese community in Singapore and Malaysia,[7] women are often regarded as the matriarch of the household who routinely makes all the major decisions on how the family is to be run.

While early research on the conflict between work and family responsibilities focused almost exclusively on understanding how work will impinge on family responsibilities,[8] more recent theoretical and empirical work suggests that demands of family responsibilities will also negatively impact individuals' performance at work,[9] thereby underscoring the pressing need for organisations to help their employees better manage stress and tension arising from juggling work and family responsibilities.

Although both men and women are equally susceptible to experiencing time-, strain-, and behaviour-based conflicts when juggling work and family responsibilities, women are likely to experience these conflicts more frequently and at greater intensity than men do. This is because women have traditionally been subjected to a greater degree of social sanction than men for non-compliance with family demands. Women are more likely than men to experience detrimental spillover effects of work and family as a result of the more porous boundaries that they have constructed between these two conflicting roles.[10]

Companies have routinely implemented corporate policies intended to help support women's careers and their explicit need to juggle the dual-role of employee and primary caregiver. These policies include flexi-time, flexi-employment schemes, dynamic working, unrecorded time off, work-from-home schemes, and telecommuting.

Among the different pro-family policies implemented by companies, the flexibility to telecommute from home via technology-mediated work platforms has been touted as one of the most effective ways for women to manage their dual responsibilities.[11] This is because telecommuting via email and technology-mediated collaborative platforms like Slack, Trello, MindMeister, and ConceptBoard have allowed female executives to enhance the fit between work and family, as well as to increase the level of control they have over competing work and family demands.[12] This perception has largely been corroborated by female executives in our interviews, who note that the ability to work flexibly with the help of technology is a welcome alternative to working 9 am to 5 pm in a physical office.

Using a semi-structured interview approach, we examined the efficacy of telecommuting in helping women juggle their dual responsibilities. Specifically, we discuss whether telecommuting and technology-mediated work platforms would enhance or impede women's abilities to balance work and family responsibilities.

TELECOMMUTING AND TECHNOLOGY-MEDIATED WORK

Telecommuting is broadly defined as virtual work that entails spending a portion of the work time away from conventional workplaces, typically working from home with the aid of computer-based technology.[13] The growth of telecommuting and technology-mediated work has been phenomenal. Global Workplace Analytics estimated that there are as many as 36 million telecommuters in the world today,[14] and Gallup suggested that the pool of telecommuters in the United States grew from a mere 9% in 1995 to 37% by the end of 2015.[15] Much of this growth has been driven by the rapid advancement of information technology, especially the increasing availability and versatility of online collaborative platforms that allow more sophisticated forms of work to be completed away from traditional offices.

Two decades ago, before the ubiquity of workplace internet and virtual collaborative platforms, telecommuters essentially performed relatively routine or clerical work, such as data entry or telemarketing. The rudimentary nature of technology-mediated work therefore had limited the usefulness of telecommuting as a viable alternative to working from office, and telecommuting was largely limited to employees who did not have managerial responsibilities or the need to work in collaborative teams. Fast forward to today: the increased sophistication of virtual technology has swelled the ranks of professionals, managers, and executives who choose to adopt technology-mediated work. Telecommuting is no longer limited to routine work but now also encompasses professional-level work that requires working across organisational hierarchies or geographical boundaries.

From an organisational perspective, virtual work has been touted as a way to manage diverse teams in different geographical offices and time zones. It has allowed for cross-geographical teams to collaborate more effectively in real time, as virtual meetings can be held literally at any time and any location. It has also enabled companies to manage projects more effectively, especially when functional expertise for projects is situated in different parts of the organisation or when the in-house project team has to collaborate extensively with external project teams. In the book *Human Capital Insights,* published by HCLI in 2015,

we explored how technology-mediated work platforms have transformed the way companies create and manage institutional knowledge, as well as how access to a digital depository of knowledge has facilitated collaborations with internal and external stakeholders. One of the companies featured in the book is Genpact, a business process management and technology services firm based in India. Genpact created GLUE, an enterprise collaboration platform that has changed the way it manages knowledge and projects. GLUE is an enterprise-wide collaboration platform that consolidates and harnesses its global intellectual capital.[16]

From the employees' perspective, telecommuting via technology-mediated work platforms can enable them to have more control over their daily schedules and work demands. In particular, telecommuting is widely perceived as having a positive impact in reducing the level of work-family conflict individuals might face, thereby allowing them to better accommodate family demands along with their workplace responsibilities.

As highlighted by one of our interviewees, who is a general manager in a fast-moving consumer goods company, technology-mediated work platforms have enabled her to divide her day into three separate working shifts—a day shift where she manages her work responsibilities from the office, a home shift where she performs her role as a spouse and mother to two school-aged children, and a global shift from her home where she performs her role as the global general manager of the company after her children have gone to bed.

TECHNOLOGY, WORK, AND FAMILY

Although telecommuting via technology-mediated work platforms has been viewed by many as an effective way for female executives to manage family demands, some female executives see telecommuting as a source of conflict, further exacerbating their difficulties in juggling work and family. This is because telecommuting has brought work and family roles in closer proximity to each other, allowing greater interference to take place between the two roles.[17]

A mid-level executive from a financial services firm noted: *'I appreciate the flexibility to work from home but I perceive it to be rather unproductive. I find myself constantly being distracted by tasks and errands, and not being able to concentrate fully on the work. Instead of focusing on work when I should, I often end up doing family chores. I would, almost always, complete less than what I would if I were to work from office.'*

This observation is not an isolated one. Prior research has repeatedly suggested that telecommuters almost always engage more in non-work activities at the expense of work when they telecommute. This is more likely to be the case for those who voluntarily choose to telecommute as a way to help manage work and family demands.[18] It is, however, not uncommon to also hear anecdotal experiences from female executives about how they have successfully embraced telecommuting and how such arrangements have allowed them to better manage their dual roles.

A senior executive from an oil and gas company shared this with us: *'For the last decade, I have always worked from home in the morning. This arrangement started when my eldest son started schooling. My husband had a very demanding job that required him to start very early in the day. I took over the responsibility of sending our son to school and I will always work from home after sending him to his classes. I will use the morning to clear my emails and to work in the comfort and quiet of my home. I can do this without being distracted by my team and my team appreciated me not breathing down their necks every morning. I'll meet them in the afternoon when I'm in office but I always give them the space to run their own teams and do what they need to do in the morning. This has worked very well for me, and for them as well.'*

Managing Work-Life Boundaries in the Digital Era

One of the ways to reconcile these seemingly disparate outcomes and perceptions of telecommuting is to understand telecommuting by looking at how people manage the boundaries between work and non-work. The need to manage boundaries and identities is an important notion, especially in an era where technology has further blurred the lines between different roles. What once were salient and separate roles of work and non-work are themselves now increasingly integrated, an amalgamation largely catalysed by the ability to access work 24/7 via internet-enabled mobile devices. This closer integration of work and non-work has led to greater interest in understanding how people would psychologically (or physically) demarcate time and space between work and family.

Boundary theory is a group of theories used to understand and explain how people manage their physical and psychological spaces. It has been used to examine how organisations and people erect spaces,[19] how people transition between work and home,[20] and the nature of the boundaries between work and home,[21] as well as the strategies that people use to manage boundaries between different roles in life.[22] In general, people adopt different ways to transition between roles and are predisposed to engage and disengage from roles in certain ways.

Research on boundary theory suggests that people often erect mental fences around their roles—some people tend to set up porous fences around roles, allowing their roles to integrate and intermingle; others build strong fences around their roles and keep different roles distinct and segmented.[23] The former approach is commonly referred to as *integration strategy* and the latter as *segmentation strategy*. These two strategies lie on two separate ends of a continuum of strategies that individuals can choose to manage work and family responsibilities. Empirical evidence of complete integration or complete segmentation of work and family responsibilities is rare; in most instances, individuals choose a mix of integration and segmentation to manage their dual responsibilities. The degree and extent to which individuals choose one strategy over another on a continuum depends on their desire and preferred way to manage the demands of both roles.

One plausible reason that explains why telecommuting via technology-mediated work platforms has elicited mixed responses from female executives is that this way of working can either align or misalign with their desire for integration or

segmentation; it can also reinforce or weaken the ways they actually manage their boundaries.

People have predispositions in their desire for the integration and segmentation of different role identities. Some people want greater integration because the blurring of different life domains allows them to resolve the conflicts between different role requirements seamlessly and to transition effortlessly from one role to another. Others might look for greater segmentation because keeping roles distinct helps them reduce the spillover effects of stress and tension from different roles; it also allows them to better manage their differing responsibilities by reducing unwanted interruptions that might come from mingling those different roles.[24]

Pro-family policies that are meant to help individuals address the challenges of juggling work and non-work roles can also be characterised as segmenting or integrating in nature. Policies such as flexi-time and flexi-employment contracts can be considered segmenting because they allow female executives to continue to separate work and family while, at the same time, offering these executives control over the ways they manage their time by using a non-traditional work schedule. On the other hand, policies such as work-from-home schemes and telecommuting can be seen as integrating in nature because the divide between work and home is no longer distinct and is blended within the same physical environment.

The implicit assumption that people have a choice in how they manage their boundaries and will always adopt a boundary management strategy that is congruent with their desire for integration/segmentation is reasonable but is unlikely to always be true.[25] In reality, people do not always have a choice about how they manage their boundaries and may adopt a management strategy that is not aligned with their desire for integration/segmentation as a result of circumstances. For example, a female executive who is predisposed towards segmentation may temporarily adopt an integration pro-family policy such as work-from-home because her child has taken ill.

Similar to work-from-home schemes, telecommuting promotes the integration of work and non-work identities. Telecommuting is likely to elicit a positive response when female executives who adopt it desire the integration of their work and non-work identities. In these cases, telecommuting allows these executives to freely integrate their different identities and responsibilities within a common physical space and increase the efficacy with which they can manage dual responsibilities. On the other hand, the same practice is likely to elicit a negative response from female executives who have an inherent desire for segmentation. For these executives, telecommuting via technology-mediated platforms from home does not allow them to physically and psychologically separate their different roles and increases the perceived level of interruption from work to family and vice versa. Executives with the desire for segmentation would view such increased levels of perceived interruptions as undesirable distractions from their responsibilities in both roles that reduce their efficacy in completing either role.

The above dichotomy suggests that the perceived usefulness of telecommuting as a pro-family policy depends on on whether or not the female executives prefer to integrate or segment their role identities and responsibilities. Although telecommuting is viewed by some female executives as an important way to juggle work and family, others perceive it as an ineffectual policy that impedes their ability to manage work. From a policy standpoint, telecommuting is a neutral tool and a natural evolution of work arrangements that resulted from the increasing ubiquity of technology-mediated work platforms.

Organisations need to be cognisant that telecommuting may not be for everyone and, in fact, may have drawbacks for some employees. Organisations that attempt to help women manage their dual responsibilities of work and family need to recognise that different female executives may have different preferences for boundary integration and segmentation, and may have to consider creating different pro-family policies that cater to such individual preferences.

TELECOMMUTING: A DOUBLE-EDGED SWORD FOR FEMALE EXECUTIVES

Telecommuting via technology-mediated work platforms is a double-edged sword for female executives. On the one hand, it has helped those who desire integration better manage their dual responsibilities; on the other hand, it has impeded the work performance of those who prefer segmentation.

The mixed effects of telecommuting are not limited to the balancing of work and family responsibilities. During our interviews, our interviewees shared ways that technology-mediated work platforms can potentially mitigate unconscious bias and adverse evaluation, yet at the same time increase their professional isolation from strategic networks.

Unconscious Bias, Adverse Evaluation, and Performance Appraisal

One of the biggest issues that continues to limit the advancement of women at work is the pervasiveness of unconscious bias that exists in organisations. We have heard repeatedly from our interviewees that they are appraised by different yardsticks than their male counterparts, not given due recognition and credit for work they have performed, are assigned to projects that have less impact or visibility, and are unfairly evaluated during the appraisal cycle—especially when they are on maternity break. Although many of these comments may seem dated in today's work environment, which is supposed to emphasise diversity and inclusion, these are concerns that have been routinely expressed by female executives. A senior executive from an international bank asserted that *'Organisations are designed for men. The appraisal and reward structure[s] are meant to incentivise masculine behaviours. How often do you find an appraisal system that rewards behaviours such as being a people developer? Appraisals are always about hitting KPIs [key performance indicators] and KPIs are always tied to some bottom-line numbers.'*

It was fairly common for our interviewees to share that, in order to be noticed and promoted, they have to be extremely competent in their work and demonstrate competency levels higher than men. Some interviewees are of the opinion that women in technical roles are less likely to be appraised unfairly

because the technical nature of their work allows them to objectively demonstrate what they know. Women in non-technical roles, however, would experience instances of adverse evaluation since their performance appraisal may include subjective interpretations about how well they have performed.

Various interviewees across different types of work (i.e., in both technical and non-technical fields) have suggested different ways to reduce subjective interpretations during performance appraisals. Some interviewees have suggested that appraisals should be done on a bi-monthly basis for women so that their managers can be updated regularly on how well they have performed. Others suggested that appraisals should be done in the presence of human resources (HR) so that HR can be the organisational ombudsman that manages instances of adverse or unfair evaluation. Interestingly, some interviewees suggested that technology-mediated work platforms could be a potential leveller that helps to reduce unfair evaluation.

Consider what this interviewee has to share: *'I think having access to technology-mediated work platforms is actually good for the performance appraisal of women. My manager expects everyone, regardless of gender or seniority, to contribute to the project. My contributions are documented clearly on* Nexus *[in-house project platform used by the company] and that helps my manager to visually see how I value add to the project.'*—A mid-level executive in a FinTech company. Another interviewee reported, *'Due to family reasons, I was unable to attend meetings that occur early in the morning or those that run late into the evening. That had affected my performance evaluation somewhat because my manager would, without fail, ask my colleagues where I [was] even though he knows that I am unable to attend those meetings. He looks to me for technical support and it affected him when I was not present in those meetings. My company has started using WebEx a couple of years ago and that helps. I can now join meetings on the go or when I'm at home managing my kids. My manager is now more at ease knowing that I'm joining the meeting on WebEx.'*—A mid-level executive in an oil and gas company.

Although it is still early to conclude that technology-mediated work platforms can effectively help women manage unconscious bias and adverse evaluation during appraisal, anecdotal evidence seems to suggest its usefulness.

Face Time, Professional Isolation, and Access to Strategic Networks

Technology is a key enabler that has increased the ease of communication across geographical boundaries and facilitated the operations of regional teams. The ease of access to online meeting platforms and the availability of low-cost online communications applications have led businesses to switch increasingly from holding physical meetings to holding virtual meetings. This switch is especially rapid for companies that need to host regular meetings for regional or global teams. Compared to the high cost of hosting a physical meeting where the cost of flights and hotel accommodations must be incurred, a virtual meeting is an attractive alternative. While the ability to hold virtual meetings from anywhere has significant upsides in cost-savings and efficiency, it has, however, led to unintended consequences for employees who use such platforms in lieu of more traditional forms of meeting. Specifically, over-reliance on virtual meetings has led to the loss of face time and social interactions with senior management, increased levels of professional isolation, and decreased access to strategic networks. These downsides will have implications for the careers of female executives who, in the first place, are disadvantaged at work as a result of their lack of corporate visibility and their lack of access to internal strategic networks.

'Given that most of my team sits outside Singapore and my immediate boss sits out of our APAC HQ in Hong Kong, I have to rely a lot on technology to communicate with them. Technology has made communications more impersonal. We are a small team and we used to meet every quarter at our Hong Kong APAC HQ. Now we meet once, or, at most, twice a year. We do most of our team-wide meetings on Skype these days. To be honest, I feel that I am losing touch with my team and I do not know some of the newer members personally. They are just another name on my email.'—A mid-level female executive from a FinTech company.

One of the most significant drawbacks of virtual teams is the lack of face-to-face interactions among team members. Prior research has consistently suggested that over-reliance on virtual teams will lead to the erosion of team cohesiveness because the lack of actual human interactions among team members will impede the formation of team identity and team norms.[26] Researchers have often suggested that virtual meetings should be interspersed with intense face-to-face meetings because such meetings will help team members develop trust and transparency, as well as facilitate the informal sharing of information.[27] These findings were corroborated by our interviewees. A senior female executive from a hospitality group has this to share: *'Attending face-to-face meetings was important during my early career. Such meetings helped me to gain visibility among the management and allowed me, a mid-level employee then, to be seen and heard. We often go for social [gatherings] after the meetings and that's where we got to know each other on a personal level. The management got to know me personally, got to know what I stood for, and most importantly, they can attach a face to my name—that helped them to remember who I am. Virtual meetings can never replace the quality of interactions that occur during and after face-to-face meetings. You can't go for social [get-togethers] after a virtual meeting.'* This quote further reinforces the notion that face-to-face meetings are important, especially for female executives since, all else being equal, they are less likely than their male counterparts to be noticed by senior management on a day-to-day basis because of the implicit bias against women.[28]

Face-to-face meetings in this instance become an important vehicle for female executives to get noticed by senior management, as well as a stage on which they can demonstrate their mettle and their worth. Not only would the replacement of such meetings by a virtual environment lead to reduced corporate visibility, it could also lead to increased levels of professional isolation in organisations, which is especially problematic for women.[29]

Professional isolation is defined as the belief that one lacks sufficient connection to critical strategic networks of influence

and social contact. It is a state of mind where one feels cut off from others and where the need for interaction and support is not met. The threat of professional isolation for female executives who telecommute frequently is real. Female executives who spend large amounts of time working away from the office often find themselves cut off from the informal office network and often encounter more difficulties when trying to obtain resources necessary for work. Consider this example given by one of our interviewees: *'I spent a few days a week telecommuting from home because I am the primary caregiver for my terminally ill father. I was on this arrangement for about 6 months until my father passed on. I feel that the relationships between me and my colleagues have changed. The relationships feel a lot more formal and distant compared to the past. I feel less welcome, as if I am not part of the team and informal network anymore. I also feel that it is more difficult to get work done through my team.'*—A mid-level female executive from the education industry. The next quote is particularly illuminating: *'I have a dual portfolio—I have to manage a local team and an APAC team, and therefore I have two offices because the local and APAC teams are physically located in different parts of Singapore. I spend approximately half of my time managing each team. I do not always have the physical energy to shuttle between the two offices and have to rely on technology to manage the different teams. What I realised is that while technology does help to a certain extent, it still does not replace face-to-face interactions. Being "physically there" allows me to manage complex work and social relationships, especially when there are personality clashes or when the project is extremely complex. I need to be there otherwise I will run the risk of being estranged from my own subordinates.'*—A senior executive from a medical equipment company.

Although research on the relationship between telecommuting and professional isolation is in its nascent stage, extant studies have often found that there is a strong and unequivocal relationship between time spent on telecommuting and the level of professional isolation.[30] This is because communications via electronic means are vicarious and lack the richness of face-to-face interactions. Interactions on technology-mediated platforms are often less rich and less capable of transmitting the full range of contextual factors that are needed to interpret the nature of the interaction, therefore leading to increased levels of ambiguity and uncertainty. When individuals telecommute frequently, they are less able to manage interpersonal relationships with colleagues to coordinate complex and ambiguous tasks, and are forced to carry out work activities with limited contextual insights and information, thereby reducing their work effectiveness and performance. These feelings of having to work without rich contextual data and with the lack of an effective network among colleagues will inevitably give rise to experiences of professional isolation and a feeling of being cut off from the rest of the organisation.

To start off with, women, in general, have a smaller and less boundary-spanning network than men do; this is a result of the network strategy they adopt. Frequent telecommuting will further reduce their corporate visibility and their access to strategic and instrumental networks by limiting their opportunities to build an effective network through contextual conversations or social interactions. Professional isolation that results from excessive telecommuting is likely to impinge on the career development of female executives by reducing their corporate visibility and their 'promotability' in a context where there is hyper-competition for career opportunities. This could perhaps be reversed only in a situation where telecommuting is the norm rather than the exception and is utilised equally by both men and women, and when there are new methods to ensure team cohesion and interactions.

CONCLUSIONS

There are strong motivations for companies to ensure that women are represented at every level of organisation. Gender diversity in management, especially at the senior leadership level, is much sought after because the volatile, uncertain, complex, and ambiguous environment in which businesses are operating today requires companies to possess diverse skill sets and problem-solving skills. This diversity in skills is best curated when the management team comprises individuals of different genders and ethnicities with different skills, backgrounds, and perspectives.

This chapter has briefly explored the challenges of promoting gender diversity in workplaces and issues that may potentially hamper the advancement of women at work. Technology has routinely been suggested as one possible solution that can help women better juggle demands of work and family, yet its impact on organisational outcomes are mixed. Most importantly, technology is a double-edged sword that, on the one hand, may help women circumvent unconscious bias and adverse evaluation, while on the other hand it may lead to increased professional isolation and further decline in access to strategic networks.

There is no simple solution to the challenges women face at work. What we have touched on in this chapter is merely the tip of the iceberg, and systemic issues need to be resolved before the needle on the dial can be moved. Solving issues such as pervasive unconscious bias, ineffectual HR policies, the confidence gap experienced by women, conforming to stereotypes, and women's lack of awareness of the realities of a management career will require concerted effort from the management team, and of course from women themselves.

What is urgently needed today is a system-based solution that aims to bring about an organisation-wide change in how women and the organisations for which they work manage their careers. It requires organisations to proactively build awareness around the topic, engage in participative career planning with women, implement the right type of HR policies (e.g., more objective appraisal methods, ratio-based promotion structures, etc.), explicitly address the perceived penalty of utilising pro-family work practices, and, most importantly, it requires senior management to take the lead in sponsoring the careers of high-potential women.

Apart from supportive corporate policies, men, in particular, have an important role to play in helping to level the playing field for women. Rather than holding on to the untenable assumption that managing family is the primary duty of women, men need to step up their game and take ownership of their family

responsibilities. Besides introducing policies that acknowledge the need for women to juggle work and family responsibilities and support that goal, companies should encourage—or perhaps even reward—men in sharing family responsibilities with their spouses. This is essential for the advancement of women at work because it removes an important social hurdle that impedes their corporate progression, and also sends a strong signal to women that, in an egalitarian society where responsibilities are shared, they too have the right to pursue a career.

In the words of one of our interviewees: *'There will be no women in executive teams if the scale is not tipped in favour of helping women advance at work.'*

ENDNOTES

1 Hunt et al. (2015).

2 Fitzsimmons et al. (2015).

3 Carter & Silva (2010).

4 McKinsey & LeanIn.org (2015), Women in the workplace, available at http://www.mckinsey.com/business-functions/organization/our-insights/women-in-the-workplace

5 Singapore's Diversity Action Committee (2016), Women on Boards: Tackling the issue.

6 Given that women are under-represented at every level of organisational leadership, it will take 25 years for organisations to reach gender parity at the senior-VP level and more than 100 years for the same parity to be reached in the C-suite if nothing is done to further support the progression of women in corporations (see McKinsey & LeanIn.org, 2015, ibid.).

7 *Straits-born Chinese* are descendants of Chinese immigrants who settled in the Malay Archipelago and British Malaya between the 15th and 17th centuries. They have partially or fully adopted the local cultures and customs of the Malay Archipelago. See West, B.A. (2010), *Encyclopaedia of the peoples of Asia and Oceania,* Facts on File.

8 Numerous research studies have highlighted the difficulties of juggling work and family responsibilities. In particular, work and family responsibilities are likely to conflict with each other in three ways (Greenhaus & Beutell, 1985). First, one's work role and family responsibilities will create two forms of time-based conflict where (1) the time individuals spend to fulfil one role will make it physically impossible for them to meet demands imposed by the other, and (2) pressure from one role causes mental preoccupation with that role even when an individual is physically performing the other role. Second, stressors encountered by individuals when fulfilling work and family responsibilities will lead to stress-based conflicts where strains such as tension, anxiety, frustration, and irritability experienced in one role will spill over to the other (and vice versa), affecting the ability to fulfil different roles effectively. Last, managing work and family roles will create behaviour-based conflict where behaviours that are well regarded in one arena are incompatible with behaviours expected in the other. For example, although an individual is expected to be results-oriented and focused on task delivery at work, family members, on the other hand, would expect the same individual to behave differently at home. An individual will experience behaviour-based conflict and stress when he/she is unable to effectively adjust his/her behaviours between the two different roles.

9 Netemeyer et al. (1996).

10 Carlson et al. (2000).

11 Rau & Hyland (2002).

12 Golden et al. (2006).

13 Golden (2007).

14 See http://globalworkplaceanalytics.com/telecommuting-statistics

15 See http://www.gallup.com/poll/184649/telecommuting-work-climbs.aspx

16 One of the companies featured in the book is Genpact, a business process management and technology services firm based in India. Genpact created GLUE, an enterprise collaboration platform that has changed the way it manages knowledge and projects. GLUE is an enterprise-wide collaboration platform that consolidates and harnesses its global intellectual capital. The virtual platform has led to the democratisation of knowledge, where project teams can reach out to more than 67,000 Genpact employees in 25 countries for potential solutions, and enterprise knowledge co-created by Genpact's employees can be accessed 24/7 via GLUE from mobile devices. Most importantly, GLUE functions as a Genpact-Client collaboration platform that enables Genpact's project teams to update and communicate project progress with clients in real time. Puri et al. (2015).

17 Kurland & Bailey (1999).

18 Riley & McCloskey (1997).

19 Katz & Kahn (1978).

20 Ashforth et al. (2000).

21 Nippert-Eng (1995).

22 Edwards & Rothbard (2000).

23 Ashforth et al. (2000).

24 Edwards & Rothbard (2000).

25 Edwards & Rothbard (2000).

26 Maznevski & Chudoba (2002).

27 Arvey, R. D., (2009), Do face-to-face business meetings still matters? Hilton Hotels Asia/Pacific News, available at http://news.hiltonworldwide.com/index.cfm/newsroom/detail/183

28 Fitzsimmons et al. (2015).

29 Golden et al. (2008).

30 Cooper, C. D. & Kurland, N. B., (2002), Telecommuting, professional isolation, and employee development in public and private organisations, *Journal of Organisational Behaviour,* 23, 511–532.

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CHAPTER 6

Are We Prepared for the Talent Overhaul Induced by Technology? A GTCI Research Commentary

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Machines are rapidly replacing many types of jobs, as discussed in **Chapter 1**—not just routine manual jobs but also knowledge jobs in professions such as law, medicine, education, and consulting. But new technology-assisted jobs that demand higher levels of skill replace some of those that are lost, and brand new fields of work, such as data analytics, that were hard to imagine a decade ago are created. Machines are unlikely to create the mass unemployment that was predicted in former eras of technological change—including the predictions of John M. Keynes, who introduced the concept of 'technological unemployment' in the 1930s. We hear about the skills such as creativity and social ability that people need in order to robot-proof their careers. As the board member of a major European bank told us recently, 'Our chairman said that he wants 10,000 people out of this bank, and 10,000 people with new skill sets in.'

That statement captures the scope of the change. Many people will have to adapt by reskilling or moving to new sectors of the economy. The information technology (IT) career cluster has a bright outlook. The healthcare sector is expanding. The future of work may indeed demand more problem solvers and

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holistic thinkers, whose skills are needed in the knowledge economy. The professions will also evolve but they will not disappear.[1]

But these new technology-assisted jobs reflect quite a different organisational context than that of the last century. Business models used to be so fixed that a change in business model was a periodic revolution, whereas today developing a new business model has become the name of the start-up game. The 20th century norm of salaried employment is giving way to a patchwork of alternative work models that challenge traditional social conventions.

These technology-driven changes come on the back of the tensions of globalisation, with manufacturing work moving from Western nations to developing countries, a shift to services, and new geopolitical realities. They are accompanied by other pressing changes—ageing populations that, in the future, may live to a hundred; depleted pension pools; and unresolved ecological constraints to planet Earth. This time one can argue that the challenge for work is not automation—it is the speed of change. Can countries cope with this degree of change and the velocity of its impact?

Based on a review of the state-of-the-art literature in this area and also on discussions with experts and key players in different regions of the world, the aim of this chapter is to assess the impact of these changes on organisation, work behaviour, and models of work, leading to an exploration of the implications for skills and careers. This leads to a discussion of various policy issues for nations, and to an assessment of how well countries and regions of the world are equipped to deal with challenges that are massive, fast, complex, and uncertain.

THE IMPACT OF TECHNOLOGY ON ORGANISATION AND WORK BEHAVIOUR

Digital technologies are transforming the social systems upon which economies are built. Combined with robotics and artificial intelligence, they are changing the nature of organisation and management. A great part of the change in social systems comes from changes in how businesses operate. As Richard Straub put it, *'the advent of the modern organisation and the practice of management constitutes a 'social technology' that has been equally transformative [as the technical achievements]'*.[2]

While there is agreement among scholars of organisation that we are in the midst of a transformation in how businesses are organised, the shape of organisation in the new economy is still unfolding. The last big shift in organisation, the move to distributed work with a corresponding emphasis on collaboration, started 20 years ago and is well digested. Based on our research and discussions with prominent scholars, we see four aspects of organisation as part of the transformation: the importance of *connectedness,* an emphasis on *modularity, less reliance on authority,* and an accelerating shift from *input control to output control.*

Connectedness

While the key to the 20th century economy was to own the means of production, the key to the 21st century economy is to own the means of connection. The much-heralded platform economy captures the importance of connectedness. Platforms are marketplaces that connect people and businesses that trade and interact under rules established by the platform's owner or operator. Operating systems such as Windows and Android are an example, serving as platforms for innovative applications provided by others. E-commerce sites such as Amazon are another—like Uber, they serve as a platform for transactions, while social networks are also platforms that bring together consumers, advertisers, and software developers. In the past firms operated in a linear mode: they added value to products, shipped them out, and sold them to consumers. The organisations of the new economy develop platforms that connect diverse participants with one another and enable them to interact and transact directly with one another. Pipelines become platforms; resource control becomes resource orchestration; internal orchestration becomes external interaction; the focus on customer value becomes a focus on ecosystem value. *'When a platform enters a pipeline market, the platform invariably wins'*.[3]

Indeed, since the 1980s the world has seen a dramatic increase in the frequency in which firms engage in collaborative relationships spanning geographies, value chains, and industries, as noted by Gulati et al. (2012). Firms have been shrinking their cores and expanding their peripheries. Thus Apple's iPhone is largely a design of elements developed and manufactured by others; similarly, its hugely successful Apple Store captures 30% of the revenues of products produced by others. Organisations are no longer married to the idea that strategically important tasks require employees. Industries that used to be tightly integrated, such as pharmaceuticals, have outsourced to start-ups and other partners what used to be seen as core tasks—research and development (R&D), clinical trials, manufacturing, sales. Wherever innovation is at the forefront, the importance of connected collaborative relationships is evident,[4] though industries where there are clear economies of scale, such as semi-conductors, may continue to be organised on a centralised basis.

Innovation is critical in today's fast-moving business environment, and the idea that innovation happens at boundaries or by connecting 'structural holes' has become a tenet of network theory.[5] Connecting distant people creates novelty. Thomas Edison is often regarded as the most productive inventor of all time—not because of his creative genius but because he was well connected with creative technicians, politicians, and players in the US ecosystem around the turn of the 20th century, leading to the light bulb, the telegraph, and various patents behind the first motion pictures. The same is true today but happening at a *faster* pace—Procter & Gamble's Connect+Develop strategy involves sharing technology briefs with its network of suppliers, universities, and external labs so as to invent new products. Similarly Tata Consulting Service (TCS), the leading Indian firm in IT services and consulting, reckons that 40% of the solutions it comes up with to address client problems stem from contacts within the wider Tata Group to which the firm belongs.

Connectedness is the foundation for new patterns of work that are emerging, as described in the next section. It requires social and project skills that were not prominent on the traditional map of talent competencies; these are skills that should be

learned early in life. Modularity is another element of organisation in the new economy.

Modularity

The modularisation of work is at the heart of digitalisation and automation—decomposing complex work into constituent tasks so that algorithms or machines can manage them where possible. But modularity goes further than this. Organisation theory rests on the idea of differentiation into small units or modules and their integration into a functioning unit. When it comes to integration, the focus in large organisations has been more and more on collaborative relations rather than structural lines of authority.[6] The award-winning work of Chicago sociologist John Levi Martin argues that large organisational structures are actually conglomerations of smaller structures, rarely designed from scratch but resulting from acquisitions, turnarounds, and organic evolution.[7]

Technology has played a vital role over the last 30 years in facilitating the integration of such modules into large organisations, through the standardisation of processes (integration is severely handicapped if units such as country branches or business functions each have their own processes) and by common IT systems, data integration, and virtual communications. Large organisations are also developing 'plug and play' capabilities—as IT has become increasingly modular and combinable, so have organisational processes and forms.[8] Cloud-based services allow cheap, quick access to modules of IT capabilities, enhancing firm agility as a consequence. When technology combines standardisation with modularity, organisations can reuse business process modules to respond more quickly to local opportunities.

This view appears to parallel what has been occurring in multinational firms in recent years as they move to multidimensional modular structures. During the last five years, most multinational enterprises have moved to a multidimensional matrix organisation, a form of organisation dismissed 30 years ago as too complex and cumbersome. Each module within the multidimensional firm has a different focus (such as local markets, global manufacturing, customers, or technology), with a web of relationships or connections linking the matrix. People used to view the defining feature of matrix as being multiple bosses, but research shows that matrix has two features.[9] The first—having more than one boss—is the hierarchic dimension that creates problems. The second is the importance of lateral collaborative relationships (for example, between product, country, and technology managers). The former creates problems, while the latter works well. Organisations have learned to build those collaborative relationships before they introduce the matrix; this leads to a third feature of organisations in the new economy.

Less Reliance on Authority

Although authority hierarchies are unlikely to disappear as the dominant feature of organisation, there is less and less reliance on authority. While there is still a need for reporting lines to define goals and targets, and for periodic evaluation of performance and potential, command-and-control structures are increasingly out of synch with our networked and modular world—as the matrix example above indicates. Organisations with the flat structures of peer production or open innovation have systematic advantages over managerial hierarchies when the object of production is information or innovative performance.[10]

As businesses leave behind the predominantly hierarchic model of 20th century industrial conglomerates, leadership approaches are changing. Managers are learning how to allow members of the organisation a measure of independence to probe and experiment so as to make sense out of the tons of big data and information, while directing them to stay on the right overall course by putting all the pieces together.[11] Platform leaders orchestrate free agents rather than directing employees in a hierarchical command-and-control structure.[12]

In large hierarchic organisations, managers typically complain that it is more difficult to collaborate with other departments than with suppliers and people outside the firm; a growing number of young people feel that it is easier to find clients than to find a boss. So prominent organisations have dispensed with hierarchy, replacing it with the self-organised authority of expertise and results that wins respect. In Brazil, Richardo Semler's Semco is a long-standing example—a systems engineering company with its origins in centrifuges for the vegetable oil industry;[13] others are Denmark's Oticon, the world's second-largest hearing aid company, and a growing number of platform firms such as Zappos in shoes with its holographic organisation,[14] as well as the leading entertainment software company Valve.

Lab studies underway show that peer-to-peer work gets almost as good results as hierarchical work, but with higher levels of satisfaction—largely because people select themselves for tasks and have more realistic expectations. In flat work structures such as peer production and open innovation, people follow social signals rather than managerial commands or market prices.[15] The intrinsic rewards of peer work, such as intellectual stimulation and recognition by peers, can be more powerful motivators than extrinsic rewards such as bonuses.[16] Reputation becomes a 'signalling' device for getting access to opportunities. Delayed rewards come in the form of better projects and career prospects in the future, potential shares in commercial open source–based companies, or future access to venture capital markets.[17] This is increasingly possible in a networked information economy because workers are less likely to have idiosyncratic, or firm-specific, human capital that limits moving to new projects or work environments.[18]

The shrinking reliance on authority has important implications for educational policy, as discussed later. The hierarchic model of education, with the teacher up front and pupils behind who learn by rote, socialises children poorly for the organisational world into which they will move.

From Input Control to Output Control

Spurred by digitalisation, virtual communications, and other aspects of technology, there has been a quiet step-by-step change in the way we think about work. This shift goes under the unappealing label of 'performance management', and it reflects the fact that work is increasingly evaluated in terms of its outputs, not where and how it is done—its inputs. Should one valuate a

person on the basis of her *inputs*—how long she spends at the office, whether she is willing to sacrifice evenings or weekends, her appearance? Or on *outputs*—whether she delivers the desired results?

Prompted by this shift in what is evaluated, much of traditional human resources (HR) work is changing. On-demand work in the gig economy of Uber drivers and Deliveroo pizza cyclists is largely output driven, managed entirely by algorithms—although the fact that the algorithm can be changed at the whim of the platform controller raises serious questions about whether this trend is liberating or exploitative.[19] Output orientation combined with technological processes is also changing the face of talent and human resource management in large industrial enterprises. Even yesterday's exemplars of traditional HR practices in recruitment, performance appraisal, and compensation—such as GE, Microsoft, and P&G—are giving up on practices that are often experienced as rituals with questionable value-added.[20] Given the rapid evolution in web-based methods for search, selection, and assessment, recruitment is often outsourced to external partners who can keep pace with constantly changing methods. The time-consuming ritual of annual performance appraisal and development discussions facilitated by HR is giving way to apps that allow employees to get online support and coaching from peers and experts to achieve fluid and changing goals rather than being assessed on annual targets.[21] Objective performance data are collected with online tracking and automated 360° feedback, often providing a fairer assessment than the notoriously arbitrary view of the boss. Companies are simplifying remuneration, abandoning complex A-B-C-D-E performance/pay scales in favour of simple salaries, with generous bonuses only for the few outstanding performers.[22] Overall, burdensome top-down HR processes are giving way to bottom-up digitally assisted systems to help people help themselves, shifting the onus for managing development from the company to the individual.[23] IBM's Talent Marketplace, discussed below, is a good example. Data analytics may increasingly substitute for the judgment of HR managers on matters related to people.

THE IMPACT OF TECHNOLOGY ON WORK MODELS

The four transformations discussed above are driving the new models of work that are emerging. Take the example of IBM's Open Talent Marketplace.[24] Launched in 2008, it allows managers to deconstruct work into short-cycle events *(modularity)*; publicise those events to an internal and external population of players who use the platform to bid for tasks and form communities to complete the work *(connectedness)*; and then track their work history and capabilities, supported by a common work language *(output orientation)*. All of this is undertaken with a digitally driven process rather than by bosses *(less reliance on authority)*.

With these organisational transformations, it is also becoming clear that the 'organisation' or 'corporation' will not be the only work model in the future of work. Work and knowledge are increasingly produced beyond firm boundaries, by free agents or by people who have no contractual relationship with the enterprise, be they customers, members of networks, or communities. An example is Procter & Gamble's Connect+Develop platform, mentioned above, where customers and outside people submit ideas and innovations.[25] Furthermore, although the decomposition of work into task modules leads to the automation of routine tasks through algorithms or robots, other tasks are outsourced to workers on demand or via online platforms. This is creating a multitude of freelance, contingent jobs and entrepreneurial opportunities. As Boudreau et al. (2015) put it, *'The days of employment being the only important means for getting work done are passing'*.

Online platforms have elevated websites from being mere bulletin boards for advertising jobs, incorporating them into the organisation of work itself. The combination of connectedness and modularity is fuelling the rise of contingent work, now so large in scope that it is often labelled 'the human cloud'. Some platforms simply connect employers and workers in a dyadic relationship to perform certain tasks (e.g., Upwork connects high-skilled freelancers with firms to solve specialised tasks while some other platforms crowdsource multiple micro-tasks to be delivered online). For more complex projects, some platforms provide the governance to engage multiple suppliers of work and choose the best providers for the task at hand through competitions. Those focused on crowdsourcing aggregate hundreds of micro-tasks performed by multiple suppliers for situations that require immediate solutions (e.g., Mechanical Turk). Platforms also connect service providers directly with users (e.g., Uber). The common denominator is that participants engage in contingent work as independent contractors for work delivered mainly online, and the governance of projects normally resides with the employer or sometimes within the online platform that underpins the service.

Research shows that almost all net employment growth in the United States since 2005 appears to have been in alternative work arrangements—part-time, freelance, gig jobs, and a patchwork of contingent work outside full-time employment; such alternative work arrangements grew from 10% in 2005 to cover nearly 16% of workers in 2014. The same is true in Europe, where by 2015 19% of the adult population worked part-time and 11% were on fixed-term contracts.[26] There are different reasons for engaging in contingent work; surveys of crowdworkers carried out by the International Labour Organization show that while some people used crowdwork to top-up the income from their main employment or as a pension supplement, it was the primary income for 37% of the platform workers surveyed.[27] This raises important questions about institutional arrangements, as discussed later. While work via private employment agencies is highly regulated in most countries, there is little or no regulation of working conditions for free agents and no welfare provision for unemployment. People in such less regulated forms of work can also find it difficult to get mortgages; this is counterbalanced by positive aspects such as people having the flexibility to satisfy care responsibilities (gender differences are found here), and the empowerment of people who need to work from home because of disabilities or for work/life balance reasons.

As underlined in **Chapter 1,** algorithms and artificial intelligence have been steadily eroding work even in professions

such as law, medicine, architecture, and journalism. This process may accelerate with the learning capacity of artificial intelligence. However, most people and firms today cannot afford the services of first-rate professionals; and most economies are struggling to maintain professional services such as court systems, financial advice, and health services. While services have traditionally been based on face-to-face interaction, remunerated according to the amount of time this takes, new networked and connected methods for the distribution of services may meet a *'vast reservoir of need for practical expertise that is currently unmet'* according to Susskind & Susskind (2015, p. 290). Indeed, networks promote collaborative models of public services as well as those of private consumption and commercial interest. An example is care for the ageing Chinese population—an estimated 12 million medical caregivers are needed, whereas only 300,000 are available, 99% of whom have no relevant training. A new start-up company founded by an INSEAD alumna uses an Uber-type model in order to exploit excess human capacities, training people in cities to provide care to frail elderly people when they are available, sometimes on top of their regular employment.[28]

Another important work model that emerged with digital technology is collaborative. When the object of production is information or innovation, peer production and open innovation have clear advantages over markets and managerial hierarchies.[29] Online firms such as InnoCentive have fuelled a crowdsourcing movement of 'science by the masses' where real R&D problems faced by companies in areas as diverse as engineering, computer science, math, chemistry, life sciences, physical sciences, and business are framed as 'challenge problems' for anyone to solve. Facilitated by technology (connectedness), economic organisation (modularity), and social practices (autonomy), collaboration between individuals is much broader in scope than it was in the industrial era of the 20th century. Such collaborative relationships are less constrained by the price systems of markets or by hierarchy,[30] and they do not always depend on proprietary strategies (the Linux open source project is the classic example). The Singapore government is deliberately using co-creation to exploit the potential of digital technology, through briefs on its platforms that invite people to develop solutions. Co-creation is collaborative, as are crowd-funding, peer-to-peer loans, and making higher education freely available online.

IMPACT ON PEOPLE

This section examines the impact of technology on people, including the impact it has through the changes that it mediates in organisation and work models. Two issues are considered: first, what a career will mean in the machine age; and second, what skills will be needed by the talent pool.

Towards 'Spiral Careers'

The concept of a linear career—'find your ladder and climb it'—fits poorly with shorter product and technology lifecycles, rapid change, and continuous innovation. Fifty years ago people could stay in a single career for their entire lives; now the technology may change within a job lasting a few years. Human longevity also undermines this linear way of thinking of life and a career.[31] As advances in medical science and lifestyle prolong life, living until 100 may soon not be a rare phenomenon. Most people will be working for longer periods to provide for underfunded pensions, and the idea that people will continue working into their 70s and even 80s is no longer improbable. It is difficult to imagine people maintaining high levels of performance without a different way of thinking of a career.

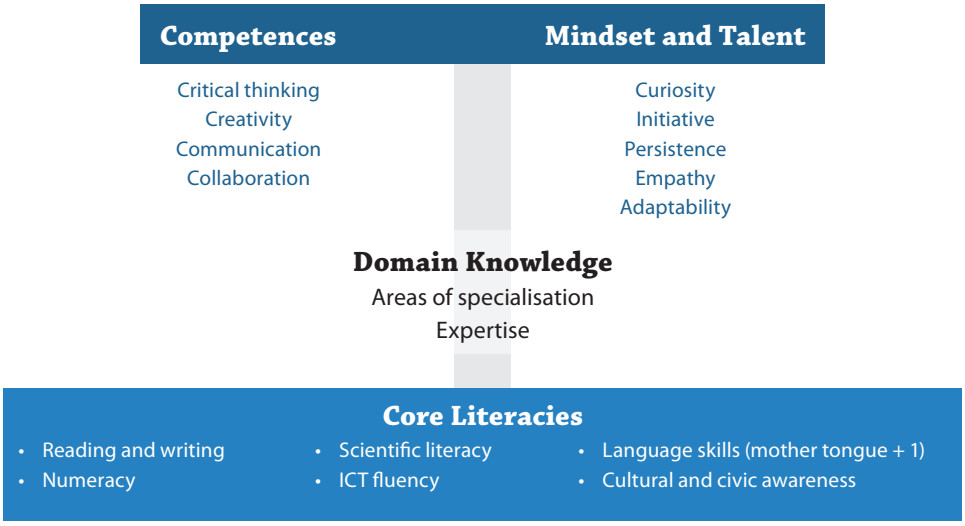
The linear idea of a career, embodied in Schein's studies of its 'anchors',[32] dates back only 60 years or so to the time when long-term corporate jobs were becoming the norm, institutionally embodied in the desirability of permanent contracts and full-time employment for life. Manufacturing enterprises at that time needed a trained and stable workforce so they could control quality and maximise production and sales. However, a hundred years ago, in the earlier phases of the manufacturing era, big companies outsourced virtually everything. One analysis around 1910 found that half the workers in production jobs were independent contractors.[33]

What are the alternatives to the linear way of thinking of a career and life? There are other ways of thinking of a career that used to describe a minority—though perhaps some of these ways will become a norm in the future. Take notably the *spiral career,* one of periodic lateral transitions from one career to another.[34] It is exemplified by an engineer who spends 10 years in a technical lab that she ultimately heads up, then getting involved in quality improvement projects, spiralling off to become a sales manager—indeed, 10 years later the highest performing sales manager because she can relate to customers in technical terms. At this stage, given her remarkable sense for people and talent, she is candidate for a position as talent director for a global corporation, transitioning off into a third career in HR leadership. In her portrayal of the future of work, Gratton (2011) indeed sees this pattern of 'serial mastery' as becoming the norm in the future.

This shift has profound implications for policy, notably educational policy. It means that the idea of preparing people for 40 to 60 years of working life with 20 years of upfront education does not make sense. Industries and jobs are changing so quickly that it is now difficult to envisage a career without transitions and intervals of reskilling or re-education. Lifelong learning and redeployment are becoming the norm rather than the exception.

Furthermore, the fact that people can work from home in full-time, part-time, or supplementary jobs opens up new lifestyles. With their strong output orientation, the Nordics appear to be furthest down this route. They spend fewer hours in the office than their counterparts in other countries, they get back home at 4 in the afternoon to spend time with their children, they take occasional days off to tend the garden or work out at the gym. When asked about their short working hours, their relatively balanced lifestyles, most Nordics these days smile and say 'we have learnt to work more *effectively* than others.' This is a society that embraces technology because it allows people to work even more effectively. The other side of the technological reality is that, after the children have been put to bed, people are likely

Figure 1
Skills and resilience for a world of change



Source: European Commission. (2016). The future of work: Skills and resilience for a world of change, Europe Political Strategy Centre, *Strategic Notes,* Issue 13.

to be back at their laptops or talking on Skype with colleagues and customers on the other side of the world.

Skills for the New Economy

Even as jobs are automated and eliminated by technology, new jobs are created. But, as mentioned, these new jobs require different and typically higher levels of skill. The future of work is all about skills, as a 2016 European Commission report states;[35] there is general agreement among economists about this. What are the effects on skills of connectedness in more modular networks, of less reliance on authority, and of output control? And what does this mean for policy and reform?[36]

The new machine age is filled with paradoxes, as we experience it through eyes that are still in the 20th century. Take the so-called *productivity paradox.* Until the end of the last century, productivity and employment closely tracked each other. Then, beginning in 2000, the 'great divergence' started: productivity continued to rise while employment suddenly wilted and wages stagnated.[37] In more recent years, productivity has experienced a slowdown even in the context of rapid technological change—the productivity paradox that is explained in part by skill mismatches.[38] The *talent paradox,* as we think of it, is that the way we develop people for employment is not specialised enough—many people do not have the specific skills needed to be employable. But, at the same time, the way we develop people is too narrow—they work in protected silos and do not have the breadth to collaborate with others. Education is not specialised enough … and yet it is too narrow. In our interviews, we heard of debates among recruiters at Google and other firms about whether people should have the breadth of a liberal education or the depth of a vocationally oriented education.

As has been pointed out in various books and articles, such paradoxes reflect our age of *dualities.*[39] We need specialised skills in our jobs AND we need to collaborate with others from different domains. We have to learn how to act with immediate performance requirements in mind AND think long term about innovation and change. Globalisation means doing things better AND cheaper AND faster. The idea of duality means BOTH-AND.

When it comes to skills, the concept that captures this well is that of T-shaped skills, introduced more than 30 years ago but now being seriously revisited.[40] Led by IBM, IDEO, and a growing number of universities, the T emphasises the importance of specialist skills AND social or collaborative skills. Tim Brown, CEO of the world-leading design firm IDEO, describes such professionals: *'The vertical stroke of the T is a depth of skills that allows them to contribute to the creative process. This can be from any number of different fields: an industrial designer, an architect, a business specialist or a mechanical engineer. The horizontal stroke of the T is the disposition to collaborate across disciplines.'*[41] Indeed, Harvard's Deming has recently shown that labour markets have been rewarding individuals with strong social and interpersonal skills that facilitate interaction and connections. His research shows that, since 1980, social skill–intensive occupations have enjoyed most of the employment growth across the whole wage spectrum. Employment and wage growth have been especially strong in jobs requiring both high cognitive AND high social skills.[42]

Applying this to organisations, we started many years ago to think of the dualistic requirements in jobs, applying the T-shaped concept to matrix organisation.[43] See the box on *'The split-egg concept of organisational roles'*, showing how managers get paid for their performance in their operational roles ('the job' or bottom of the egg) but promoted for their initiative or development actions in the top-of-the-egg project role—typically involving collaboration across boundaries with others. These top-of-the-egg roles sometimes become the basis for a spiral career

THE SPLIT-EGG CONCEPT OF ORGANISATIONAL ROLES

In the slower moving world of the 20th century, people focused on their jobs or operational roles (the bottom of the egg in the image), while top leaders at headquarters dealt with innovation and longer-term strategic development, aided by their staff (the top of the egg). But as the pace of development and change speeded up, people with high potential were expected to demonstrate that potential by taking initiatives on strategy and innovation. The manager now has two roles, operational and project, as shown in the diagram. After settling into a new job, which involves being sure that one can delegate operational tasks to subordinates, more and more time—say 30%—is spent on projects with a longer-term perspective, typically involving formal or informal cross-boundary teamwork. Managers are paid for their performance in 'the job', doing things right. But they are promoted because of the leadership initiative that they show in the project role—doing the right things. In talent management processes, guided by the so-called 9-box framework,[1] managers are now evaluated on their operational performance AND on their potential or contribution to strategic development. This is not just in technology-driven firms. Nestlé in consumer products anchored this framework in their organisation more than 10 years ago, referring to the operational role as the person's area of 'responsibility' and the project role as that of 'accountability'. During the last decade our surveys suggest this split-egg role concept has begun to spread widely down from managerial to professional levels within firms.

Dualities such as doing things better AND cheaper AND faster do not apply just to organisations, but also to the roles that people occupy. The operational bottom of the egg means managing short term while the top means keeping an eye on the long term. The bottom is the local role, the top is the regional or global role. There is more authority in the operational role, whereas the project role is met through collaborative networks.

Note

1 The 9-box framework is a grid with two dimensions, typically performance on one axis and potential on the other, each divided into 3 categories (for example, outstanding, satisfactory, and unsatisfactory) and thereby forming a 9-box grid. This is used by many corporations such as GE, Novartis, Microsoft, and P&G in talent management. See Pucik et al. (2016), pp. 245–246, for an outline with examples.

transition, as with the earlier example of a technical manager who moves via a quality improvement project into a sales role.

A more recent version of the T-concept put forward by the European Commission is shown in Figure 1. In this approach, the 'T' acquires a base; font specialists would say that it morphs from a 'sans-serif T' to a 'serif T'. The 'serif-T' stands on a platform of core literacies provided in basic education. To reading, maths, and science skills, as measured by the Organisation for Economic Co-operation and Development (OECD)'s Programme for International Student Assessment (PISA), for example one can add ICT fluency as well as skills necessary for social cohesion such as language and cultural knowledge.[44] The stem of the T is an area

of specialisation, provided by vocational or higher education, while the top of the T focuses on the social and collaborative skills and the mindset required by our connected era. However, it should be noted that different organisations and scholars propose many versions of such T frameworks.[45]

SOME POLICY IMPLICATIONS

Peter Drucker, one of the pioneers of management thinking, noted that *'the greatest danger in times of turbulence is not the turbulence—it is to act with yesterday's logic.'*[46] Much of our institutional structure, from educational and social security systems to employment laws, was designed for the industrial age. Organisation, business, and work models have changed, and policies must adapt accordingly.

The head of digitalisation for the Danish government, one of the most advanced countries in Europe in digitalisation of government services, told us that after 15 years of work in creating a digital infrastructure, the new focus will be on the competences that a digitalised society needs, and the key pillar will be educational and teaching reform. This is the first of the major policy areas addressed in this section. Then the section turns to employment policy, which is vital to ensuring the workforce adjustment that is made imperative by the impact of technology and new work models. These and other major changes in societal infrastructure, including data security and e-commerce consumer protection, will require close collaboration between industry, consumers, educational institutions, and government agencies. The strength of such ecosystems is the third, and perhaps superordinate, policy element explored here.

Educational Policy

The educational policy of most nations is founded on the factory model of the 20th century—producing people with the technical and vocational skills for manufacturing and sales positions in industry, with a smaller number of skilled generalists and professional specialists graduating from universities to staff professional, managerial, and leadership positions (the mass high school model in the United States dates back to 1910).

A new model of education is needed. MIT's Andrew McAfee, co-author of *The Second Machine Age,* argues: *'Routine human work is going away very quickly and never coming back. I mean both routine knowledge work—payroll clerk kinds of things—and routine physical work. … Educational systems are doing a marvellous job of turning out routine workers. The mismatch is profound. Education is one of the slowest institutions to change in this society. That mismatch in clock speed between education and technology is something we need to work very hard on.'*[47]

One of the key dualities evident in T-shaped skills is that people need more specialisation to be employable, but at the same time they need the flexibility to navigate spiral careers. Specialisation in, say, data analytics, graphic design, or telemarketing is perhaps the easiest element; it can be acquired at different stages in life, through vocational training and short diploma courses, facilitated by the myriad types of training that are on offer today—from Lynda.com e-courses to the catalogue of video courses of the Khan Institute. But flexibility builds on the ability to learn how to learn, and this appears to be moulded in the early stages of education. The 'technology of skill formation', as explained by Heckman from the University of Chicago, begins early in life, and it is here that a great part of the future success of people is determined.[48]

Discussing specific policy interventions is beyond the scope of this chapter, but the central point is that self-directed learning should be given more prominence. *'The workplace doesn't look like an assembly line anymore',* says Deming from the Harvard School of Education. *'So maybe our high schools and colleges shouldn't either.'* The authoritarian rote learning style of education that characterises traditional classrooms undermines the natural creativity of children—and changing this approach matters for all levels of education. Deming comments: *'It is striking to me how much a high quality preschool classroom looks like a modern workplace. Children share resources and experiences with each other and move flexibly between tasks and roles. Learning is immersive and often implicit—even for "hard" skills like math and literacy.'*[49]

In Montessori-type schools that emphasise self-directed learning, children work on projects, learn how to collaborate, and take initiatives that foster entrepreneurship. Both Larry Page and Sergey Brin of Google went to Montessori primary schools, as did Amazon's Jeff Bezos and Wikipedia's Jimmy Wales.[50] Aside from acquiring social and problem-solving skills, such schools give rein to the basic curiosity of young children, who learn the importance of persistence and adaptability. At higher levels of education, flipped classrooms where students absorb the content online, followed by self-directed classroom discussions and projects, are rapidly gaining ground, including at our own INSEAD.

To equip them for a connected world where people must be self-reliant rather than follow authority, a system-oriented approach can help students understand how networked systems of people, processes, and machines join together to make today's workplaces function. Such an approach involves three key elements: thematic study across disciplines, project-based learning, and experiential opportunities.[51] One can see a specific example of such policy in action in Singapore. Revising the Science Curriculum Framework for schools in 2008, its 'inquiry-centric' strategy encourages students to ask questions about things they see around them and to maintain that curiosity, which will enable them to continue learning even after they leave school. The national strategy follows a systemic approach to curriculum planning and development that attempts to ensure that the focus of people's competencies remains relevant in the future.[52] Most importantly, the success of this approach requires a commitment to developing a strong teaching force. Teachers in Singaporean schools are given the flexibility to try innovative teaching methods (for example, eliminating blackboards and adopting digital channels); new methods are often tested on a small scale to assess effectiveness before wider implementation, institutionalising evidence-based pedagogic design. Teachers are entitled to attend 100 hours of training annually to keep abreast of developments in science and technology as well as new teaching methods.[53]

The ideas behind such educational systems are not new. As the former chairman of Microsoft Europe, Jan Mühlfeit, pointed out, they can be found in the pedagogic philosophy of Czech John Amos Comenius, who died in 1670 and is often described as the father of modern education. Mühlfeit summarised Comenius's convictions: *'If you tell kids, they will forget. If you show them, they will remember. If you involve them—albeit in a demanding but fun way—they will learn.'* The authoritarian rote learning style of education that characterises traditional classrooms undermines the natural creativity of children. NASA commissioned a study that showed that only 2% of professionals at the age of 25 showed clear indications of a creative mentality. As they went back in school age, the picture looked different—30% of the 10-year-olds were creative, and 96% of the 6-year-olds![54] Another of Comenius's principles back in the 17th century was that teaching approaches and materials should be adapted to the student's ability to learn.

As outlined in the Global Talent Competitiveness Index (GTCI) 2014, vocational education is experiencing a renaissance, with countries such as Switzerland—the GTCI global talent leader—as a model. But adaptability needs to be built into vocational education. Studies show that people with only deep vocational skills show less adaptability and therefore diminished employment prospects later in life, and this can only get worse with shorter skill lifecycles.[55] Spiral career realities need to be built into vocational education and incorporated into lifelong learning, but with foundations laid in primary education. As put by Andreas Schleicher from the OECD in a recent conference, *'we need to integrate the world of work and the world of learning; we need to give people a compass to navigate their careers.'*[56]

Employment Policy

A challenge underlying the future of work is the way we think about 'jobs'. First, as noted above, fewer people will have a single career during their lives, and even fewer will develop that career within a single organisation. The speed of innovation and change in the economy requires mobility across jobs and sectors in spiral careers. This raises the question of how to design policies that promote labour market flexibility and provide appropriate social protection, and notably how to promote active labour market policies that facilitate job mobility.[57] Second, a more fundamental question emerging from the rise of free agent work is how to define employment: under what circumstances is a freelancer considered to be an employee, and do any of the benefits and protection of conventional employment relationships extend to such people?

Labour market flexibility is captured in the GTCI by indicators measuring the ease for organisations of hiring and redundancy, along with some measures of social protection for individual workers.[58] GTCI countries with a high degree of labour market flexibility include Denmark, Switzerland, the United States, Singapore, and Qatar. On the other hand, rigid labour markets that might handicap human adjustment to new technologies include France, which recently hammered through piecemeal reforms, along with Norway, South Africa, and South Korea.

There may be little disagreement, among economists at least,[59] about the importance of labour market flexibility to facilitate the radical work and skill adjustments necessitated by technological change. But the blunt reality of Industry 4.0 (signifying the Fourth Industrial Revolution) following on the back of industrial outsourcing is that many people will be in hard straights—they will lose their jobs and may fall with their children into poverty (currently nearly 15% of the US population are estimated to live below the national poverty threshold).[60] Social protection to buffer the risk of falling off the ladder is deemed in many countries to be the necessary complement to labour flexibility.

The idea of social protection in the shape of unemployment benefits has been broadened to include active labour market policies such as training and start-up incentives that facilitate mobility and skill transitions.[61] But here political and social values lead to differences. In continental Europe, the European Commission holds up the Danish model of Flexicurity as a model. Generous welfare benefits are offered to those who lose jobs, but for a limited period; these benefits are accompanied by skill training, comprehensive information on opportunities, and appropriate support. To enjoy welfare benefits, the individual accepts obligations—if a new job cannot be found, people are obliged to retrain, be mobile, move to a lower class of job, or work part-time. On the other hand, the political mood in the United States (and Tory United Kingdom) is against government intervention, meaning that growing numbers of people are obliged to join the precarious alternative employment economy, where they enjoy little protection.

How to adapt both social protection and active labour market policies to the new world of employment where many are free agents—how to define 'work'—is another challenge for most nations. Traditionally social protection and skill retraining have been linked to years of salaried employment, assuming that workers will move as employees from one organisation to another. In the gig economy, most platforms assert that 'crowdworkers' and people engaged in contingent work are self-employed, independent contractors. As a result, individuals find themselves without recourse to worker-protective norms, minimum wages, health and safety regulations, unfair dismissal protection, and retraining support.[62]

For example, a group of Uber drivers suing to be treated as employees was recently granted class-action status in San Francisco.[63] Classifying them as employees would immediately raise several questions: should Uber drivers be compensated for the time they spend waiting for rides? Should such time go towards determining a minimum hourly wage? Would driving for competitor Lyft violate an employee's duty of loyalty to Uber? A recent paper from the Hamilton Project, a liberal think tank in the United States, has fuelled discussions about defining an intermediate status between a contractor and an employee—a new category labelled 'dependent self-employed'.[64]

One potential solution that tackles some of the challenges raised by both contingent work and labour mobility would be to create 'individual security accounts' that allow benefit portability as people move across jobs or even from gig to gig.[65] In the era of 'You Inc', as *The Economist* describes our individualised

economy,[66] access to benefits should be customised. Benefits (unemployment insurance, health insurance, disability and injury insurance) should not be tied to specific employers. For instance, the portability of pension rights across occupations (or even across countries, as is being considered in the European Union) is expected to encourage labour mobility.[67] One of the key elements of the Danish Flexicurity approach is the universal right of access to welfare services—social benefits are not tied to a particular employer. This makes workers much more mobile. Escaping from the historic legacy of tying people to organisations, workers are free to search for new jobs if they become dissatisfied with current employers. Thus, in Denmark most workers take the initiative to leave a job,[68] and few become unemployed as a result of being fired. Mobility is encouraged. The proportion of job-hoppers to total employed is high (between 20% and 30% of those who are economically active) primarily because people are looking for opportunities to cultivate new skills.[69] Similarly, an increasing number of countries, from Singapore to France, have linked training credits to portable individual accounts such as the French *compte personnel d'activité* rather than to years of service with the employer.

The question remaining is who should contribute to the creation of protection schemes for individuals (e.g., social security contributions). By defining an intermediate status between a contractor and an employee, digital labour markets should be made to pay at least a part of the traditional bundle of social protection provisions. Many legal scholars argue that all parties—including platforms, crowdworkers, and service users—should each be shouldering their appropriate share of what in the past were employer responsibilities.[70] More research is needed to define how to do this since it is difficult to define in a general way the criteria that identify a dependent self-employed person. Meanwhile, one should note that private employment service providers play an important role in bridging the needs of businesses and individuals. While agency work secures training and the full benefits of social protection for associate workers, various forms of open-ended agency contracts, such as the new CDI intérimaire in France, allow flexible labour supply for companies, as described in **Chapter 2.**

Connectedness among Stakeholders

Actions to deal with national public problems such as the digitalisation of the state, the reform of the educational system, or the development of specialised skills for new work opportunities require close collaboration between state partners, businesses, and educational institutes. Collaboration within such ecosystems was indeed a major theme in the first GTCI 2013 report, which featured examples of skill development to meet new needs and opportunities in India and Singapore that required such close collaboration between social partners. This was highlighted by Lars Frelle-Petersen, the head of Denmark's government digitalisation program over the last 15 years, who stated in our interview: *'To successfully digitalize a society, there are two vital background requirements. The first is a history of cross-sector collaboration. Since 2001, the state, regions and local authorities have built the systems and requisite databases in close cooperation, with joint financing. This also includes collaboration with the business community, notably the banking sector, in the development of digital payment systems. The second is trust in the reliability and integrity of the state since digitalization involves creation of databases on persons, firms, property, addresses, the geographic map, energy use, and so on. As a consequence, we have reliable data that one can trust.'* **Chapter 2** by Dehaze in this report provides examples of public-private partnerships in the domain of skill development that are also an intrinsic aspect of this type of collaboration.

Measured in the GTCI by the variables of Business-government relations (and also Labour-employer cooperation), all the Nordic countries are well positioned on stakeholder connectedness, along with Singapore, Switzerland, Japan, the United Arab Emirates, and the United Kingdom. The development of the active labour policies in the Nordic countries that were discussed above is an example, as outlined by Kristensen (2016, pp. 158). Firms, state, and educational institutions in the Nordic region interacted to form a mutual chain of talent supply enablers to offset the competitive effects of globalisation. By combining access to training institutions and income support from the state, workers are encouraged to search constantly for new skills, thereby also getting included in the ongoing redefinition of job roles. Furthermore, welfare services such as childcare, eldercare, and housing support facilitate their engagement in highly demanding jobs. This enables firms to decentralise responsibilities to operative levels, making possible new forms of learning organisation where control rests in the hands of workers. This in turn facilitates innovation of new services and products.

Other Policy Areas

These three policy areas were highlighted in this research review, but they are far from exhaustive. As noted earlier, Denmark's head of digitalisation emphasises the importance of *trust in the state and institutions,* vital if citizens are to make personal information available, have confidence in online payment systems, and accept the need for ongoing changes. *Transparency* is closely related to trust, as well as to governance (see **Chapter 4** in this report). *Cyber risks* are so serious that some global financial corporations are training their entire staff in cyber risk management since rules and procedures can no longer cope with the ingenuity of hackers, rather as companies 20 years ago would foster a culture of quality management. Less closely related to talent are *intellectual property right issues* that have a significant effect on work models.[71]

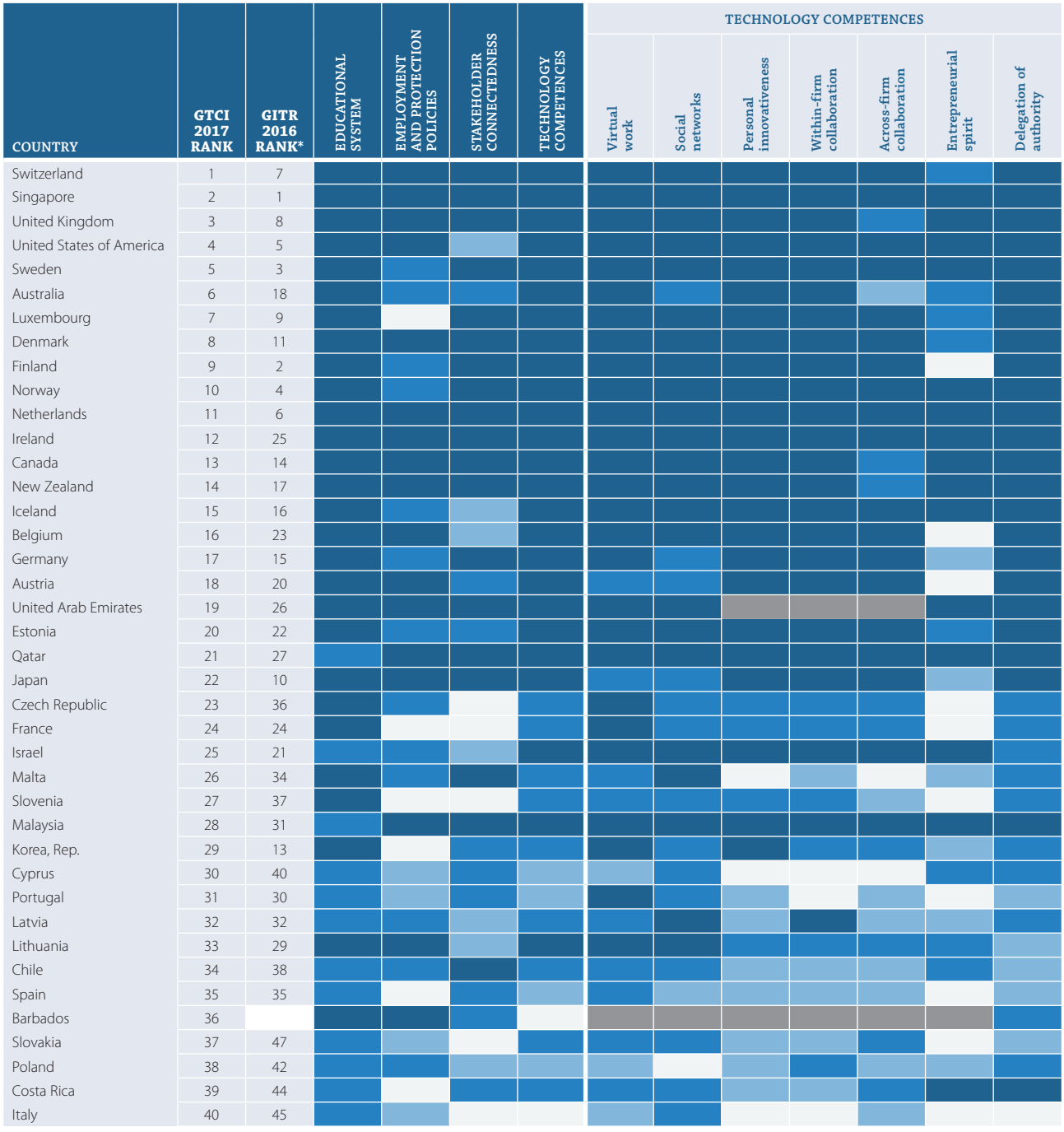
WHICH COUNTRIES ARE BETTER PREPARED?

The 'talent readiness' of countries to benefit from technology largely depends on how well societies and their institutions are adapting to emerging needs and realities. Building on our review, educational and employment policy are the big two policy challenges in the talent arena, reflecting the emerging changes in organisation, work models, and skills of the 21st century economy. And without stakeholder connectedness, any such major policy reforms are likely to stumble.

Figure 2 shows the readiness of a sample of 40 countries to maximise talent capabilities in the context of the technology

Figure 2

A heatmap of talent readiness for technology in the top 40 GTCI countries



* The GITR rank refers to the Networked Readiness Index of the GITR. Well positioned, Mixed readiness, Less well positioned, Low readiness, Missing data.

revolution. This heatmap measures four main attributes at the country level.

1. The readiness of the **educational system** is measured by four indicators: the quality of basic literacy and maths skills (PISA scores), the use of technology for educational purposes, access to lifelong learning opportunities, and the relevance of the education system for the needs of the economy.

2. The readiness of the **employment system,** including its social protection component, is measured by three indicators: labour market flexibility (ease of hiring and ease of redundancy), access to a solid safety net, and by the strength of labour-employer cooperation.

3. The **connectedness of stakeholders** is measured by a single indicator, Business-government relations. For example, the need for adaptive continuous education

using blended learning, employing online learning platforms, and classroom training requires close collaboration around design and certification between businesses, trainers and educational institutions, and public institutions.

The fourth attribute measures the level of *Technological competences* in these 40 nations, and it consists of seven indicators of the pervasiveness of practices relating to current technology. These seven variables were chosen based on the discussion, in the first section of this chapter, of organisational practices in the new economy: the use of virtual work (e.g., remote working, telecommuting); the use of online social networks; personal innovativeness (or idea generation by people); the extent of within-firm collaboration; the extent of across-firm collaboration; entrepreneurial spirit; and delegation of authority. These variables are reported in Figure 2 both in aggregate (the sum total of the normalised seven scores) and for each variable.

The indicators for all four attributes are either country-level variables from the GTCI index or variables from the World Economic Forum's Executive Opinion Survey; many of them are used in the Cornell-INSEAD-WEF Networked Readiness Index of the *Global Information Technology Report* (GITR).

Using these four attributes, the heatmap shows the technological readiness of the top 40 countries of the GTCI index. The four levels of readiness (well positioned, mixed readiness, less well positioned, low readiness) are defined by using the quartiles of the scores of each attribute.

Out of these 40 countries, 9 are particularly well positioned in terms of talent readiness for technology, showing top quartile strengths in all four attributes. In order of their GTCI ranking, they are Switzerland, Singapore, the United Kingdom, Denmark, the Netherlands, Ireland, Canada, New Zealand, and the United Arab Emirates. One country outside the top 40 (and therefore not shown in the heatmap)—Bahrain—is similarly well positioned. Aside from Bahrain, countries that are not in the top GTCI league that might expect to benefit in particular from the new economy include the Philippines, Rwanda, Sri Lanka, and Zambia.

On the other hand, among European countries, France and Italy are less well positioned,[72] along with Croatia, Montenegro, and Serbia in particular (the latter are not in the top 40, and Serbia is in the bottom quartile on all four attributes, along with countries such as Bolivia, Venezuela, Algeria, and Madagascar). There appears to be a strong need to seriously consider the implications of technology within the Balkan region.

Turning to Asia, and leaving its clear leader Singapore aside, Malaysia demonstrates stronger talent readiness for technology than South Korea, even though the IT infrastructure of the latter is much superior as reflected in its strong Networked Readiness Index ranking. China is in a reasonably robust position of talent readiness with across-the-board second quartile positions on all four attributes, closely followed by Vietnam—although, as mentioned, the Philippines is also well prepared. In Latin America, Chile is in a particularly favourable position, followed by Costa Rica, as shown in Figure 2, as well as Panama and Uruguay—all far more digitally ready than Argentina, Colombia, or Brazil.

Developing countries may be left in the lurch by the new talent-driven economy. Many were hoping to follow the model of Singapore, Malaysia, China, Vietnam, and others, attracting outsourced manufacturing because of low costs and then moving up the skill scale to higher value added economic activities. But as companies bring their manufacturing back to automated factories in the West and as China invests heavily in robotics, the possibilities of this model are no longer so clear. With growing concern about 'premature deindustrialisation', emerging and developing countries such as Mexico, Indonesia, and India may have to rethink their growth models and invest in upskilling the workforce.[73]

Lessons from Two Talent-Ready Countries

This section presents a closer look through interviews and research in two of the nine countries that display strong talent readiness for the new technology-driven economy—Denmark in Europe and Singapore in Asia.

On EU measures of digitalisation, the **Danish state** is currently the most advanced in Europe.[74] Systematic digitalisation of Danish society started in 2001 as part of a sweeping reform of government, and later of municipalities and regions, where building e-government was a centrepiece of the vision for the future. Led by a digital directorate, the focus for the last 15 years has been on creating the country's digital infrastructure, so that today every citizen has a digital e-box with a single digital signature for all information and transactions concerning most aspects of life—income and taxes, property, company registration, transport, energy consumption, banking and finance. Digital systems and processes are now part of daily life for almost all citizens. The 2001 vision clearly played a driving role, and was backed by leadership from a digital directorship. Based on discussions with key authorities, we noted earlier various lessons behind this successful experience—strong collaboration between the different sectors of society, including partnerships with banks; and trust in government institutions—two conditions that are far from ideal in other European states such as France and Italy. Additionally, Denmark's Flexicurity employment system, introduced 25 years ago, is a global model for workforce adaptability. We find that Scandinavians tend to view foreign executives as authoritarian, commenting how hierarchy is strikingly anchored in offices and buildings that they visit abroad in contrast to their own architecture.

Denmark lags, however, on two fronts. First, technology has not had a deep impact on the educational system, where reform is today's priority. The country experienced a strike for the first time in recent history when teachers protested against reforms that had a distant connection to the new economy, illustrating the obstacles in education reform. It lags here behind the United Kingdom, which was the first European country to introduce coding and computational logic into the school curriculum, and there is an acute shortage of IT specialists (Danish women avoid such occupations). The curriculum needs to be adapted to the needed skills and talent, particularly in higher education, including more emphasis in schools on science and technology (again, the United Kingdom leads Europe on science, technology,

engineering, and maths, or STEM, focus in schools). Although project learning is a norm, learning methods need to be more individualised, with a greater use of adaptive and blended learning (a Swedish study showed that technology-enhanced education improved PISA competences on literacy and maths while also reducing the gender gap in performance).

The second lag is in the intensity of digital adoption by business, which helps bring down Denmark's Networked Readiness Index ranking to 11. In contrast to its Nordic neighbours—Sweden and notably Finland, with its Unicorn start-ups and high tech companies—Danish firms tend to be small and medium-sized enterprises that do not have the scale to adopt digital processes in operations and services, despite the good national infrastructure. On the other hand, Denmark aspires to lead in digital healthcare—you can already meet with your doctor by online video, undertaking a self-diagnosis with simple home medical devices.

With a lead on business adoption of digitalisation and more aggressive reform on the educational front, a recent analysis forecasts that Finland will take a clear Nordic lead by 2025 despite its currently less dynamic employment system and poorer performance in lifelong learning. But according to this projection, the e-intensity in the Asian region is such that Singapore, South Korea, Taiwan, and even China may overtake the Nordics in their technological capabilities, including on the talent front, within the next decade.[75] This finding provokes us to explore some lessons from Singapore's experience.

In terms of government usage of ICT, **Singapore**—like Denmark—is one of the leading nations in the world.[76] It scores strongly on the four attributes discussed above, and the Networked Readiness Index of the GITR positions it as the #1 nation in the world on overall IT readiness as well as on state digitalisation. As with Denmark, this success was driven in 1999 by an unfolding vision, its Smart Nation strategy, and the creation of an agency (Infocomm Development Authority or IDA) to lead initiatives, notably e-citizenship, though this has been extended to include a one-stop educational and career resource portal. That agency is currently being reorganised into an even more high profile organisation called GovTech to lead on government digital and technological initiatives.[77]

Singapore, with its digital vision and strategy, its flexible labour market, and its strong city-state ecosystem, embodies the points highlighted in this chapter. But our discussions and studies lead us to focus on two additional lessons from the Singapore experience.

Peter Drucker emphasised the importance of forward thinking in times of turbulence, and Singapore's use of education to drive societal change is an exemplar. The first observation is that the country has always taken seriously what could be called *social engineering*—the design of social systems to drive desired economic and societal change. This can be seen in the changing imperatives driving the educational system since Singapore's independence in 1965. At the outset the priority was using English in primary schools to build cohesion between the migrant ethnic groups that make up the country. Then, in 1979, the New Educational System introduced multi-streaming geared to the diverse needs of the market and economic development—a vocational track to produce the skilled workers needed by business; a track to produce needed doctors, engineers, and professionals; and even a track for the writers, artists, and musicians to enrich cultural life.[78] Less than 20 years later, the aim of a new educational reform was to move Singapore into the knowledge economy, shifting learning from absorbing information to nurturing thinking skills—this chapter alluded earlier to the introduction of inquiry-centric education, and to the equipping of communities of teachers to innovate in pedagogy.

The second striking feature of Singapore (along with South Korea and Taiwan) is that government is united around the central importance of talent in national development. Talent attraction, development, and retention, along with enabling, are not just issues of concern to the ministries of labour or education or (in Singapore's case) a powerful ministry of manpower or an IDA—they are the focus of *all* ministries, within the scope of an all-embracing Smart Nation strategy. Encapsulated by its slogan of CONNECT, COLLECT, COMPREHEND, CREATE, this digital strategy covers public safety, transport, healthcare, education, enterprise, and energy. Co-creation is an intrinsic element of the strategy, bringing together experts, brainpower (including talent from abroad), and stakeholders to find innovative solutions to challenges in these sectors of society.

This is in striking contrast to the government and political debates in many Western nations, where forward-looking thinking often appears to be lost in public debates over closing factories, immigration, and terrorist threats. Our prediction is that it will be smaller entities like cities and regions (Singapore is, after all, a city-state) that will take the lead in the new economy.

CONCLUDING OBSERVATION: THE ELEPHANT IN THE TECHNOLOGY ROOM

Focusing on the way in which organisations and models of work are changing, and then on the consequences for people, three major policy implications emerged from this assessment of the talent implications of the emerging machine revolution—the need for deep educational reform that is forward-looking; the importance of an *active* employment policy that balances flexibility with reasonable measures of protection as well as individual obligations to be mobile; and the fundamental importance of collaboration among stakeholders in ecosystems.

Assessing talent readiness for the 21st century machine age across nations, these three policy areas were translated into three attributes plus a Technological Competence attribute, measured by indicators from the GTCI and related indices. In this context, nine countries are well positioned. Not surprisingly, it is Singapore, which has a technology-oriented ecosystem that appears to be in an exemplary position—a nation where talent considerations tend to lead technological change rather than lag far behind. Other Asian countries follow fast in its footsteps. There is an implicit call for action on the part of some other countries in the top 40 GTCI league.

However, behind the scenes of technological talent readiness lies another issue that is starting to become visible and disturbing, influencing elections and referendums and draining

attention away from the need for policy reforms. Talent can be viewed as an elitist concept—indeed, corporate talent management was burdened for some time by debates over whether a few high potentials should benefit from talent development or whether everyone has talent.[79] In developed nations, Richard Florida's estimate is that perhaps 30% of the population has the type of valuable and creative skill to be part of the talent pool, and we would concur.[80]

People will accept that skills, opportunity, and wealth are not equally distributed in society, and that economic progress means that some will be favoured by globalisation, innovation, and digitalisation while others may fall by the wayside—perhaps they accept this more readily in what Gert Hofstede called 'high power distance' cultures than in the more egalitarian Nordic world.[81] But when falling by the wayside means moving without dignity to the poverty line, when social and racial origins imply a low probability that one's children will lead a better life, when income inequalities reach stupendous proportions with 5% of the population owning 72% of the wealth (and worsening Gini-coefficients across the world suggest that this is not just a US phenomenon), then the path to future prosperity may be washed away by the landslide of referendum and election votes and by rising populism.

The elephant in the room is that of **growing inequalities,** and the complex issues that this raises. While technology is creating enormous wealth and improving many aspects of our lives, the deeper challenge has perhaps more to do with the inequalities between the winners and the losers in the technological revolution than with the assessment of its technical and economic scenarios.

Machines are replacing many jobs, on the back of globalisation that moved many jobs to low-cost countries, creating disillusionment on the part of large swathes of Western populations. Globalisation was morally defensible since it gave the poor living on a dollar a day the opportunity to improve their lot. But it is not the poor in developing countries who will benefit from Industry 4.0—many feel to the contrary that it is a small number of the rich who will become astronomically richer. That is harder to argue against when many experts fear 'the rise of the precariat' as independent workers engage in a race to the bottom in a contractual labour market, accompanied by continuous performance evaluation. A law scholar argued that *'some forms of the new crowdwork seem to be a throwback to a Taylorist deskilling of the industrial process, but without the loyalty and job security'.*[82] *'There's a risk we might devolve into a society in which the on-demand may end up serving the privileged few',* observed Arun Sundararajan, professor at New York University's School of Business.[83] Our Wharton colleague Peter Cappelli comments: *'If one wanted to look at single changes that matter a lot to work, the biggest in my view has been ideology, the shift from the idea that business had a responsibility to all stakeholders toward the idea that they have responsibility only to one—shareholders.'*[84]

A recent article in the *Academy of Management Perspectives* raises a dilemma about technology: *'[On one side] these technologies lead to a dystopia in which we are all reduced to contingent employees, permanently on call, perhaps bidding for jobs and perhaps even bidding against more desperate peers in poorer countries—allowing those who monopolize the underlying technology platform to reap the profits. On the other side, these same technological capabilities, by dramatically lowering economies of scale, lead to the possibility of a viable communal economy composed of flexible networks of cooperative enterprises.'*[85]

Without rethinking the social contract and the relationship between work and society, the disparity between economic winners and losers from the technology revolution will continue to grow. Technology will not reach its enormous potential if there is broad and deep resistance to the way that technology reshapes the work scene. To maintain societal cohesion, one must ensure that those left behind have the opportunity to retrain and bounce back rather than fall into a spiral of poverty and despair. Discussions about new ways of organising the economy will intensify as inequalities derived from technology and globalisation grow. As announced in **Chapter 1,** this is likely to be a core area of focus for the GTCI in 2017.

ENDNOTES

1 See Susskind & Susskind (2015).

2 Straub (2015).

3 Van Alstyne et al. (2016).

4 The recent Global Innovation Index addresses this issue, with its focus on winning with global innovation. See Dutta et al. (2016).

5 Burt (1992).

6 The foundations of organisational theory here were laid by Lawrence & Lorsch (1967).

7 Martin (2010). This is a perspective that is gaining ground among organisational design theorists who are developing a micro-structural view of design—rather than trying to understand the whole organisation, it is more realistic to see it as an evolving constellation of smaller modules. We acknowledge the insights of one of INSEAD's organisational design scholars, Professor Phanish Puranam, who is editor of the *Journal of Organizational Design* and preparing a book on *Organizing collaboration: A micro-structural approach to organizational design,* to be published by Oxford University Press.

8 Feldman & Pentland (2003).

9 Ford & Randolph (1992); Martinez & Jarillo (1989). See Pucik et al. (2016), Chapter 4 on 'Structuring coordination', for a discussion.

10 Benkler (2002).

11 Managing in the contexts of modularity was discussed in the 1990s (e.g., Baldwin & Clark, 1997).

12 Leadership approaches in platform enterprises are discussed in a global survey carried out by the Center for Global Enterprise (2016). The rise of the platform enterprise: A global survey (The Emerging Platform Economy Series No. 1, 2016).

13 Maddux, W., Swaab, R., Tanure, B., & Williams, E. (2014). Ricardo Semler: A revolutionary model of leadership. INSEAD case study, Fontainebleau.

14 Askin, N. & Petriglieri, G. (2015). Tony Hsieh at Zappos: Structure, culture, and radical change. INSEAD case study, Fontainebleau.

15 See Benkler (2002).

16 When members of online communities innovate, they do not do it anonymously or randomly in cyberspace, but with reference to the identity, reputation, and technologically derived status in collegial networks (Fleming & Waguespack, 2007).

17 Lerner & Tirole (2002) put some thought to the question of individual motivations by applying arguments derived from economic theory to the specific case of the open source software movement. Their findings would also apply for other forms of open innovation and peer production. A person participates in a project, whether commercial or open source, only if he or she derives a net benefit (broadly defined) from engaging in the activity. The net benefit is equal to the immediate payoff (current benefit minus current cost) plus the delayed payoff (delayed benefit minus delayed cost). Among the costs is the opportunity cost: that is, the person is unable to engage in other professional activities.

18 Since many elements of the source code are shared across open source projects, more of the accumulated knowledge can be transferred to the new environment.

19 When your boss is an algorithm, *Financial Times,* 8 September 2016; Uberisation and the dangers of neo-serfdom, *Financial Times,* 9 August 2016.

20 See, among other articles, Ewenstein et al. (2016). Netflix is one of the new models for HR; see McCord (2014).

21 GE's shift in this direction is noteworthy. See Why GE had to kill its annual performance review after more than three decades, *Quartz,* August 13, 2015 (www.qz.com/428813/ge-performance-review-strategy-shift/).

22 There is evidence that performance in technology-driven firms follows a Pareto J-curve more than the Gaussian inverted U on which traditional performance/pay scales are based.

23 For an extended analysis, see Chapter 8 in Pucik et al. (2016), including observations on the IBM Talent Marketplace portal. Cappelli (2008) provides an extensive analysis of the way in which the responsibility for talent development has shifted from the corporation to the individual.

24 See Boudreau et al. (2015) for a description of the IBM Open Talent Marketplace.

25 Another example is the way in which talent management tools such as LinkedIn Lookup are making the boundary between talent inside and outside the organisation fade. LinkedIn Lookup is designed to find insider talent for a project, but it can also be employed to find project talent from outside the organisation's boundaries.

26 The source for the US data is Katz & Krueger (2016). The source for the European data is: The future of work: Skills and resilience for a world of change, EU European Political Strategy Centre, *Strategic Notes* Issue 13, June 2016, available at https://ec.europa.eu/epsc/pdf/publications/strategic_note_issue_13.pdf; and Eurostat Employment Statistics, November 2016, available at http://ec.europa.eu/eurostat/statistics-explained/index.php/Employment_statistics

27 ILO (2016).

28 Longer, better lives in the sharing economy, INSEAD Knowledge blog post, Wang, N., 1 September 2016, available at http://knowledge.insead.edu/blog/insead-blog/longer-better-lives-in-the-sharing-economy-4894

29 See Benkler (2002). Grandori (2016) explains that conditions of uncertainty stemming from knowledge problems—under which both inputs and outputs are difficult to observe and attribute to specific actors—are known to create inefficiencies in the use of both markets and bureaucracies because of a lack of requisite information.

30 There are also talent management benefits in the context of knowledge work. Human creativity is difficult to standardise and specify in the contracts necessary for either markets or hierarchies. As the weight of human intellectual effort increases in the overall mix of inputs into a given production process, an organisational model that does not require contractual specification of the individual effort required to participate in a collective enterprise, and which allows individuals to self-identify for tasks, will be better at gathering and utilising information about who should be doing what than a system that does require such specification (Benkler 2006).

31 Gratton & Scott (2016).

32 Early research in the 1960s and 1970s mapped out three stages in career development. The first was called 'exploration' of one's skills and talents as well the outside world of opportunities, leading to an emerging career self-concept or 'anchor'. The second was one of development and achievement, guided by that personal orientation, while the third stage had different paths of continued achievement, plateauing, or decline. Schein's concept of a career anchor mapped out eight different orientations, the anchor being a perceived combination of competence, needs, and/or values that a person would not give up if forced into a choice (Schein 1978). In this model, the anchors are technical-functional expertise, managerial competence, entrepreneurship-creativity, autonomy, service-dedication to a cause, security-stability, pure challenge, and lifestyle.

33 Greenstone Miller & Miller (2012).

34 See Driver (1979) for a theory of four career concepts, including the spiral career; and Gratton (2011) for an elaboration of the spiral career concept.

35 The future of work: Skills and resilience for a world of change, EU European Political Strategy Centre, *Strategic Notes* Issue 13, June 2016, available at https://ec.europa.eu/epsc/pdf/publications/strategic_note_issue_13.pdf. See also *The European Commission's Grand Coalition for Digital Jobs* (https://ec.europa.eu/digital-single-market/en/grand-coalition-digital-jobs); and the *European Commission's Manifesto on eSkills for Jobs 2016* (http://eskills4jobs.ec.europa.eu/manifesto).

36 While this chapter focuses on talent, one should not suggest that *all* tasks will require high levels of skill. There is substantial growth in non-routine elementary occupations such as personal care services that will grow with ageing demographics.

37 Brynjolfsson & McAfee (2014).

38 There are discussions as to whether the productivity paradox is real or represents a problem of measurement. See a discussion concerning the United States in Byrne et al. (2016).

39 Pucik et al. (2016).

40 See Hansen & von Oetinger (2001) for an earlier review of the T-shaped concept, applied to knowledge managers.

41 IDEO CEO Tim Brown: T-shaped stars—The backbone of IDEO's collaborative culture. *Chief Executive,* 2010, available at http://chiefexecutive.net/ideo-ceo-tim-brown-t-shaped-stars-the-backbone-of-ideoae%E2%84%A2s-collaborative-culture/

42 Deming (2015).

43 Evans et al. (2002); Pucik et al. (2016).

44 OECD's PISA is considering broadening its conceptualisation of educational competences to include the global competences that are necessary in an intercultural and interdependent world (see OECD, 2016, *Global competence for an inclusive world,* available at www.oecd.org/pisa/aboutpisa/Global-competency-for-an-inclusive-world.pdf).

45 See, for example, an OECD report on skills for ICT professionals: OECD (2016), *New skills for the digital economy,* available at http://www.oecd-ilibrary.org/science-and-technology/new-skills-for-the-digital-economy_5jlwnkm2fc9x-en

46 Drucker (1980).

47 Producing digital gains at Davos. *BCG Perspectives,* 2016, available at www.bcg.com/perspectives/206120. See also Brynjolfsson and McAfee (2014).

48 See Cunha & Heckman (2007).

49 Deming (2015).

50 Brynjolfsson & McAfee (2014).

51 Aoun (2016).

52 Enabling a revised curriculum requires a strong and connected community of curriculum planners, education experts, and school teachers.

53 The National Institute of Education (NIE) is a teacher training institution in Singapore, offering a wide range of courses at pre-service and in-service levels to cater the needs of teachers. The NIE also offers master's degree specialisations and PhDs.

54 Land & Jarman (1993).

55 Hanuschek et al. (2011).

56 Speech by Andreas Scheicher on 'Skills for the future', OECD Forum 2016, Paris, 31 May 2016.

57 Active labour market policies and unemployment benefits may be (somewhat paradoxically) better for employment than employment protection regulations. See the discussion in Mortensen & Pissarides (1999).

58 The World Bank's Doing Business Index has a special module that measures labour market flexibility based on different types of labour market regulations—in terms of hiring, working hours, redundancy, etc.

59 See, for instance, Mortensen & Pissarides (1999).

60 Poverty in America, *The Economist,* 20 August 2016.

61 *Active labour market policies* include matters such as training, employment incentives, supported employment and rehabilitation, direct job creation, start-up incentives, out-of-work income maintenance and support, and early retirement.

62 See a discussion about the legal aspects of online platforms in Prassl & Risak (2016 forthcoming). In many cases, it is platforms that 'regulate' the market—they decide what information is collected and then displayed to partners, how prices are set, and how disputes will be resolved.

63 As the Gig Economy Changes Work, so should rules, *Wall Street Journal,* 9 December 2015.

64 Harris & Krueger (2015). The report proposes that dependent self-employed workers could jointly negotiate work conditions, with exemption from antitrust laws. Federal anti-discrimination laws would protect employees, and the employer would have to cover matters like Social Security contributions. However, workers would not be covered by federal overtime or minimum wage laws, or workers' compensation and unemployment insurance, none of which are well suited to how independent workers operate.

65 See the discussion in ILO (2016).

66 See Re-Educating Rita, *The Economist,* 25 June 2016.

67 See the discussion in https://blogs.insead.edu/iwpr/open-labor-market-with-fragmented-pension-systems-portability-of-entitlements-in-the-eu/#more-101

68 Sixty percent typically do so during high-unemployment periods, 85% during low-unemployment periods.

69 Madsen (2006).

70 See Prassl & Risak (2016 forthcoming). At the same time, it is important to note that there are valuable alternatives introduced by private employment service providers. While agency work secures social benefits and training for associate workers, various forms of open-ended agency contracts, such as the new CDI intérimaire in France, allow flexible labour supply for companies and full social protection.

71 Firms are in fact trying to develop parallels to the freedom to learn, innovate, and act as in peer-production processes by loosening the managerial bonds, locating more of the conception and execution of problem solving away from the managerial core of the firm. However, the need to assure that the value thereby created is captured within the organisation limits the extent to which these strategies can be implemented.

72 However, Cisco's CEO, John Chambers, has expressed surprise at how rapidly the French stakeholders, notably the government, have committed themselves in 2016 to digitalisation, arguing that France may head up Europe and perhaps the developed world on digitalisation in the future. See La France peut être un modèle dans le numérique, interview with John Chambers of Cisco. *Le Figaro,* 29–30 October 2016 (http://www.lefigaro.fr/secteur/high-tech/2016/10/29/32001-20161029ARTFIG00125-john-chambers-la-france-peut-etre-un-modele-dans-le-numerique.php).

73 Frey et al. (2016).

74 EU countries issue mea culpas for poor marks on internet connectivity, *EurActiv.com,* 26 February 2016, available at https://www.euractiv.com/section/digital/news/eu-countries-issue-mea-culpas-for-poor-marks-on-internet-connectivity/. However, in the UN's e-Government survey, the United Kingdom is at the top of the list, ranking higher than Denmark (https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2016).

75 Digitizing Denmark: How Denmark can drive and benefits from an accelerated digitized economy in Europe, BCG, August 2016, available at di.dk/SiteCollectionDocuments/DI%20Business/Google%20Denmark%20Report%2006%20

76 See the UN e-Government survey 2016, available at https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2016

77 See the Update on Government Technology Agency (GovTech), April 2016, from the Singapore Ministry of Communications and Information, available at www.mci.gov.sg/wps2016/government

78 There were many in Singapore at the time that lamented the utilitarian rise of professional and technical studies at the expense of humanistic and liberal education, but the heads of state felt there was no other choice—a 'one size fits all' model of education would hold the country back.

79 See the critical review on the meaning of *talent* by Lewis & Heckman (2006).

80 Florida (2002). Richard Florida calls the talent pool 'the creative class'.

81 Hofstede (2001) opened up our understanding of cultural differences between nations, using data from a global IBM opinion survey. One of his dimensions is *power distance,* the bottom-up acceptance that power is unequally distributed in organisations (and families). Austria, Israel, Denmark, and New Zealand score low on power distance (egalitarian societies); Germany and the United States are moderate; while much of the Arab world, China, Mexico, and above all Malaysia are more accepting of power differences.

82 Cherry (2016 forthcoming). The combination of modularity and output orientation is making the principles of 'Taylorism' more prominent. Frederick Taylor's 'Principles of Scientific Management' proposed back in 1911, that the best way to boost productivity is to embrace three rules: break complex jobs down into simple ones, measure everything that workers do, and link pay to performance.

83 See http://www.theguardian.com/commentisfree/2015/jul/26/will-we-get-by-gig-economy

84 The future of work: How you can ride the wave of change, Knowledge@Wharton, 29 July 2016. Available at http://knowledge.wharton.upenn.edu/article/the-forces-shaping-the-future-of-work/

85 Adler (2016).

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CHAPTER 7

JRC Statistical Audit of the Global Talent Competitiveness Index 2017

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The Global Talent Competitiveness Index (GTCI) aims to summarise complex and versatile concepts related to human capital and talent competitiveness at the national scale in 118 countries worldwide. In so doing, it raises some conceptual and practical challenges, which are discussed in the GTCI 2017 report. This chapter focuses on the practical challenges related to the data quality and the methodological choices made in the grouping of 65 variables into 14 sub-pillars, six pillars, two sub-indices, and an overall index.

The GTCI 2017 has a very high statistical reliability (it has a Cronbach's alpha value of 0.95) and its 65 individual variables are statistically well grouped into the six pillars in order to measure the talent competitiveness dimensions that such pillars try to capture. Country ranks are also robust to methodological changes related to the treatment of missing values, weighting, and aggregation rule (with a shift of less than ± 2 positions with respect to the simulated median in 90% of the countries). The added value of the GTCI model lies in its ability to summarise different aspects of talent competitiveness in a more efficient and parsimonious manner than is possible with the variables and pillars taken separately. In fact, in more than 70% of the 118 countries included in this year's GTCI, the overall ranking differs from any of the six pillar rankings by 10 positions or more.

This audit represents the fourth analysis performed by the European Commission's Competence Centre on Composite Indicators and Scoreboards at the Joint Research Centre (JRC). The previous audit identified a few minor statistical issues concerning variables that had a low correlation with the talent dimension they were trying to capture, but these have largely been addressed in the 2017 index. Overall, the JRC concluded that the GTCI model is robust and reliable, with a statistically coherent and balanced multi-level structure. The analysis was performed in order to ensure the transparency and reliability of the GTCI model and thus to enable policymakers to derive more accurate and meaningful conclusions, and to potentially guide their choices on priority setting and policy formulation.

As in the previous audits, the present JRC assessment of the GTCI 2017 focuses on two main issues: the statistical coherence

of the structure and the impact of key modelling assumptions on the GTCI scores and ranks.[1] The JRC analysis complements the reported country rankings for the GTCI, and for the Input and Output sub-indices, with confidence intervals in order to better appreciate the robustness of these ranks in relation to the computation methodology (in particular, missing data estimation, weights, aggregation formula, and normalisation). Furthermore, the JRC analysis includes an assessment of the added value of the GTCI and a comparison with other global measures of competitiveness and innovation. Its main conclusions can be summarised as follows: the version of the GTCI model presented in 2017 is coherent, balanced, and robust, displaying strong associations between the underlying variables and the GTCI sub-pillars, pillars, and sub-indices, and hence offers a sound basis for policy interpretations. Some minor issues, which are outlined in this chapter, are also recommended for examination in the next version of the index.

The practical items addressed in this chapter relate to the statistical soundness of the GTCI model, which should be considered to be a necessary (though not necessarily sufficient) condition for a sound index. Given that the present statistical analysis of the GTCI will mostly, though not exclusively, be based on correlations, the correspondence of the GTCI to a real-world phenomenon needs to be critically addressed because 'correlations need not necessarily represent the real influence of the individual indicators on the phenomenon being measured'.[2] The point is that the validity of the GTCI relies on the combination of both statistical and conceptual soundness. In this respect, the GTCI has been developed following an iterative process that went back and forth between the theoretical understanding of human capital and talent competitiveness on the one hand, and empirical observations on the other.

STATISTICAL COHERENCE IN THE GTCI FRAMEWORK

An initial discussion of the properties of the GTCI 2017 was given in June 2016. One of the main issues raised was that of the normalisation method, which does not scale all variables onto the same scale. Although it was agreed that the normalisation method could remain as it has been in previous versions of the index, it was decided to include, in the uncertainty analysis, the alternative assumption of using a full normalisation method (where all variables are mapped onto the same scale), in addition to the assumptions of previous audits.

Although the underlying concepts and framework used to describe global talent competitiveness in the GTCI 2017 have remained essentially the same as those in the GTCI 2015–16, several variables have been removed (mainly because of data availability issues) and several others have been added. As a result, there are a total of 65 variables used in the GTCI 2017, in contrast to the 61 used in the 2015–16 version.

The main change in this regard is that the former sub-pillar 'Labour productivity' has been renamed 'Employability', and features four new variables. This is a significant improvement from the conceptual point of view because this sub-pillar measures the issues of skills gaps and skills matching. Not only is it important that countries develop talent and skills, it is also important that the economy actually uses such skills to their maximum potential. Additionally, two new variables—Regulatory quality and Corruption—have been included in the Regulatory Landscape sub-pillar. Finally, a new variable, Business opportunities for women, has been included in the Internal Openness sub-pillar, and Tertiary education expenditure has been added to the Formal Education sub-pillar. All of these modifications provide significant added value to the conceptual framework of the GTCI 2017.

Two variables have also been re-allocated: Relationship of pay to productivity has become part of the Business and Labour Landscape sub-pillar because it complements well (as a measurement of meritocracy) the variable of professional management for measuring management practices as part of the business landscape. Additionally, this was flagged as a mismatch in the 2015–16 structure from a statistical point of view, a problem that seems to have been solved by its repositioning.

Overall, as will be shown in this chapter, the statistical properties of the GTCI 2017 have improved notably with respect to the 2015–16 version. Following the iterative process during which the index has been fine-tuned, the current assessment of the statistical coherence in this final version of the GTCI 2017 followed four steps:

Step 1: Relevance

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

Step 2: Data Checks

The most recently released data were used for each country. The cut-off year was changed from 2002 to 2005, thus affecting country coverage figures. Countries were included if data availability was at least 80% at the index level and at least 40% at the sub-pillar level. As a result, the GTCI 2017 data set comprises 118 countries and 65 variables. Consequently, data availability is at least 85% at the Input sub-index level and 63% at the Output sub-index level. Potentially problematic variables that could bias the overall results were identified by the GTCI development team as those having absolute skewness greater than 2 and kurtosis greater than 3.5,[3] and were treated either by Winsorisation or by taking the natural logarithm (in the case of five or more outliers). For variables with five outliers or more, a log transformation is used (see the Technical Notes of the GTCI report for details). These criteria follow the WIPO-INSEAD Global Innovation Index practice (formulated with the JRC in 2011).

Step 3: Statistical Coherence

This section presents the JRC's analysis of the statistical coherence of the GTCI 2017, which consists of a principal components analysis to analyse the structure of the data, a multi-level analysis of the correlations of variables, and a comparison of GTCI rankings with its pillars and with other similar composite indicators.

Table 1

Statistical coherence in the GTCI: Correlations between sub-pillars and pillars

	SUB-PILLAR	ENABLE	ATTRACT	GROW	RETAIN	VOCATIONAL AND TECHNICAL SKILLS	GLOBAL KNOWLEDGE SKILLS
INPUT	1.1 Regulatory Landscape	0.96	0.85	0.83	0.82	0.74	0.76
	1.2 Market Landscape	0.92	0.72	0.88	0.86	0.81	0.85
	1.3 Business and Labour Landscape	0.83	0.66	0.54	0.58	0.51	0.49
	2.1 External Openness	0.74	0.92	0.57	0.61	0.52	0.54
	2.2 Internal Openness	0.77	0.89	0.74	0.66	0.57	0.58
	3.1 Formal Education	0.68	0.46	0.89	0.78	0.76	0.83
	3.2 Lifelong Learning	0.74	0.72	0.84	0.60	0.54	0.60
	3.3 Access to Growth Opportunities	0.82	0.76	0.90	0.77	0.69	0.80
	4.1 Sustainability	0.89	0.79	0.79	0.90	0.75	0.77
	4.2 Lifestyle	0.71	0.54	0.75	0.95	0.85	0.77
OUTPUT	5.1 Mid-Level Skills	0.64	0.48	0.68	0.82	0.92	0.67
	5.2 Employability	0.61	0.52	0.53	0.51	0.64	0.58
	6.1 High-Level Skills	0.75	0.57	0.82	0.82	0.80	0.93
	6.2 Talent Impact	0.70	0.56	0.76	0.71	0.64	0.92

This latter investigation demonstrates the added value of the GTCI both against its component pillars and against other similar indexes.

1. Principal Component Analysis and Reliability Analysis

Principal component analysis (PCA) was used to assess the extent to which the conceptual framework is compatible with statistical properties of the data. PCA confirms the presence of a single statistical dimension (i.e., no more than one principal component with eigenvalue greater than 1.0) in nine of the fourteen sub-pillars, which captures 58% (Formal Education) to 81% (Regulatory Landscape) of the total variance in the underlying variables.[4] Nevertheless, a more detailed analysis of the correlation structure within and across the six pillars confirms the expectation that the sub-pillars are more correlated to their own pillar than to any other, and all correlations within a pillar are positive, strong, and similar (see Table 1). These results suggest that the conceptual grouping of sub-pillars into pillars is statistically confirmed and that the six pillars are statistically well balanced in the underlying sub-pillars.

The six pillars also share a single statistical dimension that summarises 82% of the total variance, and the six loadings (correlation coefficients) are very similar to each other, ranging from 0.82 to 0.94. The latter suggests that the six pillars contribute in a way similar to the variation of the GTCI scores, as envisaged by the development team: all six pillars are assigned equal weights. The reliability of the GTCI, measured by the Cronbach's alpha value, is very high at 0.95—well above the 0.7 threshold for a reliable aggregate.[5]

An important part of the analysis relates to clarifying the importance of the Input and Output sub-indices with respect to the variation of the GTCI scores. As mentioned above, the GTCI is built as the simple arithmetic average of the four Input sub-pillars and the two Output sub-pillars, which implies that the Input sub-index has a weight of 4/6 versus a weight of 2/6 for the Output sub-index. Yet this does not imply that the Input aspect is more important than the Output aspect in determining the variation of the GTCI scores. In fact, the correlation coefficient between the GTCI scores and the Input or Output sub-index is 0.99 and 0.95, respectively, which suggests that the sub-indices are effectively placed on equal footing. Overall, the tests so far show that the grouping of variables into sub-pillars, pillars, and an overall index is statistically coherent, and that the GTCI has a balanced structure, whereby all six pillars are equally important in determining the variation in the GTCI scores. For some of the sub-pillars, recommendations have been made to modify the underlying variables in future versions of the index, so as to render it even sounder from both a conceptual and statistical point of view.

2. Importance of the Variables in the GTCI Framework

The GTCI and its components are simple arithmetic averages of the underlying variables. Developers and users of composite indicators often consider that the weights assigned to the variables coincide with the variables' importance in the index. However, in practice, the correlation structure of the variables and their different variances do not always allow the weights assigned to the variables to be considered equivalent to their importance.

This section assesses the importance of all 65 variables at the various levels of aggregation in the GTCI structure. As a statistical measure of the importance of variables in an index we use the squared Pearson correlation coefficient (otherwise known as the *coefficient of determination* R^2). The importance of

Table 2

Importance measures for the variables at the various levels of the GTCI structure

PILLAR	SUB-PILLAR	VARIABLE NAME	SUB-PILLAR	PILLAR	INPUT/OUTPUT	GTCI INDEX
1. ENABLE	1.1 Regulatory Landscape	Government effectiveness	92%	90%	90%	90%
		Business-government relations	46%	42%	30%	23%
		Political stability	70%	58%	59%	54%
		Regulatory quality	87%	82%	81%	81%
		Corruption	91%	83%	84%	80%
	1.2 Market Landscape	Competition intensity	50%	48%	39%	36%
		Ease of doing business	70%	69%	66%	68%
		Cluster development	55%	54%	49%	46%
		R&D expenditure	57%	35%	33%	36%
		ICT infrastructure	74%	61%	77%	81%
		Technology utilisation	74%	72%	71%	69%
	1.3 Business and Labour Landscape	Ease of hiring	57%	21%	10%	8%
		Ease of redundancy	46%	23%	15%	12%
		Labour-employer cooperation	53%	54%	47%	40%
		Professional management	46%	71%	68%	64%
		Relationship of pay to productivity	52%	48%	40%	39%
2. ATTRACT	2.1 External Openness	FDI and technology transfer	49%	43%	40%	37%
		Prevalence of foreign ownership	48%	49%	38%	35%
		Migrant stock	62%	47%	33%	30%
		International students	73%	62%	36%	32%
		Brain gain	67%	60%	39%	32%
	2.2 Internal Openness	Tolerance of minorities	66%	44%	46%	41%
		Tolerance of immigrants	40%	33%	20%	15%
		Social mobility	58%	70%	64%	57%
		Female rraduates	20%	11%	22%	24%
		Gender earnings gap	51%	38%	27%	24%
		Business opportunities for women	31%	30%	22%	19%
3. GROW	3.1 Formal Education	Vocational enrolment	42%	29%	17%	21%
		Tertiary enrolment	67%	52%	40%	47%
		Tertiary education expenditure	11%	12%	14%	12%
		Reading, maths, and science	52%	46%	46%	49%
		University ranking	61%	58%	46%	48%
	3.2 Lifelong Learning	Quality of management schools	61%	59%	58%	57%
		Prevalence of training in firms	65%	34%	20%	16%
		Employee development	64%	54%	65%	59%
	3.3 Access to Growth Opportunities	Use of virtual social networks	55%	48%	60%	61%
		Use of virtual professional networks	80%	66%	63%	63%
		Delegation of authority	55%	57%	63%	59%
		Personal rights	65%	46%	36%	36%
4. RETAIN	4.1 Sustainability	Pension system	60%	77%	61%	67%
		Taxation	13%	1%	4%	2%
		Brain retention	53%	24%	46%	39%
	4.2 Lifestyle	Environmental performance	77%	66%	53%	59%
		Personal safety	60%	63%	57%	59%
		Physician density	68%	58%	38%	42%
		Sanitation	77%	69%	43%	47%
5. VOCATIONAL AND TECHNICAL SKILLS	5.1 Mid-Level Skills	Workforce with secondary education	54%	40%	27%	18%
		Population with secondary education	66%	49%	34%	22%
		Technicians and associate professionals	60%	63%	65%	63%
		Labour productivity per employee	35%	39%	33%	48%
	5.2 Employability	Ease of finding skilled employees	67%	26%	31%	37%
		Relevance of education system to the economy	70%	37%	41%	51%
		Availability of scientists and engineers	72%	42%	47%	46%
		Skills gap as major constraint	29%	6%	3%	0%
6. GLOBAL KNOWLEDGE SKILLS	6.1 High-Level Skills	Workforce with tertiary education	68%	56%	52%	45%
		Population with tertiary education	41%	32%	28%	23%
		Professionals	63%	52%	55%	56%
		Researchers	57%	46%	47%	48%
		Senior officials and managers	27%	24%	20%	17%
		Quality of scientific institutions	64%	65%	67%	72%
		Scientific journal articles	61%	56%	57%	46%
	6.2 Talent Impact	Innovation output	71%	82%	78%	77%
		High-value exports	52%	41%	35%	30%
		New product entrepreneurial activity	25%	16%	13%	12%
		New business density	33%	22%	14%	14%

Note: The values are the squared Pearson correlation coefficients, expressed as percentages.

Table 3

Distribution of differences between pillars and GTCI rankings

	GTCI INPUT SUB-INDEX				GTCI OUTPUT SUB-INDEX	
Shifts with respect to the overall GTCI rank	Enable	Attract	Grow	Retain	Vocational and Technical Skills	Global Knowledge Skills
More than 30 positions	46%	48%	49%	44%	47%	45%
20 to 29 positions	14%	13%	11%	13%	15%	11%
10 to 19 positions	16%	19%	13%	14%	19%	20%
More than 10 positions	**75%**	**80%**	**73%**	**70%**	**81%**	**76%**
5 to 9 positions	13%	7%	18%	15%	14%	13%
Less than 5 positions	9%	12%	8%	13%	4%	9%
0 positions	3%	2%	1%	2%	1%	2%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

the selected variables is taken to be equivalent to the contribution of those variables to the variation of the aggregate scores, be those sub-pillars, pillars, sub-indices, or the overall GTCI. The overarching consideration made by the GTCI development team was that all variables should be important at all levels of aggregation. The results of our analysis appear in Table 2. Examining the coefficients of determination ('importance' measures) of the 65 variables, we see that almost all variables are important at the various levels of aggregation. For example, country variations in 1.1.1 Government effectiveness scores can capture 92% of the variance in the respective sub-pillar scores (Regulatory Landscape), 90% of the variance in the respective pillar (Enable), and 90% both in the Input sub-index and overall GTCI scores. Similarly, country variations in 2.1.1 Foreign direct investment (FDI) and technology transfer scores can capture 49%, 43%, 30%, and 37% of the variance in the External Openness, Attract, Input, and GTCI scores, respectively. In the 2017 data set, there seem to be only three variables that have a very low impact on the GTCI variance (less than 10%): 1.3.1 Ease of hiring, 4.1.2 Taxation, and 5.2.4 Skills gap as major constraint. Of these, only Taxation was flagged in the JRC's previous audit of the GTCI 2015–16. Although conceptually enriching the overall GTCI framework, these variables are not found to be important at the overall index level. It is suggested that the GTCI development team reconsider the inclusion of these variables (or replace them with other variables) in next year's release.

3. Added Value of the GTCI

A very high statistical reliability among the main components of an index can be the result of redundancy of information. This is not the case in the GTCI. In fact, for more than 70% (up to 80%) of the 118 countries included in the GTCI 2017, the overall GTCI ranking differs from any of the six pillar rankings by 10 positions or more (see Table 3). This is a desired outcome, because it evidences the added value of the GTCI model, which helps highlight other components of human capital and talent competitiveness that do not emerge directly by looking into the six pillars separately. At the same time, this result also points towards the value of duly taking into account the individual pillars, sub-pillars, and variables on their own merit. By doing so, country-specific strengths and bottlenecks in human capital and talent competitiveness can be identified and serve as an input for evidence-based policymaking.

In addition, we compared the GTCI 2017 with both the World Economic Forum's 2015–2016 Global Competitiveness Index and Cornell University, INSEAD, and WIPO's 2016 Global Innovation Index. After having extracted data from both projects' websites, we find that the GTCI 2017 correlates substantially with both indices (correlation ≈ 0.9). The GTCI has most in common with the 2016 Global Innovation Index. Looking at the shifts in rankings (see Table 4 on page 90), we nevertheless find that 46% and 39% out of the 114 countries (four of the countries included in the GTCI 2017 do not feature in one or both of the other two indices) differ in ranking by more than 10 positions when comparing the GTCI 2017 with, respectively, the 2015–2016 Global Competitiveness Index and the 2016 Global Innovation Index. This indicates that the GTCI 2017 clearly differs from these other indices.

Step 4: Qualitative Review

Finally, the GTCI results, including overall country classifications and relative performances in terms of the Input or Output sub-indices, were evaluated by the development team and external experts to verify that the overall results are consistent with current evidence, existing research, or prevailing theory.

Notwithstanding these statistical tests and the positive outcomes regarding the statistical soundness of the GTCI, it is important to mention that the GTCI has to remain open for future improvements as better data, more comprehensive surveys and assessments, and new relevant research studies become available.

IMPACT OF MODELLING ASSUMPTIONS ON THE GTCI RESULTS

Every country score on the overall GTCI and its two sub-indices depends on modelling choices: the six-pillar structure, the selected variables, the imputation or not of missing data, the normalisation method, and the weights and aggregation method,

Table 4

Distribution of differences between the GTCI 2017 and other international rankings

Shifts with respect to the GTCI 2017	2016 Global Innovation Index (Cornell, INSEAD, and WIPO)	2015–2016 Global Competitiveness Index (World Economic Forum)
More than 30 positions	3%	10%
20 to 29 positions	11%	16%
10 to 19 positions	25%	20%
More than 10 positions	**39%**	**46%**
5 to 9 positions	27%	24%
Less than 5 positions	28%	25%
0 positions	6%	4%
Total	**100%**	**100%**

Table 5

Uncertainty analysis for the GTCI 2017: Weights, missing data, aggregation, and normalisation

		REFERENCE	ALTERNATIVE
I. Uncertainty in the treatment of missing values		**No estimation of missing data**	**Expectation Maximisation (EM)**
II. Uncertainty in the aggregation formula at pillar level		**Arithmetic average**	**Geometric average**
III. Uncertainty in the method of normalisation		**Partial normalisation**	**Full normalisation**
IV. Uncertainty in the weights			
GTCI sub-index	Pillar	Reference value for the weight (within the sub-index)	Distribution assigned for robustness analysis (within the sub-index)
Input	Enable	0.25	U[0.15,0.35]
	Attract	0.25	U[0.15,0.35]
	Grow	0.25	U[0.15,0.35]
	Retain	0.25	U[0.15,0.35]
Output	Vocational and Technical Skills	0.50	U[0.40,0.60]
	Global Knowledge Skills	0.50	U[0.40,0.60]

among other elements. These choices are based on expert opinion (e.g., selection of variables), or common practice (e.g., min-max normalisation in the [0,100] range), driven by statistical analysis (e.g., treatment of outliers) or simplicity (e.g., no imputation of missing data). The robustness analysis is aimed at assessing the simultaneous and joint impact of these modelling choices on the rankings. The data are assumed to be error-free since potential outliers and any errors and typos were corrected during the computation phase.

The robustness assessment of the GTCI was based on a combination of a Monte Carlo experiment and a multi-modelling approach that dealt with four issues, three of which have been included in previous assessments of the GTCI: pillar weights, missing data, and the aggregation formula. An additional assumption that was tested in this year's analysis was that of the normalisation method. In the GTCI 2017, some variables are normalised onto the [0,100] interval, whereas others are not (they use a normalisation that does not result in the minimum and maximum values being 0 and 100, respectively). The uncertainty analysis therefore includes the alternative assumption where all variables are strictly normalised onto the same [0,100] scale. In general, the uncertainty analysis, to some extent, aims to respond to possible criticisms that the country scores associated with aggregate measures are generally not calculated under conditions of certainty, even though they are frequently presented as such.

While the term *multi-modelling* refers to testing alternative assumptions—that is, an alternative normalisation method, aggregation method, and missing data estimation method—the Monte Carlo simulation explored the issue of weighting and comprised 1,000 runs, each corresponding to a different set of weights for the six pillars, randomly sampled from uniform continuous distributions centred in the reference values. The choice of the range for the weights' variation was driven by two opposite needs: to ensure a wide enough interval to have meaningful robustness checks, and to respect the rationale of the GTCI that places equal importance on all six pillars. Given these considerations, limit values of uncertainty intervals for the pillar weights are 15% to 35% for the four Input pillars for the calculation of the Input sub-index, and 40% to 60% for the two Output pillars for the calculation of the Output sub-index (see Table 5). For the calculation of the GTCI, the limit values of uncertainty intervals for all six pillar weights are 12% to 20%. In all simulations, sampled weights are rescaled so that they always sum to 1.

The GTCI development team, for transparency and replicability, opted not to estimate the missing data (only 5.6% of data were missing in the data set of 118 countries for all 65 variables).

The 'no imputation' choice, which is common in similar contexts, might encourage countries not to report low data values. To overcome this limitation, the JRC also estimated missing data using the Expectation Maximisation (EM) algorithm.

Regarding the aggregation formula, decision-theory practitioners have challenged the use of simple arithmetic averages because of their fully compensatory nature, in which a comparatively high advantage on a few variables can compensate for a comparative disadvantage on many variables. Despite the arithmetic averaging formula receiving statistical support for the development of the GTCI, as discussed in the previous section, the geometric average was considered as a possible alternative. This is a partially compensatory approach that rewards countries with similar performance in all pillars; it motivates those countries with uneven performance to improve in those pillars in which they perform poorly, and not just in any pillar.

The effect of normalising all variables onto the same scale was tested because having variables on different scales may risk some distortion in the importance of each variable.

Eight models were tested based on the combination of no imputation versus EM imputation, arithmetic versus geometric average, and full versus partial normalisation, combined with 1,000 simulations per model (random weights versus fixed weights), for a total of 8,000 simulations for the GTCI and each of the two sub-indices (see Table 5 for a summary of the uncertainties considered in the GTCI 2017).

Uncertainty Analysis Results

The main results of the robustness analysis are shown in Figures 1a–1c on page 92, with median ranks and 90% confidence intervals computed across the 8,000 Monte Carlo simulations for the GTCI and the two sub-indices. Countries are ordered from best to worst according to their reference rank (black line), the dot being the median rank. Error bars represent, for each country, the 90% interval across all simulations. Table 6 on pages 94–95 reports the published rankings and the 90% confidence intervals that account for uncertainties in the missing data estimation, the pillar weights, and the aggregation formula. All published country ranks lay within the simulated intervals, and these are narrow enough for most countries (less than 10 positions) to allow for meaningful inferences to be drawn.

GTCI ranks are shown to be both representative of a plurality of scenarios and robust to changes in the imputation method, the pillar weights, and the aggregation formula. If one considers the median rank across the simulated scenarios as being representative of these scenarios, then the fact that the GTCI rank is close to the median rank (less than two positions away) for 90% of the countries suggests that the GTCI is a suitable summary measure. Furthermore, the reasonably narrow confidence intervals for the majority of the countries' ranks (less than ±4 positions for about two-thirds of the countries) imply that the GTCI ranks are also, for most countries, robust to changes in the pillar weights, the imputation method, and the aggregation formula.

Results for the Input and Output sub-index are also robust and representative of the plurality of scenarios considered. The Input rank is close to the median rank (less than two positions away) for 88% of the countries and the rank intervals are ±5 positions for 82% of the countries. Similarly, the Output rank is close to the median rank (less than two positions away) for 85% of the countries, and the rank intervals are ±5 positions for 79% of the countries.

Overall, country ranks in the GTCI and its two sub-indices are fairly robust to changes in the pillar weights, the imputation method, full or partial normalisation, and the aggregation formula for the majority of the countries considered. For full transparency and information, Table 6 reports the GTCI country ranks (and those of the sub-indices) together with the simulated intervals (90% of the 8,000 scenarios) in order to better appreciate the robustness of these ranks to the computation methodology.

Sensitivity Analysis Results

Complementing the uncertainty analysis, sensitivity analysis has been used to identify which of the modelling assumptions have the highest impact on certain country ranks. Figure 2 on page 93 plots the GTCI and both sub-index rankings versus one-at-a-time changes of either the EM imputation method or the geometric aggregation formula (assuming equal weights for the six pillars as in the GTCI).

The most influential methodological assumption is the choice of using partial versus full normalisation (given that a lower rank correlation indicates greater sensitivity). This choice has the largest impact on differences in ranking for the Input sub-index, and roughly equally for the GTCI 2017 overall and the Output sub-index. For example, in the most extreme case, a country increases by three positions in the GTCI ranking when EM imputation is applied, falls by 14 positions if geometric aggregation (as opposed to arithmetic) is applied, and moves by zero places when full normalisation is used. Note, however, that these assumptions concern methodological choices only and might overall be less influential than choices related to the background assumptions in the conceptual framework.[6]

Overall, given the fairly modest ranges of uncertainty on the final rankings, the JRC recommendation is not to alter the GTCI methodology at this point, but to consider country ranks in the GTCI 2017 and in the Input and Output sub-indices within the 90% confidence intervals, as reported in Table 6, in order to better appreciate to what degree a country's rank depends on the modelling choices. It is reassuring that, for over 90% of the countries included in the GTCI, their ranks in the GTCI 2017 and the Input and Output sub-indices are the result of the underlying data and not modelling choices.[7] It might be worthwhile, however, to consider the possibility of normalising all variables onto the same scale in future releases of the index, unless there is a strong conceptual justification for doing otherwise.

Figure 1a

Robustness analysis (GTCI rank vs. median rank, 90% confidence intervals)

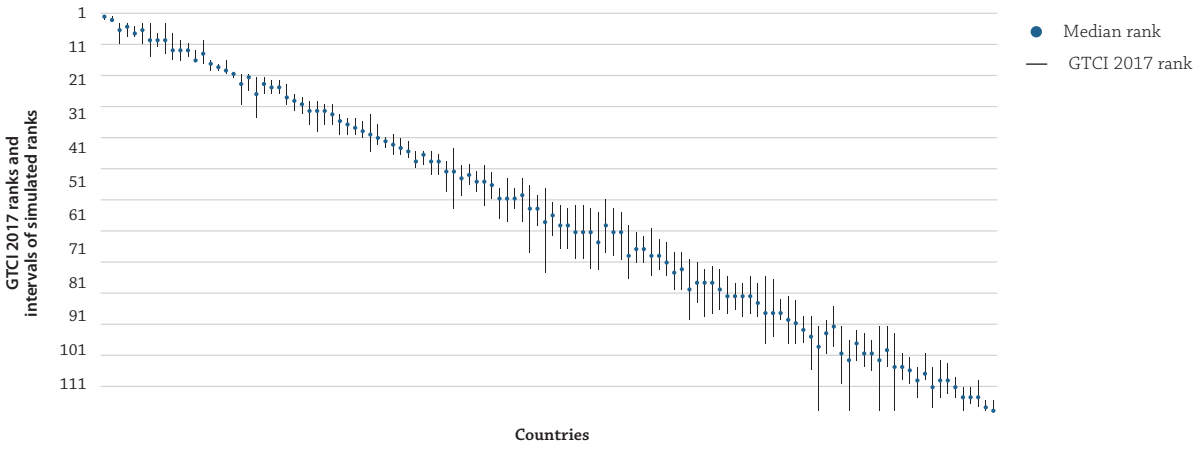


Figure 1b

Robustness analysis (Input rank vs. median rank, 90% confidence intervals)

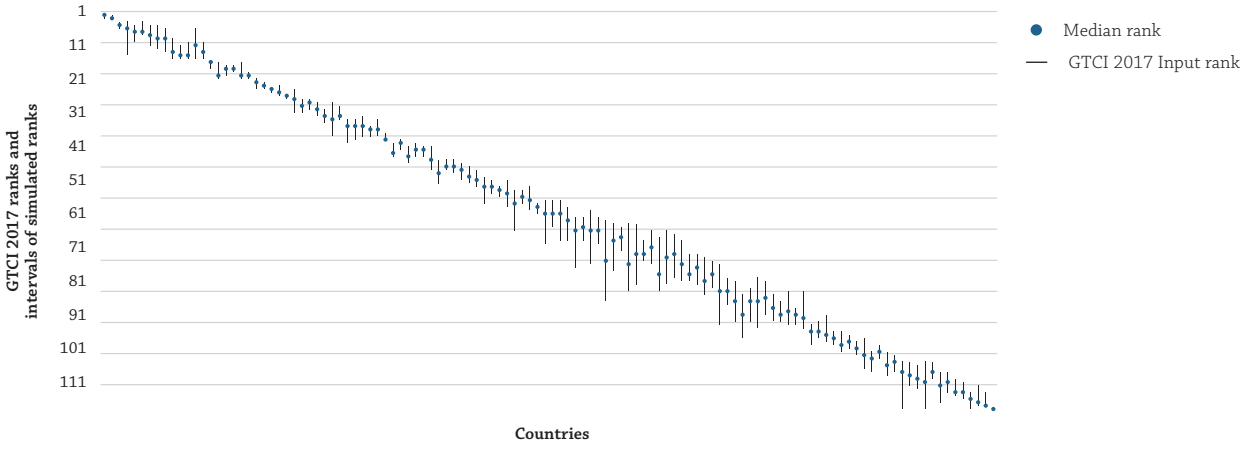
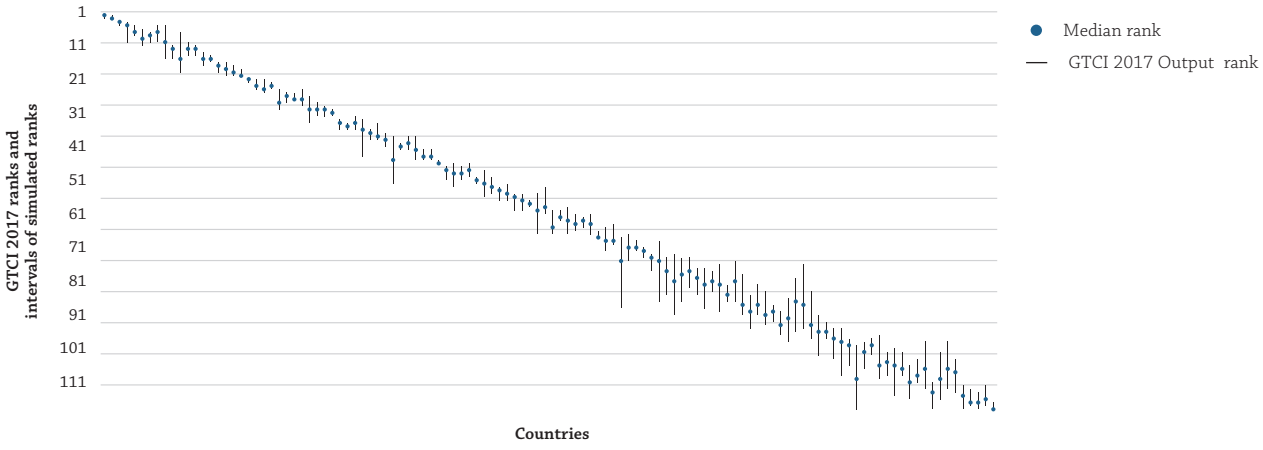


Figure 1c

Robustness analysis (Output rank vs. median rank, 90% confidence intervals)

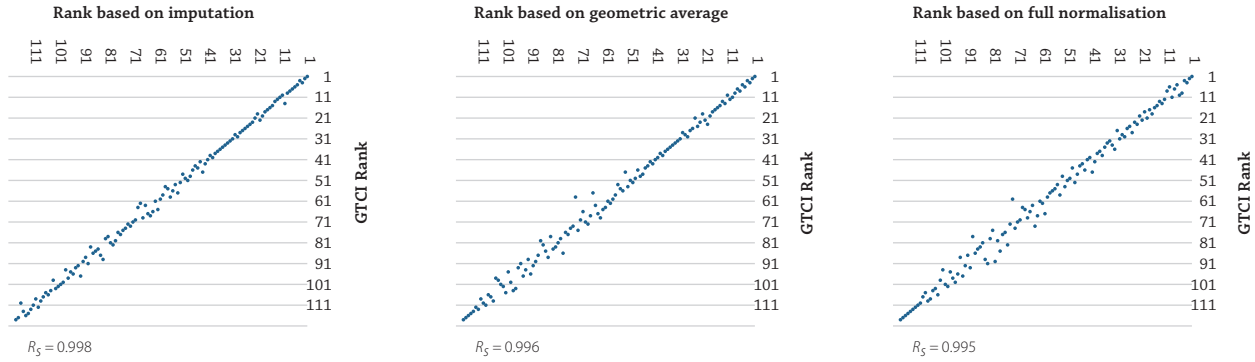


Notes: The Spearman rank correlation between the median rank and the GTCI 2017 rank is 0.999; between the median rank and the GTCI 2017 Input rank is 0.999; and between the median rank and the GTCI 2017 Output rank is 0.998. Median ranks and intervals are calculated over 8,000 simulated scenarios combining random weights, imputation versus no imputation of missing values, and geometric versus arithmetic average at the pillar level.

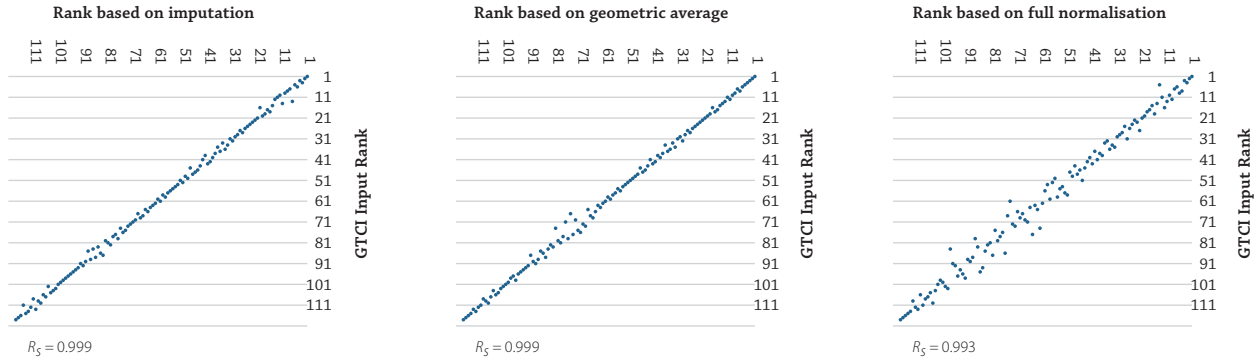
Figure 2

Sensitivity analysis: Impact of modelling choices

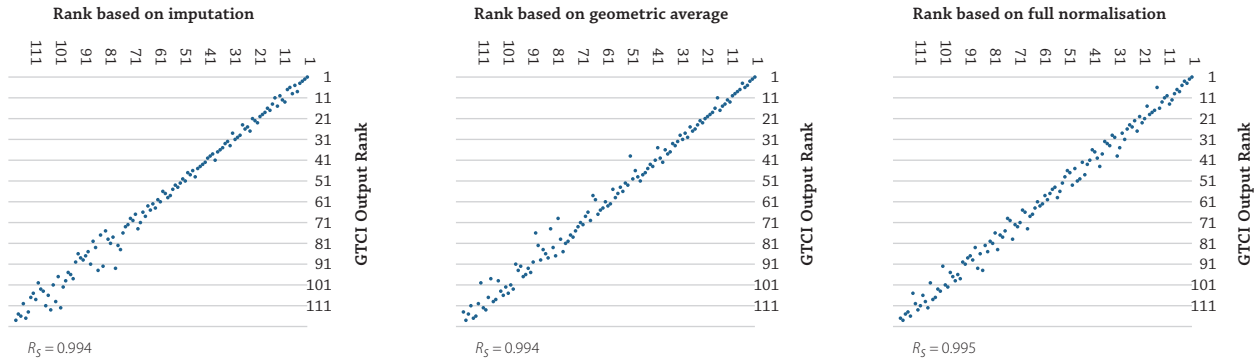
Global Talent Competitiveness Index 2017



GTCI Input Sub-Index 2017



GTCI Output Sub-Index 2017



Notes: R_S represents the Spearman rank correlation coefficient.

Table 6

Country ranks and 90% confidence intervals for the GTCI 2017 and its Input/Output sub-indices

COUNTRY	GTCI 2017		INPUT SUB-INDEX		OUTPUT SUB-INDEX	
	RANK	INTERVAL	RANK	INTERVAL	RANK	INTERVAL
Switzerland	1	[1, 2]	1	[1, 2]	2	[1, 2]
Singapore	2	[1, 2]	2	[1, 2]	1	[1, 2]
United Kingdom	3	[3, 9]	3	[3, 5]	9	[4, 14]
United States of America	4	[3, 7]	9	[5, 12]	3	[3, 4]
Sweden	5	[4, 7]	6	[3, 7]	7	[6, 9]
Australia	6	[3, 9]	5	[4, 9]	8	[4, 9]
Luxembourg	7	[3, 13]	4	[3, 13]	15	[13, 15]
Denmark	8	[6, 10]	7	[4, 10]	13	[10, 13]
Finland	9	[3, 12]	11	[10, 14]	4	[3, 9]
Norway	10	[6, 14]	8	[4, 11]	16	[15, 18]
Netherlands	11	[8, 14]	12	[9, 14]	12	[9, 13]
Ireland	12	[9, 13]	14	[9, 14]	14	[12, 16]
Canada	13	[11, 14]	10	[8, 14]	18	[16, 19]
New Zealand	14	[8, 15]	13	[5, 14]	17	[15, 19]
Iceland	15	[14, 17]	17	[16, 19]	10	[10, 14]
Belgium	16	[15, 17]	15	[15, 17]	23	[21, 23]
Germany	17	[14, 18]	20	[18, 20]	11	[6, 18]
Austria	18	[18, 19]	18	[16, 18]	25	[24, 27]
United Arab Emirates	19	[18, 27]	16	[15, 20]	35	[32, 43]
Estonia	20	[18, 23]	23	[23, 24]	6	[5, 10]
Qatar	21	[19, 31]	19	[15, 20]	39	[37, 51]
Japan	22	[19, 24]	21	[20, 23]	27	[23, 28]
Czech Republic	23	[20, 24]	22	[21, 23]	22	[20, 24]
France	24	[20, 24]	24	[22, 25]	19	[17, 19]
Israel	25	[21, 27]	34	[32, 38]	5	[4, 7]
Malta	26	[24, 29]	28	[26, 29]	24	[23, 29]
Slovenia	27	[25, 30]	37	[32, 37]	20	[20, 21]
Malaysia	28	[26, 33]	27	[26, 30]	31	[29, 31]
Korea, Rep.	29	[26, 35]	33	[32, 39]	26	[24, 26]
Cyprus	30	[27, 33]	38	[36, 38]	21	[20, 23]
Portugal	31	[27, 33]	25	[25, 26]	44	[41, 44]
Latvia	32	[30, 36]	36	[34, 37]	30	[28, 31]
Lithuania	33	[31, 36]	30	[29, 33]	37	[33, 38]
Chile	34	[31, 36]	29	[27, 31]	41	[37, 41]
Spain	35	[32, 37]	32	[28, 32]	40	[39, 41]
Barbados	36	[30, 41]	26	[23, 30]	53	[52, 56]
Slovakia	37	[33, 39]	43	[40, 43]	29	[27, 31]
Poland	38	[37, 40]	42	[39, 43]	33	[33, 35]
Costa Rica	39	[36, 42]	35	[31, 37]	48	[46, 50]
Italy	40	[37, 42]	44	[40, 47]	34	[31, 35]
Hungary	41	[38, 43]	46	[44, 47]	32	[32, 35]
Saudi Arabia	42	[41, 46]	39	[39, 43]	52	[49, 54]
Greece	43	[41, 45]	47	[44, 48]	38	[36, 40]
Montenegro	44	[41, 48]	53	[52, 55]	28	[25, 33]
Croatia	45	[42, 48]	50	[47, 52]	36	[35, 38]
Mauritius	46	[44, 53]	41	[40, 45]	60	[59, 66]
Bahrain	47	[40, 58]	31	[27, 37]	84	[74, 86]
Panama	48	[45, 54]	51	[49, 57]	47	[45, 52]
Bulgaria	49	[45, 51]	52	[50, 54]	45	[44, 45]
Macedonia, FYR	50	[47, 53]	49	[46, 51]	54	[51, 56]
Uruguay	51	[45, 57]	40	[38, 41]	78	[73, 82]
Philippines	52	[47, 55]	58	[57, 60]	43	[41, 44]
Kazakhstan	53	[52, 61]	55	[53, 65]	55	[54, 59]
China	54	[49, 62]	60	[56, 64]	51	[47, 55]
Romania	55	[52, 58]	56	[53, 57]	57	[56, 58]
Russian Federation	56	[49, 62]	68	[63, 77]	42	[37, 44]
Kuwait	57	[51, 71]	48	[45, 50]	82	[75, 89]
Jordan	58	[54, 63]	59	[56, 69]	56	[54, 59]
Oman	59	[52, 77]	45	[44, 51]	92	[79, 95]

Table 6 *(continued)*

Country ranks and 90% confidence intervals for the GTCI 2017 and its Input/Output sub-indices

COUNTRY	GTCI 2017		INPUT SUB-INDEX		OUTPUT SUB-INDEX	
	RANK	INTERVAL	RANK	INTERVAL	RANK	INTERVAL
Serbia	60	[56, 66]	79	[72, 81]	46	[46, 50]
Turkey	61	[57, 70]	63	[61, 76]	62	[58, 66]
Lebanon	62	[58, 70]	81	[74, 82]	50	[49, 51]
Botswana	63	[57, 73]	54	[50, 58]	77	[73, 86]
Argentina	64	[57, 73]	61	[56, 68]	67	[64, 71]
Armenia	65	[58, 76]	82	[75, 93]	49	[45, 49]
Azerbaijan	66	[59, 76]	70	[63, 83]	58	[54, 66]
South Africa	67	[55, 71]	65	[59, 75]	61	[59, 62]
Jamaica	68	[58, 72]	62	[58, 68]	68	[63, 69]
Ukraine	69	[59, 73]	75	[65, 81]	59	[52, 60]
Georgia	70	[63, 79]	67	[62, 86]	66	[65, 67]
Colombia	71	[65, 74]	64	[61, 68]	72	[70, 73]
Mongolia	72	[66, 74]	69	[64, 71]	70	[66, 74]
Thailand	73	[64, 78]	57	[52, 59]	85	[78, 90]
Mexico	74	[67, 76]	73	[65, 75]	71	[68, 71]
Moldova, Rep.	75	[68, 78]	83	[79, 87]	65	[60, 66]
Namibia	76	[71, 82]	71	[63, 81]	80	[76, 88]
Tunisia	77	[71, 82]	89	[84, 92]	63	[60, 65]
Bosnia and Herzegovina	78	[73, 91]	84	[80, 92]	69	[67, 88]
Ecuador	79	[74, 86]	76	[66, 79]	86	[84, 94]
Albania	80	[76, 90]	72	[68, 74]	91	[85, 98]
Brazil	81	[75, 89]	66	[61, 69]	95	[90, 102]
Sri Lanka	82	[76, 88]	86	[82, 92]	74	[68, 86]
Peru	83	[78, 89]	80	[73, 84]	88	[83, 93]
Dominican Republic	84	[80, 88]	78	[72, 80]	90	[89, 96]
Guatemala	85	[80, 90]	77	[68, 80]	96	[92, 97]
Viet Nam	86	[78, 89]	90	[86, 92]	75	[73, 84]
Kyrgyzstan	87	[80, 90]	92	[88, 93]	76	[72, 90]
Egypt	88	[78, 98]	101	[97, 106]	64	[61, 64]
Zambia	89	[79, 96]	87	[79, 94]	94	[83, 97]
Indonesia	90	[85, 91]	95	[92, 97]	79	[76, 84]
Rwanda	91	[84, 98]	74	[67, 83]	113	[103, 113]
India	92	[85, 98]	103	[99, 103]	73	[72, 77]
Honduras	93	[90, 98]	93	[83, 94]	99	[97, 105]
Paraguay	94	[90, 106]	91	[83, 93]	105	[100, 114]
El Salvador	95	[93, 118]	88	[80, 90]	110	[110, 118]
Morocco	96	[91, 101]	94	[93, 99]	97	[94, 103]
Kenya	97	[87, 99]	98	[95, 101]	93	[75, 94]
Bhutan	98	[93, 110]	85	[84, 97]	114	[111, 118]
Nicaragua	99	[97, 118]	99	[96, 100]	100	[99, 118]
Senegal	100	[94, 103]	97	[95, 99]	102	[97, 102]
Lesotho	101	[95, 105]	100	[98, 102]	98	[94, 108]
Ghana	102	[97, 106]	96	[90, 98]	107	[105, 115]
Iran, Islamic Rep.	103	[93, 118]	106	[104, 118]	81	[77, 83]
Bolivia, Plurinational St.	104	[93, 105]	105	[102, 107]	87	[81, 90]
Venezuela, Bolivarian Rep.	105	[95, 118]	109	[104, 118]	83	[81, 86]
Uganda	106	[101, 109]	104	[101, 108]	104	[101, 108]
Algeria	107	[102, 110]	107	[104, 111]	101	[98, 106]
Cambodia	108	[105, 114]	102	[101, 107]	115	[112, 117]
Cameroon	109	[101, 109]	110	[104, 109]	103	[96, 109]
Ethiopia	110	[105, 117]	111	[107, 116]	108	[103, 110]
Pakistan	111	[103, 114]	116	[111, 117]	89	[87, 92]
Mali	112	[104, 113]	112	[107, 113]	109	[98, 112]
Bangladesh	113	[108, 114]	114	[110, 115]	106	[101, 108]
Tanzania, United Rep.	114	[111, 118]	108	[105, 112]	118	[116, 118]
Mozambique	115	[111, 116]	113	[109, 114]	117	[111, 117]
Zimbabwe	116	[109, 117]	117	[113, 117]	112	[98, 112]
Burkina Faso	117	[115, 118]	115	[113, 118]	116	[113, 118]
Madagascar	118	[115, 118]	118	[118, 118]	111	[101, 115]

CONCLUSIONS

The JRC analysis suggests that the conceptualised multi-level structure of the GTCI 2017 is statistically coherent and balanced (i.e., not dominated by any pillar or sub-pillar; all variables contribute to the variation of the respective Input/Output sub-indices and to the overall GTCI). Furthermore, the analysis has offered statistical justification for the use of equal weights and arithmetic averaging at the various levels of aggregation, showing that the GTCI model is statistically reliable in its current form as the simple average of the six pillars (as measured by a very high Cronbach's alpha value of 0.95, well above the recommended 0.7 threshold for a reliable aggregate).

Points that call for possible refinements of the GTCI framework were also identified. These refinements concern mainly three out of the 65 variables, namely 1.3.1 Ease of hiring, 4.1.2 Taxation, and 5.2.4 Skills gap as major constraint. Although present in the conceptual framework, these variables do not contribute significantly to the variation of the GTCI country scores and, consequently, do not have an impact on the GTCI rankings. A further possible change might be to consider normalising all variables to the same scale, given that this has been identified as the most sensitive of the assumptions. However, it should be noted that the overall uncertainty in rankings remains relatively low.

On the whole, the analysis of the correlations at the sub-pillar level reveals that the statistical structure of the GTCI model is coherent with its conceptual framework, given that sub-pillars correlate strongly with their respective pillars. Furthermore, all pillars correlate strongly and fairly evenly with the GTCI itself, which indicates that the framework is well balanced.

The GTCI and both the Input and Output sub-indices are relatively robust to methodological assumptions related to the estimation of missing data, weighting, and aggregation formula. It is reassuring that for over 90% of the countries included in the GTCI report, the overall rank and those in the Input and Output sub-indices are the result of the underlying data and not of the modelling choices. Consequently, inferences can be drawn for most countries in the report, although some caution may be needed for a few countries. Note that perfect robustness would have been undesirable because this would have implied that the GTCI components are perfectly correlated and hence redundant, which is not the case for the GTCI 2017. In fact, one way in which the GTCI helps highlight other components of human capital and talent competitiveness is by pinpointing the differences in rankings that emerge from a comparison between the GTCI and each of the six pillars: for around 70% of the countries, the GTCI ranking and any of the six pillar rankings differ by 10 positions or more. This outcome both evidences the added value of the GTCI ranking and points to the importance of taking into account the individual pillars, sub-pillars, and variables on their own merit. By doing so, country-specific strengths and bottlenecks in human capital and talent competitiveness can be identified and serve as an input for evidence-based policymaking.

The auditing conducted herein has shown the potential of the Global Talent Competitiveness Index 2017, subject to some minor hints for future releases, in reliably identifying weaknesses and best practices and ultimately monitoring national performance in human capital and competitiveness issues around the world.

ENDNOTES

1 The JRC analysis was based on the recommendations of the OECD & EC JRC (2008) *Handbook on Constructing Composite Indicators* and on more recent research from the JRC. The JRC auditing studies of composite indicators are available at http://composite-indicators.jrc.ec.europa.eu/ (all audits were carried upon request of the index developers).

2 OECD & EC JRC (2008).

3 Groeneveld & Meeden (1984) set the criteria for absolute skewness above one and kurtosis above 3.5. The skewness criterion was relaxed to account for the small sample (118 countries).

4 The sub-pillars that have more than one latent dimension are: 1.3 Business and Labour Landscape, 2.2 Internal Openness, 3.2 Lifelong Learning, 5.2 Employability, and 6.1 High-Level Skills. This indicates that a notable amount of information is lost when aggregating directly the variables into sub-pillars.

5 See Nunnally (1978).

6 Saltelli & Funtowicz (2014).

7 As already mentioned in the uncertainty analysis, at least 85% of the simulated median ranks for the GTCI, Input, and Output (Sub-) Indices are less than two positions away from the reported 2017 rank.

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Special Section

Cities and Regions

Special Section

Benchmarking Cities as Key Players on the Global Talent Scene

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The previous edition of the GTCI (2015–16) had flagged the importance of cities and regions in the global talent competitiveness landscape: *'In a world of talent circulation, cities and regions are becoming critical players in the competition for global talent'*, stressing that *'an increasing number of large cities are becoming "global talent hubs", which attract skilled and creative workers from all parts of the world. Talent continues to be attracted by the usual enablers: (1) high-quality infrastructure, (2) competitive market conditions and business environment (including clusters), (3) an existing critical mass of talents, with excellent networking and cooperation possibilities, and (4) superior living conditions (including factors as diverse as climatic conditions, cultural environment, safety and easy access to key services such as health or education)'*.[1]

Innovative talent strategies are emerging from all parts of the world, and cities are playing an increasingly significant role in these strategies. Such strategies affect all aspects of talent competitiveness, including education, skilling and re-skilling, attracting external talents and fostering co-creation with local ones, as well as encouraging imported (or returning) talent to stay and contribute to long-term local objectives. When competing for talents, cities benefit from three key advantages over nation-states, namely (1) economic growth rates that can be significantly higher than the average national growth rate of their respective countries; (2) specific advantages related to geography, culture, or quality of life (environment, culture, cost of living, safety); and (3) a higher degree of agility and branding ability.

CITIES AS KEY ENGINES OF GROWTH AND GLOBAL TALENT HUBS

As a recent study by McKinsey's Global Institute underlined, *'Today, major urban areas in developed regions are, without doubt, economic giants. Half of global GDP in 2007 came from 380 cities in developed regions, with more than 20 percent of global GDP coming from 190 North American cities alone. The 220 largest cities in developing regions contributed another 10 percent. But by 2025, one-third of these developed-market cities will no longer make the top 600; and one out of every 20 cities in emerging markets is likely to see its rank drop out of the top 600. By 2025, 136 new cities are expected to*

Figure 1

China's top 10 emerging cities

Source: Economist Intelligence Unit, 2015, https://www.weforum.org/agenda/2016/03/which-are-china-s-fastest-growing-cities/

* Based on real GDP, population, disposable income per person, consumer spending per person, fixed-asset investment, urban built area, fiscal revenue, foreign direct investment, and merchandise exports.

enter the top 600, all of them from the developing world and overwhelmingly—100 new cities—from China'.[2]

China is indeed a good example of the new powers acquired by cities as engines of economic growth (Figure 1):[3] even if, in the coming five years, China's national economy grows at a slower pace (e.g., around 7%) than it did during the previous decade, it will still boast a significant number of cities that will grow at almost twice that rate.[4]

As indicated in the GTCI 2015–16, cities are taking back some of the leading roles that they played between the 15th and 18th centuries. This is particularly evident in the area of talent. Over the past few decades, in all parts of the world, cities and municipalities have assumed a high-profile position and adopted proactive strategies to attract talent. This approach has been accompanied by strong branding strategies associated with major global or regional events such as the Olympic Games, World Expos, and European 'Capitals of Culture', for example.

Because they are smaller than most national entities,[5] cities are not only more manageable but also more agile—able to produce innovative 'talent propositions' more rapidly than their respective countries might be. As often highlighted in previous editions of the GTCI, policy change in the area of talent and employment requires vibrant ecosystems, with close collaboration between government, business, and education. In cities, these components are naturally closer to one another than they are in a broader (national) environment. In the face of massive disruptive change (the GTCI's theme this year), cities are hence likely to identify and deliver solutions more rapidly than nation-states. It should also be noted that many of the high-performing GTCI countries are small and enjoy tightly connected ecosystems.[6]

Since a key purpose of the GTCI is to monitor (and to some extent help anticipate) global trends in talent competitiveness, it is therefore natural that the report should include a special component comparing the abilities of cities in competing for talent on the global scene. Yet it is equally important that, in doing so, the GTCI report should reflect the objectives and respect the constraints already identified in the GTCI 2015–16, especially from a methodological point of view.

BENCHMARKING CITIES' TALENT COMPETITIVENESS: RATIONALE AND METHODOLOGY

A Few Cautionary Words

Considering the dynamics of talent attraction at the city level points out one of the limitations of an index like the GTCI. By focusing exclusively on the nation-state dimensions of talent competitiveness, it is easy to miss an important part of why and how talent flows from some parts of the world to others. At the same time, the differences that separate cities from nations suggest that one should be cautious not to build an index that would encourage sweeping comparisons between the performance of sub-national entities (cities, regions), on one hand, and that of nation-states on the other.

Based on the rationale already provided in the GTCI 2015–16, the methodology proposed in this section aims to fulfil two main objectives, namely:

1. **Be coherent but differentiated.** The proposed cities index needs to respect the philosophy and structure of the GTCI. Like the GTCI, it is based on a holistic definition of talent as well as a comprehensive approach to the pull and push factors of talent attraction, growth, and retention. With this in mind, the proposed index will include some city-specific variables reflecting local conditions while other country-specific GTCI data will not be included.

2. **Be ambitious but realistic.** When building a global index, trying to include as many countries as possible is a legitimate objective. This year, the GTCI covers 118 national economies, representing 97.3% of the world's GDP and about 88.7% of its population. A city-specific index could not aim to cover all cities and all regions of the world. In itself, such an objective would hardly make sense in the absence of an agreed definition on what constitutes a city or a region.[7] The adjunction of such an index to the GTCI can hence be implemented only in a gradual fashion. This year's first attempt therefore includes a first subset of 46 cities for which relevant and comparable data could be generated. This number is expected to grow rapidly in subsequent years.

Based on these principles, this separate section of the GTCI report includes the inaugural edition of the **Global Cities Talent Competitiveness Index (GCTCI)**. In this initial, first-year version, the index includes 46 cities of different sizes, located in all parts of the world, and representing a mix of national capitals and regional centres as well as up-and-comers in the talent competitiveness space.

Putting forward this city index side by side with the GTCI's ranking of countries allows for a deeper and more complete assessment of the global landscape of talent competitiveness.

This initial version of the GCTCI relies on previous research done in the European context, with significant leadership from the Basque Region of Spain (Bizkaia).[8]

We hope that, as has been the case with the GTCI for over four years, the benchmarking opportunities and frameworks presented in this section will serve not as an academic exercise or reference point but rather as a tool for action, measuring talent-related indicators in order to understand and improve them.

Key Drivers behind Cities' Talent Competitiveness

The rationale behind the introduction of a beta version of a GCTCI in this edition of the GTCI report can be summarised in one sentence: talent competitiveness has become key to cities, and cities are becoming key to talent competitiveness.

Talent Competitiveness: Critically Important for Cities

Cities and regions not only compete for talent—they often act as leaders that define new ways to grow, attract, and retain talent. Globally competitive and locally relevant, they can attract outside knowledge and identify new roles and opportunities for themselves in the global economy.

The 20th century notion that 'people move to where the jobs are' has, for the most part, been replaced with idea that 'jobs tend to go where the talent is'. In the old days, cities that attracted talent were typically places hosting large industries and companies. Clearly those characteristics have not disappeared, and large urban hubs endowed with the presence of major employers continue to enjoy a significant advantage over smaller cities in terms of talent competitiveness. Yet, today, talent (especially higher-level talent) can be attracted selectively.

When trying to attract investment, especially from abroad (e.g., through foreign direct investment or FDI), cities need to look beyond the traditional tools of fiscal exceptions and land offerings. In addition to connectivity (for both transport and information flows), the presence of a sizeable local talent pool has become central in this regard, both for large and for smaller cities.

Cities' Strategies: Critical to Global Talent Competition

In many locales, the presence of quality talent is complemented by the efficient diffusion of international communications and technology. Indeed, new cohorts of creative talent such as 'digital nomads' have been attracted to places that offer a low cost of living combined with good-quality and reliable internet connectivity.[9]

Cities and regions are often better positioned than countries to develop and brand features such as quality of life and educational opportunities that are attractive to both domestic and international talent. In addition, cities can successfully differentiate themselves through local capabilities—for example, business clusters that provide opportunities for innovation. Because they are ecosystems, cities are more agile than nations. In fact, this combination of branding, differentiation, and agility can significantly boost the potential talent competitiveness of smaller cities over the usual champions of city rankings—typically large urban hubs and metropolises.

When it comes to promoting prosperity and well-being, local governments control many of the available policy levers. According to the Organisation for Economic Co-operation and Development (OECD)'s 2014 estimates, local authorities are responsible for around 40% of total public expenditure and 60% of public investment in the OECD area.[10] In his 2016 book *Connectography,* Khanna stresses that cities are taking on an enhanced role in 21st century governance.[11] The more a city invests in physical, online, and financial infrastructure, the greater its future role will be in a world where connectivity is the chief commodity. Khanna's argument is not an isolated one. Cities today are becoming the undisputed focal point of many trends and changes in the global economy.[12] They enjoy the overwhelming majority of economic activity along with an ever-greater portion of the world's population.

BUILDING A GLOBAL CITY TALENT COMPETITIVENESS INDEX (GCTCI)

Architecture of the GCTCI model

For this beta version of the GCTCI, four drivers have been identified as worth considering and quantifying. Mirroring the architecture of GTCI, they have been grouped in the four left pillars of the GCTCI model, as illustrated in Figure 2.

The additional two pillars (on the right of Figure 2) that constitute the GCTCI reflect productive channels for the talent that cities and regions have enabled, attracted, grown, and managed to retain. These pillars have to do with the way cities and regions utilise two main kinds of skills, namely (1) those acquired through secondary education and vocational enrolment and (2) those that allow cities to connect with global networks and build on these networks to generate knowledge.

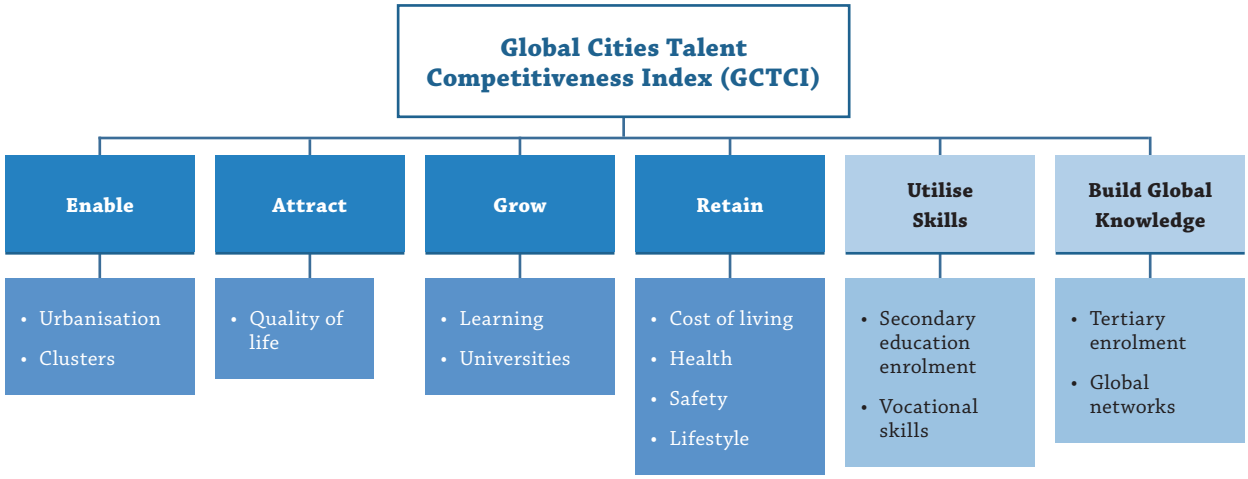
When combined, these various facets yield the six-pillar structure of the GCTCI, which fully reflects the definition of talent competitiveness provided by the GCTI: enabling, attracting, growing, and retaining two types of talent—namely Vocational and Technical Skills on one hand, and Global Knowledge Skills on the other.

Populating the Model: Facing the Local Data Challenge

In terms of data collection and availability, many economists have described regions and cities as 'orphans'.[13] Despite acting as engines of their countries' economic growth and as conduits for foreign investment, their economic management involves a number of different tiers of government. In particular, the continued emphasis on publishing economic data and other relevant statistics at a national rather than sub-national level has created a void in economic and business policy.

In this section we look at the current global landscape of collecting and publishing talent-related metrics using sub-national/regional/city data points. We outline some of the main challenges governments and researchers encounter in sourcing data at the

Figure 2
The architecture of the Global Cities Talent Competitiveness Index



city or region level. We then proceed to describe the methodology underpinning this first edition of the GCTCI.

Building a Different Kind of City Index

When trying to quantify the city-specific aspects of talent competitiveness, analysts and policymakers face several kinds of difficulties:

- In recent years, the topic of cities and their newfound power and influence in global domains has become popular in the media as well as from the perspective of different knowledge sectors. Multiple rankings of liveable cities, green cities, safe cities, and cities of the future have been published by business journals, universities, management consultancies, accounting firms, and travel and lifestyle publications. Others have provided assessments and forecasts of the attractiveness for investment of individual cities and regions.[14]

- The world of cities is one in which we see a large number of indices and comparisons, but few make an attempt at being truly global: the accent is often put on those cities that do well, rather than helping others identify their weak points or how to improve. Often, for perfectly legitimate reasons, many of the existing city indices focus on lifestyle and cost of living (see Table 1). Because it defines talent competitiveness in a comprehensive and multidimensional way, the GCTCI must attempt to embrace all of these aspects. For example—and as demonstrated in previous editions of this report—talent is a key driver of FDI; clearly, one can also point to the importance of quality of life in attracting and retaining talent, which is why this dimension is a pivotal element of both the GTCI and the GCTCI.

New Efforts to Enhance City/Region Data Availability

Although there are inherent challenges in identifying, verifying, and collecting sub-national data on talent competitiveness, there *are* geographic regions where progress has been made, providing an analytical departure point for exploration of this talent competitiveness space.

Until recently, efforts to gather more data at the city level (particularly to assess competitiveness among urban centres) have been driven largely by academics such as Richard Florida in North America. Public and governmental entities have now started to face the challenge, either through 'opengov/datagov' strategies,[15] or by more direct data collection at the local level. European Union (EU) structures and agencies in particular (e.g., Eurostat, Eurobarometer) have made a commendable and long-standing effort to generate and publish statistical data related to EU regions—an undertaking virtually unknown in many other parts of the world. Although the data are of a statistical nature, with an economic perspective that is broader than talent considerations alone, they provide a rich, detailed, and historical source of information on many of the factors shaping the talent discourse. These include, for instance, education enrolment rates, education outcomes correlated with age and gender, employment rates, and other valuable indicators.[16]

The EU regions have also undertaken initiatives that cast additional light on the talent dimension of local dynamics. These programmes include the following:

- **International Regions Benchmarking Consortium** (www.internationalregions.org). Sponsored by Boeing and Microsoft, the consortium explores the dynamics between economic opportunities and cost of living as factors in attracting in-migration of talent from within the home country and from abroad. Member cities include Barcelona, Helsinki, Stockholm, and Munich, alongside a few cities in Asia and North America.

Table 1

A selected sample of commonly referenced city-focused indices

INDEX	PUBLISHER	FOCUS	COVERAGE	NO. OF VARIABLES
European Cities and Regions of the Future	FDI Magazine	Investment landscape	Top 25 cities	Several dozen
Cities in Motion Index	IESE business school	Smarter cities, governance, urban planning, human capital	180 cities worldwide	77
EIU Liveability Ranking	Economist Intelligence Unit	Living conditions	140 cities worldwide	30
EIU Best Cities	Economist Intelligence Unit	Complements the liveability ranking with a particular emphasis on spatial characteristics of cities	70 cities worldwide	14
Quality of Living Rankings	Mercer	Quality of living, personal safety for international employees	230 cities worldwide	39
Quality of Life Survey	Monocle	Public transport, international connectivity, safety, nightlife	25 cities worldwide	22

- **Talent Attraction Management in the Nordic Regions and Cities (TAM Project)** (www.tendensor.com/news/tendensor-news/nordic-project-talent-attraction). Launched in 2013, TAM is a partnership-based development project with the goal of providing Nordic cities and regions with strategies and tools for an organised talent attraction approach. The project also aims to illustrate how public and private actors can build a successful collaboration to manage strategies to attract talent.

- **Talent Retention in the Baltic Sea Region** (www.bdforum.org/tag/toolkit-on-talent-retention). Co-financed by the European Union's European Regional Development Fund, this toolkit outlines activities and services for welcoming, receiving, and integrating talents in cities and regions in the Baltic Sea Region.

THE GCTCI: DISTINCT FROM THE GTCI, YET CLEARLY SHARING THE SAME PHILOSOPHY

This section takes a look at the ways the GCTCI both differs from the GTCI and the ways it rests on the same basic tenets.

Pillars, Sub-Pillars, and Variables in the GCTCI Model

The GCTCI model applied in this study seeks to respect the philosophy and structure of the GTCI. It is therefore based on a holistic definition of *talent* as well as a comprehensive approach to the pull and push factors of talent attraction, growth, and retention.

Similarly, in selecting individual variables for inclusion in each of the GCTCI's six pillars, effort was made to preserve and mirror the GTCI's composition of variables as closely as possible. Choices were guided by two key criteria: data availability and data applicability:

- **Data availability.** Some of the GTCI's variables are available only at national rather than sub-national levels. In some instances, this lack of availability was mitigated through the use of proxies (see below).

- **Data applicability.** Some GTCI variables directly reflect trends and policies set by central governments (e.g., legal frameworks, labour laws). As such, they are of limited use when making direct comparisons of cities and regions on a global scale.

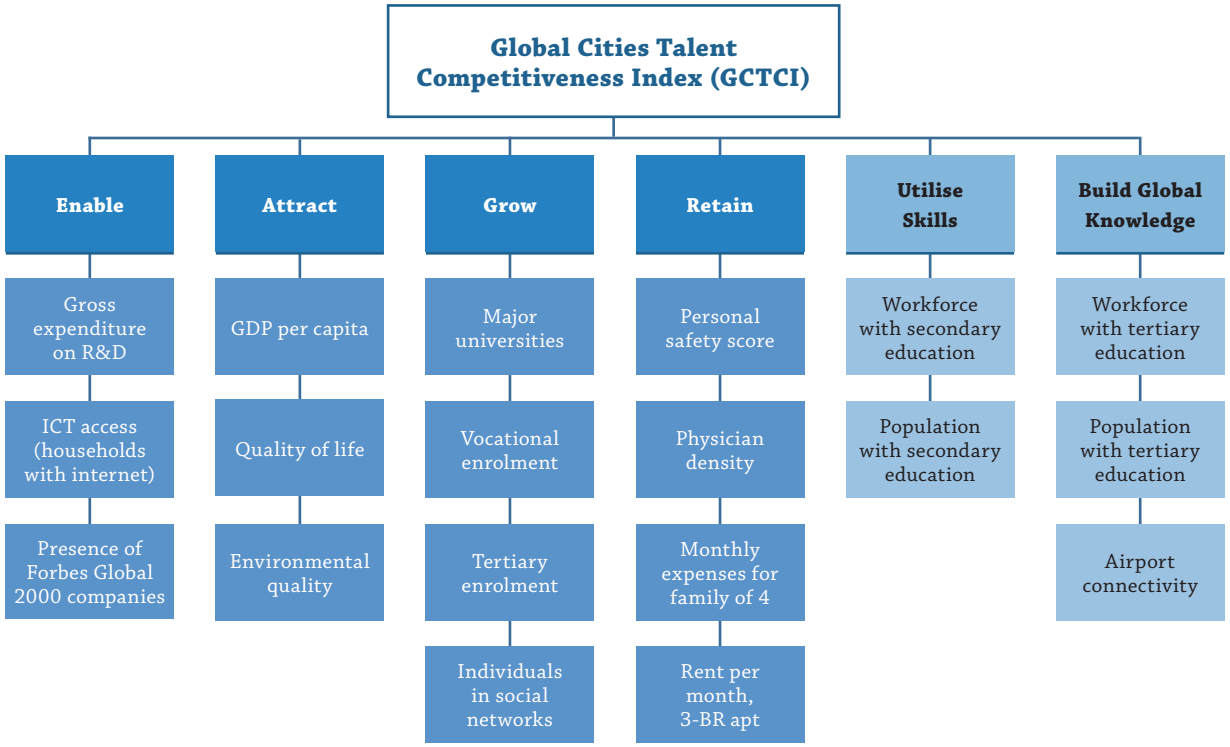
The initial version of the GCTCI presented here is clearly only a first attempt at creating the city counterpart of the GTCI, based on the methodological choices and data constraints described above. Ideally, a number of additional components of talent competitiveness could be brought in to enrich this initial model, bringing its sophistication closer to that of the GTCI. As a result, its pillars could be better defined and its variables better distributed across them. It is likely that such developments will take place in the coming years. As more international efforts continue to be deployed around direct data collection, more 'self-generated' data will continue to emerge from open-data strategies undertaken by local governments. In coming years, such improvements will become both more frequent and more significant. In such a context, feedback and engagement from a critical mass of cities around the world will be key to the future success and relevance of the GCTCI.

The resulting structure of the GCTCI, grouping 19 variables into six pillars /sub-indices, is depicted in Figure 3.

Data Sources, Proxies, and Normalisation

Typically, the following data sources were used in populating the GCTCI:[17]

Figure 3
GCTCI variables



- EU-wide statistical engines such as Eurostat, Eurobarometer;
- national-level statistical bureaus;
- local sources, including government agency websites, reports and related press releases;
- publicly available global rankings such as the EIU Best Cities ranking;
- where applicable, recognised global data sets such as Forbes Global 2000, Times Higher Education (THE); and
- survey- and self-report-based online data aggregators such as Numbeo, Knoema.

In modelling a first (beta) edition of a complex data index such as the GCTCI, a targeted and judicious use of definitional and numerical proxies is required to achieve a desired degree of data completeness and representation. To that end, the index has in some cases incorporated the following types of proxies:

- **Regional-level data points taken to represent cities.** These are used particularly where up-to-date, detailed information on EU regions was available and where 'Region X' and 'City of X' are often used interchangeably in a number of contexts.

- **Country-level GTCI data appropriated to represent cities.** These are applicable to smaller-sized cities located in small countries, whereby the city's population (without suburbs/adjacent metropolitan areas) amounts to at least 25% of the total country population.

- **Injecting data points from online tools into published indices.** Where existing branded indices such as EIU rankings did not include a particular city listed in the GCTCI, the city's corresponding ranking/score on Numbeo.com could be supplemented, after having its score correlated or traced to a city that was ranked as a leader in both sources (i.e., in EIU and Numbeo).

Having applied the proxies, the data set was tested for missing data. Cities as well as variables where 50% or more of data points were not available were eliminated, thus ensuring that the sample remained representative. The resulting set was then normalised.

The GCTCI's Initial Geographic Coverage

For this first edition of GCTCI, 46 cities located in 34 countries are included in the index (see Figures 4 and 5). These cities represent a mix of large and small urban centres, some of which are national capitals or leading urban centres, while others could be seen as 'secondary hubs' or even 'remote locations'. The cities were identified on the basis of their reputation and growing footprint in attracting, growing, and retaining global talent rather than as a function of their size or national-capital status. The availability and comparability of data obviously also played a key role in this selection.[18]

Figure 4

Cities included in this year's GCTCI

Note: Highlighted cities are those in the top 10 of this year's GCTCI.

Figure 5

A strong European presence

Note: Highlighted cities are those in the top 10 of this year's GCTCI.

Table 2

Global City Talent Competitiveness Index rankings and overall scores

RANK	CITY	OVERALL SCORE
1	**Copenhagen (Denmark)**	**74.0**
2	**Zurich (Switzerland)**	**67.7**
3	**Helsinki (Finland)**	**65.4**
4	***San Francisco (United States)***	**63.5**
5	**Gothenburg (Sweden)**	**62.6**
6	**Madrid (Spain)**	**60.2**
7	**Paris (France)**	**59.4**
9	***Los Angeles (United States)***	**58.2**
8	**Eindhoven (Netherlands)**	**57.8**
10	**Dublin (Ireland)**	**57.2**
11	Cardiff (Wales)	56.2
13	*Sydney (Australia)*	55.9
12	Berlin, Germany	55.6
14	*New York (United States)*	55.3
15	Vienna (Austria)	55.1
16	London (United Kingdom)	54.4
17	Birmingham (United Kingdom)	53.9
18	Bilbao (Spain)	53.7
19	*Singapore (Singapore)*	52.4
20	Barcelona (Spain)	52.1
22	Brno (Czech Rep.)	51.8
21	Tallinn (Estonia)	51.2
23	Hanover (Germany)	51.0
24	Krakow (Poland)	50.5
25	*Auckland (New Zealand)*	49.7
26	Bologna (Italy)	49.3
27	Nantes (France)	48.1
28	Kiel (Germany)	47.2
29	Riga (Latvia)	47.0
30	Zaragoza (Spain)	46.6
31	Milan (Italy)	44.9
32	*Doha (Qatar)*	44.2
33	*Buenos Aires (Argentina)*	41.3
34	*Santiago (Chile)*	40.6
35	Turin (Italy)	39.8
36	*Dubai (United Arab Emirates)*	39.2
37	*Shanghai (China)*	36.0
38	*Cairo (Egypt)*	34.7
39	*Mexico City (Mexico)*	33.7
40	Valletta (Malta)	33.5
41	*Johannesburg (South Africa)*	33.5
42	*Sao Paulo (Brazil)*	32.8
43	*Kuwait City (Kuwait)*	30.2
44	*Mumbai (India)*	25.7
45	*Casablanca (Morocco)*	22.7
46	*Nairobi (Kenya)*	20.3

Note: Non-European cities are italicised.

GCTCI FINDINGS

This section presents the findings of the GCTCI, looking first at the rankings by city and then highlighting the key messages that follow from those findings.

GCTCI Rankings

The aggregate results that combine data points and the corresponding scores across the six pillars of talent competitiveness have produced the rankings shown in Table 2.

In this initial (beta) version of the GCTCI, Copenhagen gathers high marks, followed by Zurich, Helsinki, and San Francisco. A first noteworthy fact is that only four major cities with more than 2 million inhabitants (San Francisco, Madrid, Paris, and Los Angeles) appear in the leading group (top 10) of the rankings.

Beyond the leaders, a rather homogenous group of cities constitutes the middle of the rankings, with relatively little difference among their respective scores.

The bottom part of the GCTCI rankings consists of cities with a total score of 50 or less (out of 100). This is the group in which many of the non-European cities can be found. Among the European members of this group are mainly smaller cities (Kiel, Nantes) and cities located in Italy and/or the Mediterranean region (Bologna, Milan, Turin). Only one of the cities located in the emerging countries of Central and Eastern Europe (Riga) has an aggregate score lower than 50.

Several Key Messages

Among the main findings reflected in this first attempt to build a Global City Talent Competitiveness Index, the following seem to deserve particular attention.

Benchmarking Cities for Talent Competitiveness: Different from Usual City Rankings

Faced with the overabundance of city rankings flagged earlier, one has become accustomed to seeing the same cities again and again, generally dominated by global metropolises. This year's first attempt to derive a city index from the GTCI has led to a strikingly original hierarchy of cities in which relatively small and upcoming urban centres (see below) are challenging the domination of large cities. If such dynamics are confirmed in the coming years, and if those emerging talent hubs continue to create local virtuous circles by which talent attracts talent and innovation drives innovation, foreign investment and large international players generally are bound to devote increasing attention to such places as potential hubs. From such a perspective, the 'surprises' of the GCTCI could be seen as the potential stars of tomorrow's city rankings.

The Top Four Spots in Europe: Scandinavian Cities

The index results make a clear case that the high cost of living in Copenhagen, Helsinki, and Gothenburg has been more than offset by these cities' physical and information infrastructure and connectivity, strong international links, and consistently high performance in quality-of-life indicators. Another advantage of most Nordic cities is that the use of English as a second language is rapidly becoming the norm.

In Europe, the top ranking also reflects the success of Scandinavian cities' and regions' concerted strategies for attracting and retaining international talent. These programs have been overseen by agencies such as Copenhagen Capacity—the Copenhagen region's official organisation for investment promotion and regional development, which has put forward a multi-stakeholder, multi-initiative talent strategy for 2014–2017.

Small Is Where the Action Is

With the exception of Paris and Madrid (both large metropolises and national capitals) and San Francisco and Los Angeles (both geographically widespread megapolises), the cities in the top 10 have an average population of just below 400,000. This confirms that the pattern of highly educated individuals predominantly gravitating to large conurbations is a thing of the past. Although a big city's size continues to come with many advantages in terms of jobs and connectivity, these advantages are partially outweighed by the ability of higher-level talents to operate from smaller locations, provided that those locations are not synonymous with isolation: physical and technical connectivity (transportation and communications) contribute to mitigate this traditional disadvantage of smaller cities, where quality of life is often seen as higher than in environmentally challenged metropolises.

Whereas cities such as Eindhoven might once have been relegated to a Tier II or even Tier III category, in today's landscape of European and global talent competitiveness they have emerged to take their place among the top few. The presence of large innovative companies with a global reach (Philips in Eindhoven, the 'ICT cluster' around Dublin with companies such as Apple Computers and LinkedIn) is clearly a distinct advantage with regard to talent competitiveness: the combination of a small, liveable, easy-to-navigate city with the presence of one or several world-class industrial corporation(s) has proved particularly powerful and compelling. It offers many skilled workers the best of both worlds by situating them in a safe and family-friendly community—yet without exacting the cost of forgoing career and networking opportunities in exchange. At the same time, for the company this is a unique opportunity to present itself at its best along the aforementioned 'business in society' dimensions by becoming not only an anchor of local employment but a virtual hometown hero around which the bulk of the city's not only economic but also social, cultural, and philanthropic activities revolve. As mentioned above for Nordic cities, the common use of English has been a critical factor in attracting talent: while being an obvious natural advantage for cities like Dublin, it has also benefited cities like Eindhoven, as well as many of the cities in this group.

City Strategies: Compete for Talent by Attracting Headquarters of Global Corporations

Large corporations have long ceased to be linked forever to the cities where they were created. In 2001, when Boeing chose to migrate from Seattle to Chicago,[19] it ushered in a new approach to relocation thinking.[20] More recently, consequences of the so-called Brexit have started to be analysed from the perspective of local job losses due to the possible relocation of major companies away from London. Such companies include Visa, JP Morgan, Goldman Sachs, and HSBC, but also non-financial companies such as Vodafone.[21]

As opportunities to attract the headquarters of major global players continue to increase, cities will be expected to devote increasing attention to this new kind of competition. Talent will be both a driver and an outcome of this competition. Since, as underlined earlier, cities see talent competitiveness as a key ingredient in their global strategies, it is to be expected that more relocations (not only of headquarters—global or regional—but also of R&D centres) will be driven by local strategies; these will not be limited to the usual big players (see the box on *'Peoria, Illinois: Corporate headquarters of Caterpillar'*).

The Talent Formula: Logical yet Delicate

Human capital has been a central ingredient of development plans drawn up at many levels: international, national, industrial, corporate, regional, and municipal. Becoming a talent hotspot means managing and balancing a number of considerations that are crucial to the talent equation: rapid demographic growth can easily create housing shortages and put pressure on public infrastructure, for example.[22] High income can translate into high cost. In domains such as health and safety, a locale's perception and reputation may take an instant to damage and many years to repair. Maintaining growth while keeping inequalities in check is a delicate balance, which cities will not find easier to achieve than nation-states.

PEORIA, ILLINOIS: CORPORATE HEADQUARTERS OF CATERPILLAR

In the area surrounding this mid-sized city in the US Midwest, Caterpillar employs a total of 16,000 people and has been the primary customer of an estimated 40% of local businesses.

Despite its continued global expansion, Caterpillar has announced that it is staying put in Peoria for the long haul. It is also in the process of upgrading its existing headquarters in the city, despite having received aggressive tax incentive offers from a number of other locations around the United States.

Source

Caterpillar reaffirms its commitment to Illinois and Peoria as company's global headquarters (2016), Caterpillar Careers, available at http://www.caterpillar.com/en/news/caterpillarNews/careers/caterpillar-reaffirms-its-commitment-to-illinois-and-peoria-as-companys-global-headquarters.html

Table 3

Top 10 city rankings and scores, by GCTCI pillar

Pillar 1: Enable

RANK	CITY	SCORE
1	Dublin	91.3
2	Zurich	80.9
3	Copenhagen	76.9
4	Paris	71.1
5	Helsinki	67.4
6	Eindhoven	59.8
7	Gothenburg	59.5
8	San Francisco	57.4
9	Hanover	56.9
10	Berlin	55.1

Pillar 2: Attract

RANK	CITY	SCORE
1	Zurich	95.2
2	San Francisco	91.1
3	New York	86.3
4	Paris	81.4
5	Copenhagen	80.4
6	Vienna	80.1
7	Eindhoven	77.0
8	London	76.4
9	Helsinki	74.6
10	Berlin	74.1

Pillar 3: Grow

RANK	CITY	SCORE
1	Copenhagen	92.5
2	Los Angeles	92.3
2	New York	92.3
2	San Francisco	92.3
5	Sydney	80.7
6	Helsinki	78.5
7	Madrid	77.7
8	Gothenburg	71.5
9	Cardiff	70.6
10	London	67.3

Pillar 4: Retain

RANK	CITY	SCORE
1	Vienna	79.0
2	Bilbao	77.6
3	Mexico City	77.1
4	Brno	76.3
5	Johannesburg	75.9
6	Casablanca	74.5
7	Tallinn	73.1
8	Cardiff	71.5
9	Cairo	70.1
10	Barcelona	69.9

Pillar 5: Utilise Skills

RANK	CITY	SCORE
1	Brno	100
2	Krakow	88.2
3	Kiel	87.7
4	Hanover	85.9
5	Vienna	72.2
6	Riga	70.6
7	Berlin	70.5
8	Tallinn	68.1
9	Nantes	63.6
10	Bologna	59.6

Pillar 6: Build Global Knowledge

RANK	CITY	SCORE
1	Copenhagen	76.5
2	San Francisco	72.7
3	Zurich	70.8
4	Bilbao	63.3
5	Madrid	63.1
6	Los Angeles	60.3
7	Gothenburg	56.1
8	Dublin	54.8
9	Barcelona	54.2
9	New York	54.2

Findings Derived from the Sub-Index Level

An analysis of the six pillars of the GCTCI yields the following insights and additional key messages:

Each City Has Its Own Strengths and Weaknesses

The pillars of talent competitiveness do not exist in isolation. Particularly, in high-performing cities, there is evidence of complementarities: for instance, higher GDP levels will over time naturally lead to higher technology penetration rates and a better quality of education and healthcare. Many of these complementary developments will take the form of virtuous cycles, such as higher-ranked universities attracting a higher calibre of teaching and research staff and producing graduates whose quality and skills will in turn be demanded and rewarded in the marketplace.

Overall Low Performers Are Not without Ammunition in the Market for Talent

Copenhagen—the overall index leader—ranks 1st in three of the six pillars of GCTCI. Zurich established a top 3 spot in three of the pillars. Elsewhere, individual cities show significant variations in their pillar rankings, with some of the overall bottom performers earning a top 10 spot in another pillar. Valletta, Malta, for instance, places low in the overall index ranking, yet ranks relatively high in the Retain pillar.

Pillar-Level Analyses Create Ample Room for Strategy and Planning

The above points draw out the fact that the battle for talent needs to be waged on multiple fronts. Every city and region brings its own value propositions as well as its own deficiencies to the talent landscape. The objective of an effective, well-informed, and ultimately successful planning process will be to craft a strategy that maximises the appeal of the city's strengths and compensates for what may be perceived as its weak spots. In place of aiming to be all things to all people, it is measurable goals and timelines, owned by clearly identified stakeholders and champions, that will lift a city/region's position in the talent competitiveness space. For example, the pillar rankings and scores displayed in Table 3 suggest that:

- Large cities continue to enjoy a significant advantage when it comes to attracting talent (pillar 2): San Francisco, New York, Paris, London, and Los Angeles are in the top 10 here.

- Enabling factors play in favour of Europe (San Francisco is the only exception in the top 10 of pillar 1), whereas Europe can learn from other parts of the world in terms of growing talent (pillar 3): Los Angeles, New York, Sydney for example.

- Retain (pillar 4) is probably the area where the most benefits can be drawn from comparing specific, sometimes unexpected experiences of cities such as Bilbao, but also unexpected top performers such as Cairo, Casablanca, and Johannesburg. GCTCI champions are also places where the concept of 'brain circulation' plays a key role: as suggested by the remarkably low ranking of cities such as Singapore, Los Angeles, Zurich, San Francisco, and New York) on the Retain pillar, talents come and go to such cities in a more fluid fashion than in smaller hubs.

- The last two pillars of the model (Utilise Skills and Build Global Knowledge) offer a contrasting picture (with cities in Eastern and Central Europe doing very well on pillar 5, and large cities retaining a distinct advantage on pillar 6).[23]

CONCLUSIONS AND NEXT STEPS

Obviously one needs to be careful not to draw hasty conclusions from what remains a first attempt at ranking cities along the components of talent competitiveness: in the coming years, the GCTCI will undoubtedly improve, both from the point of view of its data granularity (by including more variables to cover the various facets of its pillars) and from that of its geographical coverage (by including a significantly higher number of cities, especially for regions outside of Europe).

Yet, from the still embryonic model derived from the GTCI, and out of the limited initial sample of 46 cities covered in this first edition of the GCTCI, a number of key messages have been formulated: these show that cities will play an increasingly important role in the global competition for talent. This trend will contribute to modifying significantly the hierarchy of players involved in talent competition worldwide, and even at the local level. On one hand, cities will continue to strive to fully leverage the advantages they enjoy over most nation-states, including (1) the superior agility that comes from their relatively smaller size and greater homogeneity, (2) the increasing fiscal and social autonomy they will be granted from their respective national authorities as governance and management continue to be de-centralised, and (3) their growing ability to create, develop, and disseminate their own branding as superior places to live, work, and innovate. On the other hand, a continuous and careful observation and quantification of efforts made at the city level to grow, attract, and retain talent is likely to highlight (or reveal) some of aspects of global talent competitiveness that would remain underestimated—or even unrecorded—if it were founded exclusively on country-based data and analyses.

To monitor such changes and provide adequate tools to anticipate and benefit from the talent implications that they will have, the city component of the GTCI will need to improve in at least three main respects—namely (1) data coverage (identifying the right indicators to allow decision-makers to make sense of current trends and make the appropriate decisions in terms of talent sourcing and talent management); (2) city coverage, to maximise diversity among regions and continents, and to reflect the multiplicity of strategies and practices among the cities, large and small, competing for talent; and (3) becoming a point of reference to stimulate encounters and exchanges of experience among the leaders of such cities, in order to accelerate the identification and customisation of the best practices implemented in the area of cities' global talent competitiveness.

Data sources for the variables can be found in Annex 1. A table of the 46 cities covered in this first edition of the GCTCI with their rankings and scores for both the overall index and by variable is available in Annex 2 of this chapter.

ENDNOTES

1 GTCI 2015–16, Key Message 7, p. 37.

2 See Dobbs et al. (2011).

3 The phenomenon of accelerated urbanisation in China is not new. It has, however, become a central component of the country's recent economic strategy. In 2015, *'coordination to ensure balanced development among rural and urban areas'* was one of the five tenets of Chinese President Xi's Proposal for a 13th Five Year Plan (2016–2021). During that period, urbanisation will be an integral part of spurring consumption and reducing the disparity between urban and rural residents in China, targeting an urbanisation rate of 60% by 2020, up from the current 55%. See *The Wall Street Journal* (2015), China's Communist Party approves Five-Year Plan, 29 October 2015, available at http://www.wsj.com/articles/chinas-communist-party-approves-five-year-plan-1446124597

4 *'Even though the days of 30% annual growth might be a thing of the past, China still boasts many cities experiencing rapid growth. These are cities that few outsiders will have heard of—such as Guiyang, Xiangyang and Hengyang—but in 2016 their economies are forecast to grow by as much as 12%.'* See EIU (2016), Which are China's fastest growing cities? 14 March 2016, available at https://www.weforum.org/agenda/2016/03/which-are-china-s-fastest-growing-cities/

5 Key orders of magnitude should be kept in mind. For example, the total population of the municipality of Chongqing (China) is about 30 million, almost four times the population of Switzerland.

6 This point is further developed below, as well as in Chapter 6 of the present report.

7 For definitional purposes, we shall consider that cities are—as suggested by McKinsey's Global Institute—*'metropolitan areas having populations of over 150,000, which can be roughly grouped into "small middleweight" cities up to five million in population, "large middleweight" cities up to 10 million, and "megacities" with populations over 10 million. Many cities are embedded in elongated multi-city corridors; others are embedded in wider sub-national regions'* (The Competitiveness of Cities, World Economic Forum, 20 May, 2016, p. 9). For analytical purposes, we shall also make a distinction between 'small cities' (up to 300,000 inhabitants) and other cities.

8 See Lagunilla & Jimenez (2016).

9 Internet connectivity is one of the key reasons why some indices of the 'best cities for digital nomads' include places such as Bangkok, Budapest, Austin, and Taipei. See the list of these cities at https://nomadlist.com/

10 See the OECD's Fiscal Decentralization Database, available at https://www.oecd.org/ctp/federalism/oecdfiscaldecentralisationdatabase.htm

11 See Khanna (2016).

12 Richard Florida has convincingly developed a related argument about how cities drive innovation. See in particular Florida (2005).

13 'Data and the city' raises a striking paradox: on one hand, 'smart cities' are struggling with the difficulties of making sense (and good policy) out of an overflow of big data stemming from multiple sensors, video cameras, and user-generated information (see, for example, Chye, S. W. & Mani, T. (2016), Do we need big data to create smart cities? Labcities, 26 January 2016, available at http://www.labcities.com/do-we-need-big-data-to-create-smart-cities/; see also Cortright, J. (2016), The limits of data-driven approaches to planning, CityCommentary, 16 August 2016, available at http://cityobservatory.org/the-limits-of-data-driven-approaches-to-planning/). On the other hand, the past dynamics of cities remain difficult to analyse because of a striking lack of reliable and comparable data (see, for example, Batty, 2013).

14 In addition, informal, self-reported, real-time rankings and indices have appeared on a number of internet websites and forums, adding to the confusion of observers and policymakers.

15 Pioneered by the US federal administration in the early 2000s, efforts to make government data available to citizens and to third parties able to create local value out of them have now been extended to some 48 US cities and counties. See https://www.data.gov/open-gov/

16 Closely linked to the theme of this year's GTCI, the European Commission has also taken the lead in mapping some of the key issues in linking information technology, skills, and jobs. See, for example, the *e-Skills Manifesto,* a European Commission blueprint for acquiring, nurturing, and retaining e-skilled talent in the 21st century, available at http://eskills4jobs.ec.europa.eu/manifesto. That document provides an overview of the benefits that EU economies can derive from digital transformation, and of the possible repercussions of that same transformation on the European Union's skills and job composition. Meanwhile, the Commission also launched the Grand Coalition for Digital Jobs, a multi-stakeholder partnership designed to tackle the lack of digital skills in Europe and the many unfilled IT-related vacancies across the continent's industry sectors.

17 A complete list of sources is provided as an annex to the present special section.

18 The definition of what constitutes a city is obviously a critical element here. For example, Vienna is defined here as a region more than as a city *stricto sensu.* Similarly, San Francisco can be described in different ways. In 2015, the US Census Bureau defined 'the City and County of San Francisco' as an entity with a population of 865,000, whereas Silicon Valley alone (the southern portion of the San Francisco Bay Area) has some 3 million inhabitants. Some analysts would hence consider the 5-county entity covering San Francisco-Oakland-Hayward Metropolitan Statistical Area (MSA) to include core areas more directly economically influenced by San Francisco rather than other nearby cities such as San Jose, which has its own MSA, (the San Jose–Sunnyvale–Santa Clara MSA; population 4.7 million). Other definitions would include the 9-county San Francisco Bay Area (7.6 million inhabitants), or even the 12-county San Jose-San Francisco-Oakland combined statistical area (8.7 million inhabitants). For the present beta version of the GCTCI, the 'middle definition' (San Francisco as a 4.7 million entity) has been used.

19 See Chicago, offering big incentives, will be Boeing's new home, *The New York Times,* 11 May 2001.

20 Ovans (2001) describes Boeing's 'big move': *'If you could move your company's headquarters anywhere in the world, where would you go? How would you narrow the possibilities? By what criteria would you judge them?'* In that same article, John Warner—the man who led the site evaluation process for Boeing—declared *'Because of the nature of the business, we knew that we needed to remain in the United States. But we do business with 145 countries, and we have significant operations in 26 states. … So we were looking for a place that would minimize travel time throughout the country and internationally and that would also give government leaders and financial markets in Washington, DC, New York, and abroad access to us. We needed a central location near a major airport. Based on that consideration and a number of others …, we very rapidly narrowed our choices.'*

21 See *The Guardian* (2016), Vodafone among firms that may move HQs from post-Brexit UK, 28 June 2016.

22 Indeed, this is one of the indirect ways in which technology can fuel inequalities within a city. See Forbes (2015), 'Technology and Inequality in San Francisco', *Forbes Magazine,* 17 February 2015.

23 It is on those last two pillars that the GCTCI methodology is likely to change most in the coming years, probably with visible effects on rankings.

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Annex 1

Definition and sources of GCTCI variables

PILLAR	VARIABLE	SOURCE
Enable	1.1 Gross expenditure on R&D (% of GDP)	Eurostat, OECD, Knoema, national statistical bureaus, other local sources
	1.2 ICT access (% households with internet access at home)	Eurostat, Knoema
	1.3 Presence of Forbes Global 2000 companies	Forbes
Attract	2.1 GDP per capita	Eurostat, Global Metro Monitor, Oxford Economics, Moody's Analytics
	2.2 Quality of life	EIU Best Cities, Numbeo Quality of Life Index
	2.3 Environmental quality	EIU Best Cities, Numbeo Pollution Index
Grow	3.1 Major universities*	Times Higher Education (THE), Financial Times ranking of global MBA programmes / business schools*
	3.2 Vocational enrolment (%)	Eurostat, with GTCI scores used as a proxy where necessary
	3.3 Tertiary enrolment (%)	Eurostat, GTCI, national statistical bureaus
	3.4 Individuals in social networks (%)	Eurostat, Knoema
Retain	4.1 Personal safety score	EIU Safe Cities Index, Numbeo
	4.2 Physician density (physicians per 1,000 people)	WHO, Eurostat, OECD
	4.3 Monthly expenses for four-person family (normalised in euros)	Numbeo
	4.4 Rent per month, three-bedroom apartment in city centre (normalised in euros)	Numbeo
Utilise Skills	5.1 Workforce with secondary education (%)	Eurostat, GTCI
	5.2 Population with secondary education (%)	Eurostat, GTCI
Build Global Knowledge	6.1 Workforce with tertiary education (%)	Eurostat, GTCI
	6.2 Population with tertiary education (%)	UNESCO
	6.3 Airport connectivity (largest airport servicing the city; adjusted by population)	Airports Council International

* Cities that are hosts to universities ranked 1–25 in the world were awarded 100 points; 26–50: 90 points; 51–100: 80 points; 101–150: 70 points; 151–200: 60 points; 201–300: 50 points; 301–400: 40 points; 401–500: 30 points. In addition, business schools received points equal to (100 – Financial Times ranking). See http://rankings.ft.com/businessschoolrankings/global-mba-ranking-2016

Annex 2

GCTCI cities and rankings: Overall and by variable

Rank	City	Country	GCTCI OVERALL	1. ENABLE			2. ATTRACT			3. GROW	
				1.1 Gross expenditure on R&D	1.2 ICT access	1.3 Forbes Global 2000 companies	2.1 GDP per capita	2.2 Quality of life	2.3 Environmental quality	3.1 Major universities	3.2 Vocational enrolment
1	Copenhagen	Denmark	74.0	100.0	89.1	41.6	58.6	82.7	100.0	90.0	93.6
2	Zurich	Switzerland	67.7	59.9	97.8	85.0	100.0	92.2	93.5	100.0	94.7
3	Helsinki	Finland	65.4	80.0	97.8	24.3	61.6	72.4	89.7	80.0	65.0
4	San Francisco	United States	63.5	n/a	76.1	38.7	100.0	77.8	95.5	100.0	n/a
5	Gothenburg	Sweden	62.6	73.5	89.1	15.8	49.1	76.1	86.0	60.0	84.7
6	Madrid	Spain	60.2	34.2	78.3	15.8	49.3	84.4	73.9	88.0	65.0
7	Paris	France	59.4	57.8	80.4	75.1	71.7	90.6	81.8	90.0	53.3
9	Los Angeles	United States	58.2	n/a	60.9	14.4	61.7	78.2	80.9	100.0	n/a
8	Eindhoven	Netherlands	57.8	52.9	100.0	26.4	52.9	88.9	89.1	40.0	44.4
10	Dublin	Ireland	57.2	n/a	82.6	100.0	66.3	57.0	56.9	60.0	43.6
11	Cardiff	Wales	56.2	22.2	82.6	8.5	36.8	88.9	n/a	60.0	100.0
13	Sydney	Australia	55.9	n/a	n/a	11.7	50.9	88.7	78.8	70.0	95.0
12	Berlin	Germany	55.6	73.0	91.3	0.9	44.5	88.6	89.3	40.0	51.1
14	New York	United States	55.3	30.9	60.9	24.3	88.7	80.6	89.5	100.0	n/a
15	Vienna	Austria	55.1	31.1	73.9	10.0	56.5	89.1	94.8	60.0	28.6
16	London	United Kingdom	54.4	18.7	93.5	23.2	65.2	84.4	79.7	100.0	25.6
17	Birmingham	United Kingdom	53.9	32.5	84.8	2.6	38.0	69.7	60.9	70.0	97.5
18	Bilbao	Spain	53.7	41.2	71.7	8.5	45.0	79.5	n/a	30.0	53.3
19	Singapore	Singapore	52.4	41.4	82.6	8.8	66.2	75.2	68.4	100.0	30.8
20	Barcelona	Spain	52.1	29.0	67.4	11.1	42.6	54.6	41.9	84.0	49.4
22	Brno	Czech Rep.	51.8	57.0	56.5	0.0	31.6	68.5	58.3	0.0	41.1
21	Tallinn	Estonia	51.2	43.0	82.6	0.0	21.1	63.3	55.6	0.0	52.2
23	Hanover	Germany	51.0	56.6	91.3	22.9	53.8	n/a	n/a	40.0	47.2
24	Krakow	Poland	50.5	24.9	n/a	0.0	30.0	45.4	29.0	40.0	76.4
25	Auckland	New Zealand	49.7	24.3	65.2	0.0	68.5	71.9	79.8	50.0	37.5
26	Bologna	Italy	49.3	32.1	63.0	23.5	56.9	68.8	54.3	50.0	56.4
27	Nantes	France	48.1	23.2	78.3	0.0	43.8	96.9	n/a	0.0	62.8
28	Kiel	Germany	47.2	28.4	91.3	0.0	n/a	n/a	n/a	60.0	38.9
29	Riga	Latvia	47.0	11.7	56.5	0.0	24.0	45.2	64.2	0.0	68.9
30	Zaragoza	Spain	46.6	16.7	58.7	0.0	39.4	100.0	n/a	30.0	54.7
31	Milan	Italy	44.9	24.9	60.9	13.5	68.6	41.8	28.3	75.0	100.0
32	Doha	Qatar	44.2	8.4	100.0	46.6	91.0	44.4	18.2	0.0	0.6
33	Buenos Aires	Argentina	41.3	n/a	n/a	2.1	16.1	66.7	35.4	60.0	36.7
34	Santiago	Chile	40.6	3.7	n/a	4.7	30.4	59.8	15.8	40.0	61.1
35	Turin	Italy	39.8	38.9	54.3	6.5	45.2	47.1	16.4	60.0	54.7
36	Dubai	United Arab Emirates	39.2	8.4	56.5	8.2	28.7	47.7	44.8	99.0	3.3
37	Shanghai	China	36.0	67.5	n/a	3.5	18.3	55.5	3.9	83.0	56.1
38	Cairo	Egypt	34.7	n/a	n/a	0.3	1.5	29.6	2.2	30.0	53.9
39	Mexico City	Mexico	33.7	n/a	0.0	2.9	23.8	48.7	1.7	50.0	44.7
40	Valletta	Malta	33.5	15.4	67.4	7.3	26.0	56.2	39.1	0.0	17.2
41	Johannesburg	South Africa	33.5	28.0	21.7	5.5	21.3	48.9	21.7	50.0	17.8
42	Sao Paulo	Brazil	32.8	31.1	n/a	3.4	23.4	52.2	3.8	70.0	16.7
43	Kuwait City	Kuwait	30.2	0.0	54.3	4.1	62.5	31.9	34.2	0.0	4.7
44	Mumbai	India	25.7	n/a	n/a	4.1	0.3	36.2	1.3	0.0	0.8
45	Casablanca	Morocco	22.7	n/a	n/a	3.1	4.5	34.8	0.0	0.0	15.6
46	Nairobi	Kenya	20.3	n/a	n/a	0.0	0.0	21.8	18.1	0.0	0.0

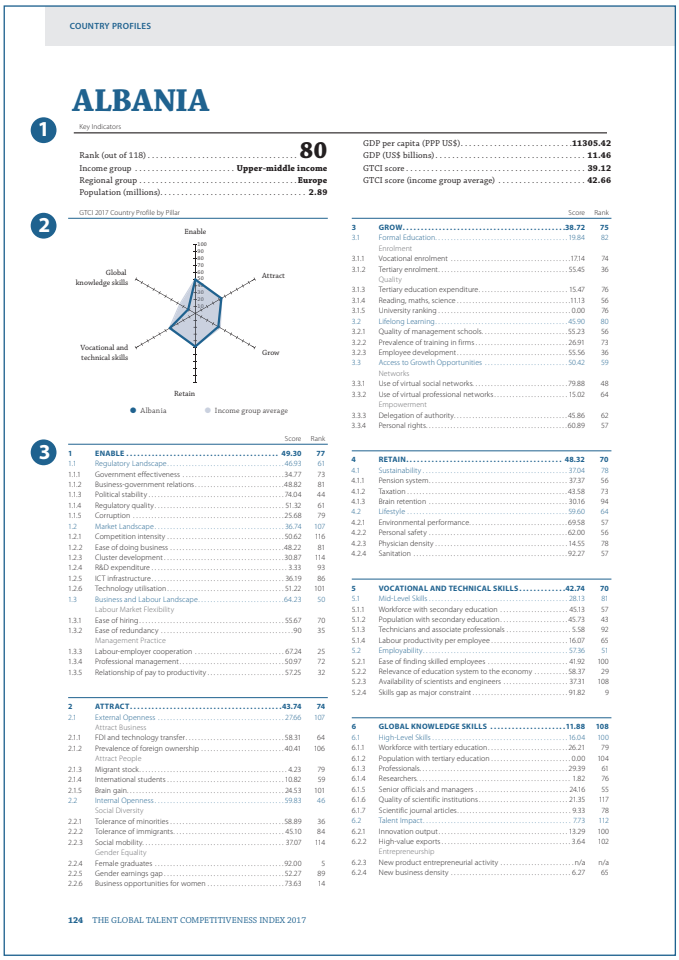
Annex 2 *(continued)*

GCTCI cities and rankings: Overall and by variable

3. GROW (CONT'D)		4. RETAIN				5. UTILISE SKILLS		6. BUILD GLOBAL KNOWLEDGE		
3.3 Tertiary enrolment	3.4 Individuals in social networks	4.1 Personal safety score	4.2 Physicians per 1,000 people	4.3 Monthly expenses for four-person family	4.4 Rent per month, 3-bedroom apt city centre	5.1 Labour force with second-ary education	5.2 Population with secondary education	6.1 Tertiary-educated workforce	6.2 Tertiary-educated population	6.3 Airport connectivity
88.8	97.4	90.0	51.5	46.9	65.3	40.8	41.1	65.7	95.2	68.7
30.3	23.7	77.0	60.3	0.0	43.4	62.0	53.2	47.6	64.8	100.0
87.3	81.6	77.7	51.5	53.9	71.8	45.7	43.3	72.7	47.7	39.2
84.6	n/a	77.0	29.4	31.1	0.0	28.4	59.5	100.0	100.0	18.0
54.5	86.8	49.4	44.1	55.3	83.1	57.4	55.8	52.8	100.0	15.6
100.0	57.9	59.1	51.5	68.9	81.8	23.2	23.2	75.5	93.2	20.7
50.8	23.7	68.2	45.6	46.8	62.2	52.6	44.6	46.5	44.7	42.4
84.6	n/a	69.9	16.2	50.7	44.9	28.4	59.5	100.0	53.7	27.4
55.3	63.2	83.7	20.6	65.2	83.6	50.0	50.0	43.5	61.2	27.4
62.9	n/a	37.4	n/a	51.1	64.2	41.9	27.1	61.3	34.5	68.7
40.9	81.6	58.6	n/a	68.1	87.7	53.6	49.3	51.8	61.0	4.2
77.1	n/a	83.4	n/a	49.3	42.3	44.9	32.4	46.7	57.1	10.6
53.9	28.9	60.4	58.8	65.1	82.1	76.0	65.0	35.9	44.7	7.7
84.6	n/a	65.1	36.8	28.6	0.0	28.4	59.5	100.0	53.7	8.9
14.5	15.8	89.0	88.2	62.8	76.0	70.1	74.2	41.4	51.8	18.3
54.2	89.5	78.4	n/a	46.6	28.8	51.5	31.8	54.8	40.9	11.7
38.9	57.9	35.3	n/a	66.0	81.5	53.1	49.3	45.9	74.0	12.5
80.9	21.1	97.0	58.8	68.8	85.9	16.8	17.4	79.9	92.7	17.2
n/a	65.8	100.0	16.2	54.7	25.7	63.2	13.0	38.3	79.7	13.3
80.1	55.3	80.0	48.5	67.4	83.7	17.3	15.7	57.3	69.9	35.5
78.5	21.1	79.2	41.2	88.6	96.3	100.0	100.0	27.5	38.6	0.9
68.1	44.7	86.9	35.3	76.6	93.8	68.1	n/a	53.1	70.3	6.3
36.0	26.3	61.7	38.2	n/a	92.2	84.2	87.6	25.8	37.9	14.7
64.8	n/a	71.0	20.6	90.1	93.9	86.2	90.1	41.4	47.7	7.1
71.0	76.3	51.1	30.9	53.4	67.6	48.7	16.1	51.2	64.2	16.3
71.6	10.5	58.2	47.1	62.7	87.3	60.9	58.2	20.7	28.1	26.0
46.9	15.8	65.9	27.9	65.2	90.0	63.8	63.4	45.2	54.8	22.4
35.3	34.2	n/a	44.1	n/a	86.3	85.7	89.6	26.6	38.8	1.4
57.2	50.0	63.6	32.4	77.7	96.3	77.5	63.7	41.6	51.1	10.9
69.9	42.1	n/a	44.1	68.8	96.6	24.8	24.1	55.2	66.9	0.0
54.8	5.3	67.6	39.7	58.1	67.4	57.7	38.0	16.5	14.6	19.9
9.6	28.9	76.7	100.0	59.3	38.6	n/a	16.9	n/a	32.2	79.2
71.4	n/a	53.1	33.8	74.4	93.3	46.2	29.1	21.6	16.7	4.6
65.9	n/a	38.8	n/a	77.1	93.2	74.7	40.4	19.9	19.6	3.9
47.6	0.0	32.9	38.2	65.1	89.3	59.5	55.8	16.5	22.4	5.1
16.9	89.5	90.8	23.5	58.4	33.5	28.3	22.6	14.0	26.5	44.9
21.2	n/a	62.2	25.0	73.2	65.7	29.4	4.2	n/a	4.6	2.6
24.4	n/a	25.8	60.3	94.1	100.0	42.1	n/a	19.0	n/a	2.0
23.4	n/a	52.9	n/a	89.0	89.4	54.9	9.7	26.8	16.2	5.4
34.8	50.0	79.9	38.2	n/a	87.9	31.9	0.0	22.2	12.6	16.2
14.7	n/a	51.6	n/a	85.7	90.5	31.9	60.5	13.9	0.0	5.7
20.1	n/a	45.4	26.5	76.3	87.2	40.8	29.4	15.2	12.8	4.1
22.8	100.0	48.6	16.2	61.9	73.2	15.0	6.0	18.8	16.0	3.1
19.5	n/a	72.0	0.0	100.0	82.9	39.3	n/a	1.1	n/a	1.9
11.4	n/a	36.3	n/a	93.7	93.4	0.0	n/a	0.0	n/a	2.5
0.0	n/a	15.8	n/a	85.9	85.2	29.8	4.8	n/a	n/a	1.9

Country Profiles

How to Read the Country Profiles



COUNTRY PROFILES

ALBANIA

1 Key Indicators

Rank (out of 118) 80
Income group ..... Upper-middle income
Regional group ..... Europe
Population (millions) 2.89

GDP per capita (PPP US$) 11305.42
GDP (US$ billions) 11.46
GTCI score 39.12
GTCI score (income group average) 42.66

2 GTCI 2017 Country Profile by Pillar

3

		Score	Rank
1	ENABLE	49.30	77
1.1	Regulatory Landscape	46.93	61
1.1.1	Government effectiveness	34.77	73
1.1.2	Business-government relations	48.82	81
1.1.3	Political stability	74.04	44
1.1.4	Regulatory quality	51.32	61
1.1.5	Corruption	25.68	79
1.2	Market Landscape	36.74	107
1.2.1	Competition intensity	50.62	116
1.2.2	Ease of doing business	48.22	81
1.2.3	Cluster development	30.87	114
1.2.4	R&D expenditure	3.33	93
1.2.5	ICT infrastructure	36.19	86
1.2.6	Technology utilisation	51.22	101
1.3	Business and Labour Landscape	64.23	50
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	.90	35
	Management Practice		
1.3.3	Labour-employer cooperation	67.24	25
1.3.4	Professional management	50.97	72
1.3.5	Relationship of pay to productivity	57.25	32
2	ATTRACT	43.74	74
2.1	External Openness	27.66	107
	Attract Business		
2.1.1	FDI and technology transfer	58.31	64
2.1.2	Prevalence of foreign ownership	40.41	106
	Attract People		
2.1.3	Migrant stock	4.23	79
2.1.4	International students	10.82	59
2.1.5	Brain gain	24.53	101
2.2	Internal Openness	59.83	46
	Social Diversity		
2.2.1	Tolerance of minorities	58.89	36
2.2.2	Tolerance of immigrants	45.10	84
2.2.3	Social mobility	37.07	114
	Gender Equality		
2.2.4	Female graduates	92.00	5
2.2.5	Gender earnings gap	52.27	89
2.2.6	Business opportunities for women	73.63	14
3	GROW	38.72	75
3.1	Formal Education	19.84	82
	Enrolment		
3.1.1	Vocational enrolment	17.14	74
3.1.2	Tertiary enrolment	55.45	36
	Quality		
3.1.3	Tertiary education expenditure	15.47	76
3.1.4	Reading, maths, science	11.13	56
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	45.90	80
3.2.1	Quality of management schools	55.23	56
3.2.2	Prevalence of training in firms	26.91	73
3.2.3	Employee development	55.56	36
3.3	Access to Growth Opportunities	50.42	59
	Networks		
3.3.1	Use of virtual social networks	79.88	48
3.3.2	Use of virtual professional networks	15.02	64
	Empowerment		
3.3.3	Delegation of authority	45.86	62
3.3.4	Personal rights	60.89	57
4	RETAIN	48.32	70
4.1	Sustainability	37.04	78
4.1.1	Pension system	37.37	56
4.1.2	Taxation	43.58	73
4.1.3	Brain retention	30.16	94
4.2	Lifestyle	59.60	64
4.2.1	Environmental performance	69.58	57
4.2.2	Personal safety	62.00	56
4.2.3	Physician density	14.55	78
4.2.4	Sanitation	92.27	57
5	VOCATIONAL AND TECHNICAL SKILLS	42.74	70
5.1	Mid-Level Skills	28.13	81
5.1.1	Workforce with secondary education	45.13	57
5.1.2	Population with secondary education	45.73	43
5.1.3	Technicians and associate professionals	5.58	92
5.1.4	Labour productivity per employee	16.07	65
5.2	Employability	57.36	51
5.2.1	Ease of finding skilled employees	41.92	100
5.2.2	Relevance of education system to the economy	58.37	29
5.2.3	Availability of scientists and engineers	37.31	108
5.2.4	Skills gap as major constraint	91.82	9
6	GLOBAL KNOWLEDGE SKILLS	11.88	108
6.1	High-Level Skills	16.04	100
6.1.1	Workforce with tertiary education	26.21	79
6.1.2	Population with tertiary education	0.00	104
6.1.3	Professionals	29.39	61
6.1.4	Researchers	1.82	76
6.1.5	Senior officials and managers	24.16	55
6.1.6	Quality of scientific institutions	21.35	117
6.1.7	Scientific journal articles	9.33	78
6.2	Talent Impact	7.73	112
6.2.1	Innovation output	13.29	100
6.2.2	High-value exports	3.64	102
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	6.27	65

124 THE GLOBAL TALENT COMPETITIVENESS INDEX 2017

The country profiles provide more granular information on how each of the 118 countries performs in the various dimensions of the Global Talent Competitiveness Index (GTCI).

Each country profile consists of three parts:

1. Key indicators,
2. Radar chart, and
3. Scores and Ranks.

1 The first section introduces the country's key indicators. It comprises its rank within the GTCI (out of 118 countries), its income group (based on the World Bank's Income Group Classification as of June 2016), and its regional group (based on the United Nations' sub-regional groups). Additionally, basic indicators are included to put the country review in context. These include population (in millions), GDP per capita (PPP US$), and GDP (current US$ in billions) from the World Bank's World Development Indicators. Finally, it presents the country's GTCI score and income group average GTCI score.[1]

2 The second section presents a radar chart that outlines the respective country's performance along the six pillars of the GTCI and its position with respect to its income group peers. The dark blue line plots the country's score on each of the six pillars, while the shaded area represents the average scores for its corresponding income group.

3 The third section lays out the country's normalised scores and ranks across all pillars, sub-pillars, and variables. The pillars are identified by a bold single digit notation (e.g., 1 ENABLE) and sub-pillars by a two-digit notation (e.g., 1.1 Regulatory Landscape). Under selected sub-pillars, components are provided in grey. There are no values attached to the components, as they only contextualise the theoretical framework. The 65 variables are indicated by a three-digit notation (e.g., 1.1.1 Government effectiveness).

For more information about variable definitions and the method of calculation, please refer to the Sources and Definitions and Technical Notes sections in the Appendices.

ENDNOTE

1 The GDP per capita indicator for Argentina is drawn from the International Monetary Fund's World Economic Outlook, April 2016. Its income group was published by the World Bank after the rest of the index was finalised and has been updated accordingly.

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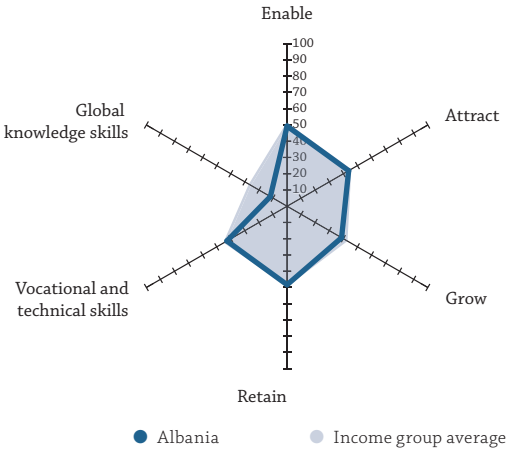
ALBANIA

Key Indicators

Rank (out of 118)	**80**
Income group	**Upper-middle income**
Regional group	**Europe**
Population (millions)	**2.89**
GDP per capita (PPP US$)	**11,305.42**
GDP (US$ billions)	**11.46**
GTCI score	**39.12**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**49.30**	**77**
1.1	Regulatory Landscape	46.93	61
1.1.1	Government effectiveness	34.77	73
1.1.2	Business-government relations	48.82	81
1.1.3	Political stability	74.04	44
1.1.4	Regulatory quality	51.32	61
1.1.5	Corruption	25.68	79
1.2	Market Landscape	36.74	107
1.2.1	Competition intensity	50.62	116
1.2.2	Ease of doing business	48.22	81
1.2.3	Cluster development	30.87	114
1.2.4	R&D expenditure	3.33	93
1.2.5	ICT infrastructure	36.19	86
1.2.6	Technology utilisation	51.22	101
1.3	Business and Labour Landscape	64.23	50
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	90	35
	Management Practice		
1.3.3	Labour-employer cooperation	67.24	25
1.3.4	Professional management	50.97	72
1.3.5	Relationship of pay to productivity	57.25	32

2	**ATTRACT**	**43.74**	**74**
2.1	External Openness	27.66	107
	Attract Business		
2.1.1	FDI and technology transfer	58.31	64
2.1.2	Prevalence of foreign ownership	40.41	106
	Attract People		
2.1.3	Migrant stock	4.23	79
2.1.4	International students	10.82	59
2.1.5	Brain gain	24.53	101
2.2	Internal Openness	59.83	46
	Social Diversity		
2.2.1	Tolerance of minorities	58.89	36
2.2.2	Tolerance of immigrants	45.10	84
2.2.3	Social mobility	37.07	114
	Gender Equality		
2.2.4	Female graduates	92.00	5
2.2.5	Gender earnings gap	52.27	89
2.2.6	Business opportunities for women	73.63	14

3	**GROW**	**38.72**	**75**
3.1	Formal Education	19.84	82
	Enrolment		
3.1.1	Vocational enrolment	17.14	74
3.1.2	Tertiary enrolment	55.45	36
	Quality		
3.1.3	Tertiary education expenditure	15.47	76
3.1.4	Reading, maths, science	11.13	56
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	45.90	80
3.2.1	Quality of management schools	55.23	56
3.2.2	Prevalence of training in firms	26.91	73
3.2.3	Employee development	55.56	36
3.3	Access to Growth Opportunities	50.42	59
	Networks		
3.3.1	Use of virtual social networks	79.88	48
3.3.2	Use of virtual professional networks	15.02	64
	Empowerment		
3.3.3	Delegation of authority	45.86	62
3.3.4	Personal rights	60.89	57

4	**RETAIN**	**48.32**	**70**
4.1	Sustainability	37.04	78
4.1.1	Pension system	37.37	56
4.1.2	Taxation	43.58	73
4.1.3	Brain retention	30.16	94
4.2	Lifestyle	59.60	64
4.2.1	Environmental performance	69.58	57
4.2.2	Personal safety	62.00	56
4.2.3	Physician density	14.55	78
4.2.4	Sanitation	92.27	57

5	**VOCATIONAL AND TECHNICAL SKILLS**	**42.74**	**70**
5.1	Mid-Level Skills	28.13	81
5.1.1	Workforce with secondary education	45.13	57
5.1.2	Population with secondary education	45.73	43
5.1.3	Technicians and associate professionals	5.58	92
5.1.4	Labour productivity per employee	16.07	65
5.2	Employability	57.36	51
5.2.1	Ease of finding skilled employees	41.92	100
5.2.2	Relevance of education system to the economy	58.37	29
5.2.3	Availability of scientists and engineers	37.31	108
5.2.4	Skills gap as major constraint	91.82	9

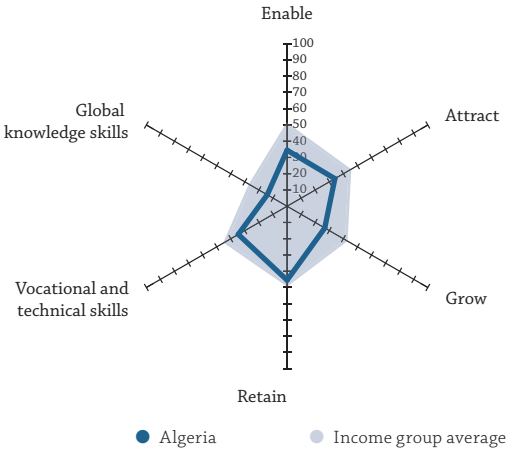
6	**GLOBAL KNOWLEDGE SKILLS**	**11.88**	**108**
6.1	High-Level Skills	16.04	100
6.1.1	Workforce with tertiary education	26.21	79
6.1.2	Population with tertiary education	0.00	104
6.1.3	Professionals	29.39	61
6.1.4	Researchers	1.82	76
6.1.5	Senior officials and managers	24.16	55
6.1.6	Quality of scientific institutions	21.35	117
6.1.7	Scientific journal articles	9.33	78
6.2	Talent Impact	7.73	112
6.2.1	Innovation output	13.29	100
6.2.2	High-value exports	3.64	102
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	6.27	65

ALGERIA

Key Indicators

Rank (out of 118)	**107**
Income group	**Upper-middle income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**39.67**
GDP per capita (PPP US$)	**14,687.39**
GDP (US$ billions)	**166.84**
GTCI score	**31.57**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**34.47**	**113**
1.1	Regulatory Landscape	28.42	107
1.1.1	Government effectiveness	22.06	99
1.1.2	Business-government relations	45.64	89
1.1.3	Political stability	32.18	111
1.1.4	Regulatory quality	16.56	115
1.1.5	Corruption	25.68	79
1.2	Market Landscape	29.22	117
1.2.1	Competition intensity	45.70	117
1.2.2	Ease of doing business	19.70	114
1.2.3	Cluster development	36.05	96
1.2.4	R&D expenditure	1.43	99
1.2.5	ICT infrastructure	33.25	91
1.2.6	Technology utilisation	39.17	118
1.3	Business and Labour Landscape	45.76	106
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	60	81
	Management Practice		
1.3.3	Labour-employer cooperation	42.87	109
1.3.4	Professional management	32.17	116
1.3.5	Relationship of pay to productivity	38.09	105

2	**ATTRACT**	**33.94**	**112**
2.1	External Openness	22.39	115
	Attract Business		
2.1.1	FDI and technology transfer	46.09	104
2.1.2	Prevalence of foreign ownership	37.81	114
	Attract People		
2.1.3	Migrant stock	1.19	99
2.1.4	International students	3.13	77
2.1.5	Brain gain	23.75	107
2.2	Internal Openness	45.49	103
	Social Diversity		
2.2.1	Tolerance of minorities	23.33	97
2.2.2	Tolerance of immigrants	42.46	89
2.2.3	Social mobility	42.35	106
	Gender Equality		
2.2.4	Female graduates	85.79	16
2.2.5	Gender earnings gap	16.19	116
2.2.6	Business opportunities for women	62.78	43

3	**GROW**	**26.76**	**113**
3.1	Formal Education	18.22	87
	Enrolment		
3.1.1	Vocational enrolment	17.84	72
3.1.2	Tertiary enrolment	29.05	72
	Quality		
3.1.3	Tertiary education expenditure	25.99	40
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	31.83	115
3.2.1	Quality of management schools	39.39	106
3.2.2	Prevalence of training in firms	18.34	83
3.2.3	Employee development	37.76	110
3.3	Access to Growth Opportunities	30.22	113
	Networks		
3.3.1	Use of virtual social networks	61.41	108
3.3.2	Use of virtual professional networks	7.01	86
	Empowerment		
3.3.3	Delegation of authority	35.48	110
3.3.4	Personal rights	16.99	111

4	**RETAIN**	**45.49**	**75**
4.1	Sustainability	34.38	95
4.1.1	Pension system	36.36	58
4.1.2	Taxation	42.39	78
4.1.3	Brain retention	24.40	107
4.2	Lifestyle	56.59	68
4.2.1	Environmental performance	61.93	74
4.2.2	Personal safety	63.18	54
4.2.3	Physician density	15.36	75
4.2.4	Sanitation	85.91	69

5	**VOCATIONAL AND TECHNICAL SKILLS**	**34.66**	**96**
5.1	Mid-Level Skills	22.82	90
5.1.1	Workforce with secondary education	27.02	80
5.1.2	Population with secondary education	24.29	77
5.1.3	Technicians and associate professionals	15.74	81
5.1.4	Labour productivity per employee	24.22	50
5.2	Employability	46.50	93
5.2.1	Ease of finding skilled employees	47.65	70
5.2.2	Relevance of education system to the economy	38.60	79
5.2.3	Availability of scientists and engineers	48.67	71
5.2.4	Skills gap as major constraint	51.07	79

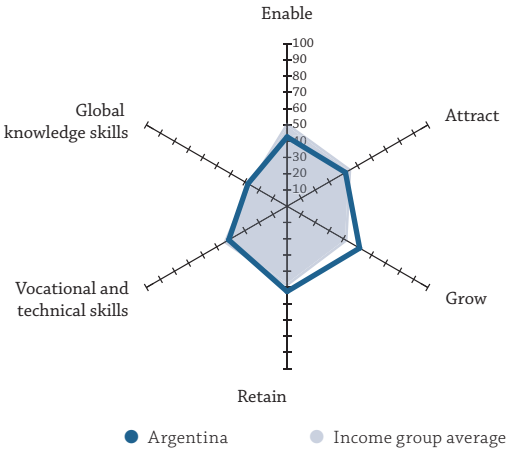
6	**GLOBAL KNOWLEDGE SKILLS**	**14.09**	**102**
6.1	High-Level Skills	18.72	88
6.1.1	Workforce with tertiary education	24.43	81
6.1.2	Population with tertiary education	12.68	80
6.1.3	Professionals	33.33	54
6.1.4	Researchers	1.96	71
6.1.5	Senior officials and managers	13.48	73
6.1.6	Quality of scientific institutions	33.10	102
6.1.7	Scientific journal articles	12.03	71
6.2	Talent Impact	9.47	108
6.2.1	Innovation output	6.82	116
6.2.2	High-value exports	0.44	115
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	27.41	67
6.2.4	New business density	3.19	79

ARGENTINA

Key Indicators

Rank (out of 118)	**64**
Income group	**Upper-middle income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**43.42**
GDP per capita (PPP US$)	**22,303.21**
GDP (US$ billions)	**548.05**
GTCI score	**42.89**
GTCI score (income group average)	**42.89**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**42.65**	**99**
1.1	Regulatory Landscape	29.65	105
1.1.1	Government effectiveness	31.56	81
1.1.2	Business-government relations	12.87	117
1.1.3	Political stability	63.91	60
1.1.4	Regulatory quality	19.66	114
1.1.5	Corruption	20.27	93
1.2	Market Landscape	42.94	90
1.2.1	Competition intensity	54.93	110
1.2.2	Ease of doing business	41.04	98
1.2.3	Cluster development	34.60	103
1.2.4	R&D expenditure	13.57	53
1.2.5	ICT infrastructure	63.04	55
1.2.6	Technology utilisation	50.47	104
1.3	Business and Labour Landscape	55.36	79
	Labour Market Flexibility		
1.3.1	Ease of hiring	44.33	95
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	43.45	107
1.3.4	Professional management	55.73	54
1.3.5	Relationship of pay to productivity	33.30	113

2	**ATTRACT**	**41.49**	**88**
2.1	External Openness	30.92	86
	Attract Business		
2.1.1	FDI and technology transfer	33.25	116
2.1.2	Prevalence of foreign ownership	54.96	70
	Attract People		
2.1.3	Migrant stock	10.45	53
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	25.02	98
2.2	Internal Openness	52.07	87
	Social Diversity		
2.2.1	Tolerance of minorities	52.22	45
2.2.2	Tolerance of immigrants	81.49	24
2.2.3	Social mobility	44.66	99
	Gender Equality		
2.2.4	Female graduates	90.97	7
2.2.5	Gender earnings gap	0.00	117
2.2.6	Business opportunities for women	43.06	112

		Score	Rank
3	**GROW**	**51.53**	**33**
3.1	Formal Education	37.04	44
	Enrolment		
3.1.1	Vocational enrolment	29.36	57
3.1.2	Tertiary enrolment	71.67	13
	Quality		
3.1.3	Tertiary education expenditure	23.68	50
3.1.4	Reading, maths, science	11.94	54
3.1.5	University ranking	48.57	28
3.2	Lifelong Learning	62.93	27
3.2.1	Quality of management schools	63.05	33
3.2.2	Prevalence of training in firms	79.42	8
3.2.3	Employee development	46.34	76
3.3	Access to Growth Opportunities	54.62	45
	Networks		
3.3.1	Use of virtual social networks	79.48	51
3.3.2	Use of virtual professional networks	30.81	29
	Empowerment		
3.3.3	Delegation of authority	41.89	84
3.3.4	Personal rights	66.28	50

4	**RETAIN**	**52.45**	**61**
4.1	Sustainability	34.11	97
4.1.1	Pension system	41.41	54
4.1.2	Taxation	19.41	118
4.1.3	Brain retention	41.52	59
4.2	Lifestyle	70.79	39
4.2.1	Environmental performance	79.77	42
4.2.2	Personal safety	57.77	65
4.2.3	Physician density	49.72	15
4.2.4	Sanitation	95.91	43

5	**VOCATIONAL AND TECHNICAL SKILLS**	**41.47**	**73**
5.1	Mid-Level Skills	44.78	49
5.1.1	Workforce with secondary education	52.79	42
5.1.2	Population with secondary education	n/a	n/a
5.1.3	Technicians and associate professionals	63.45	29
5.1.4	Labour productivity per employee	18.10	60
5.2	Employability	38.15	115
5.2.1	Ease of finding skilled employees	51.92	58
5.2.2	Relevance of education system to the economy	34.56	95
5.2.3	Availability of scientists and engineers	41.60	94
5.2.4	Skills gap as major constraint	24.53	90

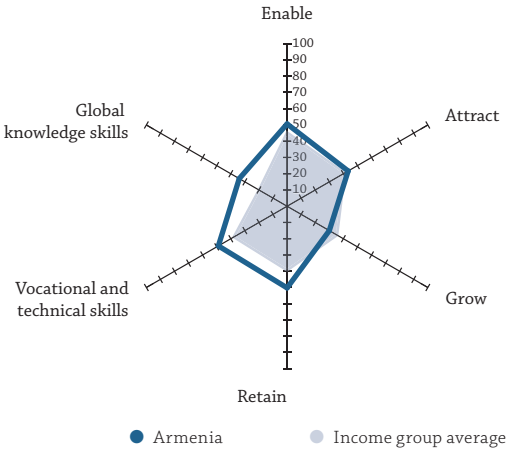
6	**GLOBAL KNOWLEDGE SKILLS**	**27.76**	**62**
6.1	High-Level Skills	36.30	44
6.1.1	Workforce with tertiary education	33.66	61
6.1.2	Population with tertiary education	n/a	n/a
6.1.3	Professionals	12.12	86
6.1.4	Researchers	14.74	43
6.1.5	Senior officials and managers	1.12	96
6.1.6	Quality of scientific institutions	56.14	36
6.1.7	Scientific journal articles	16.12	63
6.2	Talent Impact	19.21	80
6.2.1	Innovation output	29.62	61
6.2.2	High-value exports	8.10	91
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	36.81	58
6.2.4	New business density	2.32	85

ARMENIA

Key Indicators

Rank (out of 118)	**65**
Income group	**Lower-middle income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**3.02**
GDP per capita (PPP US$)	**8,393.51**
GDP (US$ billions)	**10.56**
GTCI score	**42.84**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**50.63**	**72**
1.1	Regulatory Landscape	42.99	81
1.1.1	Government effectiveness	31.93	80
1.1.2	Business-government relations	50.82	75
1.1.3	Political stability	56.77	76
1.1.4	Regulatory quality	51.13	62
1.1.5	Corruption	24.32	85
1.2	Market Landscape	47.86	72
1.2.1	Competition intensity	63.51	79
1.2.2	Ease of doing business	74.69	33
1.2.3	Cluster development	36.18	95
1.2.4	R&D expenditure	5.48	78
1.2.5	ICT infrastructure	56.39	64
1.2.6	Technology utilisation	50.91	102
1.3	Business and Labour Landscape	61.05	59
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	90	35
	Management Practice		
1.3.3	Labour-employer cooperation	60.43	41
1.3.4	Professional management	46.79	82
1.3.5	Relationship of pay to productivity	52.34	56
2	**ATTRACT**	**43.37**	**77**
2.1	External Openness	33.33	76
	Attract Business		
2.1.1	FDI and technology transfer	55.02	75
2.1.2	Prevalence of foreign ownership	50.82	88
	Attract People		
2.1.3	Migrant stock	13.82	48
2.1.4	International students	20.44	37
2.1.5	Brain gain	26.56	91
2.2	Internal Openness	53.41	77
	Social Diversity		
2.2.1	Tolerance of minorities	47.78	54
2.2.2	Tolerance of immigrants	47.33	81
2.2.3	Social mobility	44.45	100
	Gender Equality		
2.2.4	Female graduates	72.07	51
2.2.5	Gender earnings gap	48.62	96
2.2.6	Business opportunities for women	60.19	54

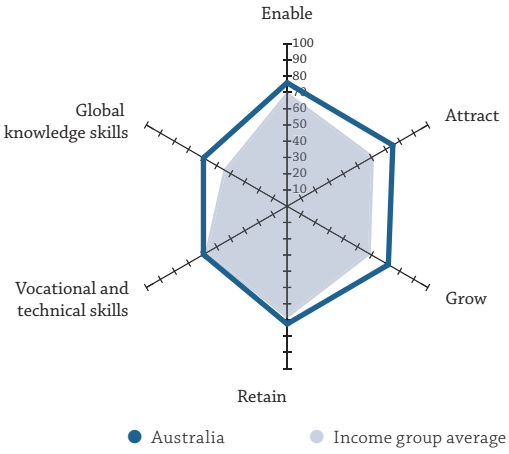
		Score	Rank
3	**GROW**	**30.00**	**109**
3.1	Formal Education	16.90	92
	Enrolment		
3.1.1	Vocational enrolment	23.32	64
3.1.2	Tertiary enrolment	40.36	56
	Quality		
3.1.3	Tertiary education expenditure	3.93	98
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	32.36	114
3.2.1	Quality of management schools	40.73	104
3.2.2	Prevalence of training in firms	16.89	84
3.2.3	Employee development	39.46	101
3.3	Access to Growth Opportunities	40.74	94
	Networks		
3.3.1	Use of virtual social networks	78.47	57
3.3.2	Use of virtual professional networks	7.84	82
	Empowerment		
3.3.3	Delegation of authority	39.55	94
3.3.4	Personal rights	37.12	90
4	**RETAIN**	**50.23**	**63**
4.1	Sustainability	33.30	99
4.1.1	Pension system	31.31	64
4.1.2	Taxation	41.40	83
4.1.3	Brain retention	27.17	103
4.2	Lifestyle	67.16	47
4.2.1	Environmental performance	83.05	36
4.2.2	Personal safety	62.84	55
4.2.3	Physician density	34.68	43
4.2.4	Sanitation	88.07	65
5	**VOCATIONAL AND TECHNICAL SKILLS**	**48.83**	**51**
5.1	Mid-Level Skills	42.36	56
5.1.1	Workforce with secondary education	57.10	32
5.1.2	Population with secondary education	61.17	23
5.1.3	Technicians and associate professionals	42.13	49
5.1.4	Labour productivity per employee	9.02	80
5.2	Employability	55.30	59
5.2.1	Ease of finding skilled employees	36.68	110
5.2.2	Relevance of education system to the economy	40.85	72
5.2.3	Availability of scientists and engineers	51.87	57
5.2.4	Skills gap as major constraint	91.82	9
6	**GLOBAL KNOWLEDGE SKILLS**	**33.99**	**47**
6.1	High-Level Skills	49.83	25
6.1.1	Workforce with tertiary education	81.23	4
6.1.2	Population with tertiary education	73.37	3
6.1.3	Professionals	45.76	34
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	25.28	53
6.1.6	Quality of scientific institutions	35.93	96
6.1.7	Scientific journal articles	37.42	44
6.2	Talent Impact	18.16	83
6.2.1	Innovation output	35.73	50
6.2.2	High-value exports	10.10	81
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	8.65	55

AUSTRALIA

Key Indicators

Rank (out of 118)	**6**
Income group	**High income**
Regional group	**Eastern, Southeastern Asia and Oceania**
Population (millions)	**23.78**
GDP per capita (PPP US$)	**45,514.18**
GDP (US$ billions)	**1,339.54**
GTCI score	**69.06**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**75.97**	**17**
1.1	Regulatory Landscape	82.38	13
1.1.1	Government effectiveness	82.62	15
1.1.2	Business-government relations	64.71	37
1.1.3	Political stability	89.53	12
1.1.4	Regulatory quality	91.24	4
1.1.5	Corruption	83.78	13
1.2	Market Landscape	72.52	16
1.2.1	Competition intensity	82.21	7
1.2.2	Ease of doing business	85.99	11
1.2.3	Cluster development	51.04	38
1.2.4	R&D expenditure	53.33	14
1.2.5	ICT infrastructure	85.68	15
1.2.6	Technology utilisation	76.85	21
1.3	Business and Labour Landscape	73.03	17
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	.90	35
	Management Practice		
1.3.3	Labour-employer cooperation	55.65	62
1.3.4	Professional management	79.59	14
1.3.5	Relationship of pay to productivity	50.90	61

2	**ATTRACT**	**75.14**	**6**
2.1	External Openness	71.40	8
	Attract Business		
2.1.1	FDI and technology transfer	62.96	42
2.1.2	Prevalence of foreign ownership	75.58	13
	Attract People		
2.1.3	Migrant stock	62.11	12
2.1.4	International students	93.75	5
2.1.5	Brain gain	62.58	15
2.2	Internal Openness	78.88	11
	Social Diversity		
2.2.1	Tolerance of minorities	67.78	20
2.2.2	Tolerance of immigrants	98.17	2
2.2.3	Social mobility	84.55	5
	Gender Equality		
2.2.4	Female graduates	70.93	55
2.2.5	Gender earnings gap	84.37	17
2.2.6	Business opportunities for women	67.51	31

3	**GROW**	**71.95**	**9**
3.1	Formal Education	67.87	4
	Enrolment		
3.1.1	Vocational enrolment	73.59	12
3.1.2	Tertiary enrolment	77.84	6
	Quality		
3.1.3	Tertiary education expenditure	25.78	43
3.1.4	Reading, maths, science	76.06	13
3.1.5	University ranking	86.11	6
3.2	Lifelong Learning	66.87	22
3.2.1	Quality of management schools	71.53	18
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	62.20	23
3.3	Access to Growth Opportunities	81.12	9
	Networks		
3.3.1	Use of virtual social networks	83.92	31
3.3.2	Use of virtual professional networks	76.41	9
	Empowerment		
3.3.3	Delegation of authority	65.37	17
3.3.4	Personal rights	98.77	2

4	**RETAIN**	**72.46**	**14**
4.1	Sustainability	62.36	19
4.1.1	Pension system	90.91	15
4.1.2	Taxation	38.14	89
4.1.3	Brain retention	58.03	23
4.2	Lifestyle	82.56	13
4.2.1	Environmental performance	93.54	13
4.2.2	Personal safety	94.56	11
4.2.3	Physician density	42.13	28
4.2.4	Sanitation	100.00	1

5	**VOCATIONAL AND TECHNICAL SKILLS**	**59.43**	**25**
5.1	Mid-Level Skills	52.25	29
5.1.1	Workforce with secondary education	51.25	46
5.1.2	Population with secondary education	45.47	45
5.1.3	Technicians and associate professionals	64.47	28
5.1.4	Labour productivity per employee	47.80	12
5.2	Employability	66.61	19
5.2.1	Ease of finding skilled employees	65.68	19
5.2.2	Relevance of education system to the economy	68.54	13
5.2.3	Availability of scientists and engineers	65.62	17
5.2.4	Skills gap as major constraint	n/a	n/a

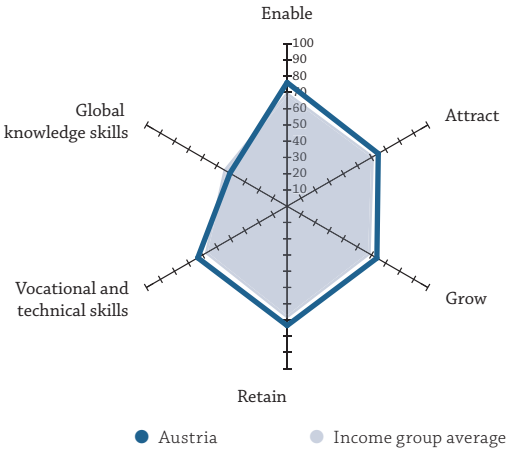
6	**GLOBAL KNOWLEDGE SKILLS**	**59.43**	**5**
6.1	High-Level Skills	62.21	8
6.1.1	Workforce with tertiary education	54.53	24
6.1.2	Population with tertiary education	49.24	12
6.1.3	Professionals	54.85	19
6.1.4	Researchers	52.31	15
6.1.5	Senior officials and managers	62.36	9
6.1.6	Quality of scientific institutions	80.26	8
6.1.7	Scientific journal articles	81.93	6
6.2	Talent Impact	56.65	7
6.2.1	Innovation output	58.71	23
6.2.2	High-value exports	37.77	17
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	43.76	44
6.2.4	New business density	86.36	4

AUSTRIA

Key Indicators

Rank (out of 118)	**18**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**8.61**
GDP per capita (PPP US$)	**47,824.19**
GDP (US$ billions)	**374.06**
GTCI score	**63.70**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



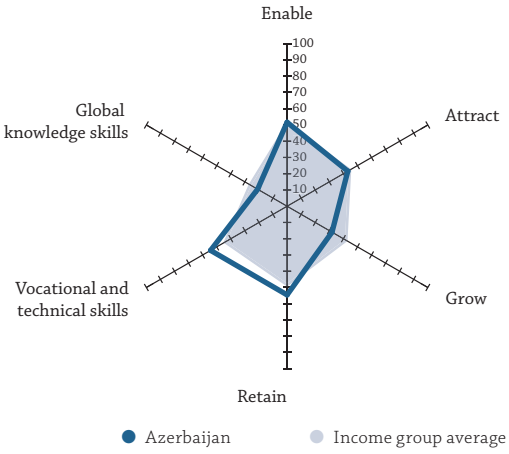
		Score	Rank
1	**ENABLE**	**76.13**	**16**
1.1	Regulatory Landscape	81.60	15
1.1.1	Government effectiveness	81.98	16
1.1.2	Business-government relations	69.33	30
1.1.3	Political stability	94.94	4
1.1.4	Regulatory quality	82.03	17
1.1.5	Corruption	79.73	16
1.2	Market Landscape	75.97	10
1.2.1	Competition intensity	78.88	13
1.2.2	Ease of doing business	82.71	19
1.2.3	Cluster development	65.42	14
1.2.4	R&D expenditure	67.14	9
1.2.5	ICT infrastructure	83.63	18
1.2.6	Technology utilisation	78.02	17
1.3	Business and Labour Landscape	70.83	22
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	60	81
	Management Practice		
1.3.3	Labour-employer cooperation	77.71	6
1.3.4	Professional management	73.38	22
1.3.5	Relationship of pay to productivity	54.07	45
2	**ATTRACT**	**64.78**	**19**
2.1	External Openness	59.55	14
	Attract Business		
2.1.1	FDI and technology transfer	61.29	50
2.1.2	Prevalence of foreign ownership	67.39	35
	Attract People		
2.1.3	Migrant stock	38.38	17
2.1.4	International students	80.68	9
2.1.5	Brain gain	50.00	29
2.2	Internal Openness	70.01	22
	Social Diversity		
2.2.1	Tolerance of minorities	60.00	34
2.2.2	Tolerance of immigrants	78.48	30
2.2.3	Social mobility	77.95	15
	Gender Equality		
2.2.4	Female graduates	67.72	66
2.2.5	Gender earnings gap	78.37	26
2.2.6	Business opportunities for women	57.51	68
3	**GROW**	**63.81**	**16**
3.1	Formal Education	62.98	9
	Enrolment		
3.1.1	Vocational enrolment	77.97	9
3.1.2	Tertiary enrolment	71.68	12
	Quality		
3.1.3	Tertiary education expenditure	43.01	16
3.1.4	Reading, maths, science	69.32	17
3.1.5	University ranking	52.91	24
3.2	Lifelong Learning	66.21	23
3.2.1	Quality of management schools	64.75	31
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	67.68	15
3.3	Access to Growth Opportunities	62.25	27
	Networks		
3.3.1	Use of virtual social networks	80.29	45
3.3.2	Use of virtual professional networks	19.26	51
	Empowerment		
3.3.3	Delegation of authority	61.06	22
3.3.4	Personal rights	88.40	12
4	**RETAIN**	**73.41**	**12**
4.1	Sustainability	58.80	27
4.1.1	Pension system	93.94	6
4.1.2	Taxation	26.17	112
4.1.3	Brain retention	56.30	26
4.2	Lifestyle	88.02	1
4.2.1	Environmental performance	92.46	18
4.2.2	Personal safety	97.32	7
4.2.3	Physician density	62.30	5
4.2.4	Sanitation	100.00	1
5	**VOCATIONAL AND TECHNICAL SKILLS**	**63.46**	**12**
5.1	Mid-Level Skills	69.30	5
5.1.1	Workforce with secondary education	72.01	20
5.1.2	Population with secondary education	70.27	12
5.1.3	Technicians and associate professionals	89.34	7
5.1.4	Labour productivity per employee	45.58	18
5.2	Employability	57.63	49
5.2.1	Ease of finding skilled employees	59.69	32
5.2.2	Relevance of education system to the economy	55.40	36
5.2.3	Availability of scientists and engineers	57.79	36
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**40.61**	**31**
6.1	High-Level Skills	46.58	28
6.1.1	Workforce with tertiary education	50.97	29
6.1.2	Population with tertiary education	26.13	53
6.1.3	Professionals	42.73	38
6.1.4	Researchers	56.77	11
6.1.5	Senior officials and managers	28.09	49
6.1.6	Quality of scientific institutions	67.97	25
6.1.7	Scientific journal articles	53.42	27
6.2	Talent Impact	34.64	34
6.2.1	Innovation output	61.58	18
6.2.2	High-value exports	26.10	39
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	46.80	38
6.2.4	New business density	4.06	77

AZERBAIJAN

Key Indicators

Rank (out of 118)	**66**
Income group	**Upper-middle income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**9.65**
GDP per capita (PPP US$)	**17,739.95**
GDP (US$ billions)	**53.05**
GTCI score	**42.76**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**51.65**	**67**
1.1	Regulatory Landscape	38.16	89
1.1.1	Government effectiveness	27.04	86
1.1.2	Business-government relations	59.58	59
1.1.3	Political stability	49.22	86
1.1.4	Regulatory quality	38.74	87
1.1.5	Corruption	16.22	100
1.2	Market Landscape	46.99	74
1.2.1	Competition intensity	55.81	108
1.2.2	Ease of doing business	62.30	59
1.2.3	Cluster development	40.08	87
1.2.4	R&D expenditure	4.76	82
1.2.5	ICT infrastructure	56.78	63
1.2.6	Technology utilisation	62.21	60
1.3	Business and Labour Landscape	69.79	26
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	90	35
	Management Practice		
1.3.3	Labour-employer cooperation	55.18	66
1.3.4	Professional management	46.88	81
1.3.5	Relationship of pay to productivity	56.91	33
2	**ATTRACT**	**43.14**	**80**
2.1	External Openness	35.02	66
	Attract Business		
2.1.1	FDI and technology transfer	61.48	49
2.1.2	Prevalence of foreign ownership	46.31	97
	Attract People		
2.1.3	Migrant stock	5.82	69
2.1.4	International students	11.58	57
2.1.5	Brain gain	49.90	30
2.2	Internal Openness	51.27	91
	Social Diversity		
2.2.1	Tolerance of minorities	36.67	75
2.2.2	Tolerance of immigrants	54.43	65
2.2.3	Social mobility	45.57	95
	Gender Equality		
2.2.4	Female graduates	58.96	74
2.2.5	Gender earnings gap	44.24	101
2.2.6	Business opportunities for women	67.74	29

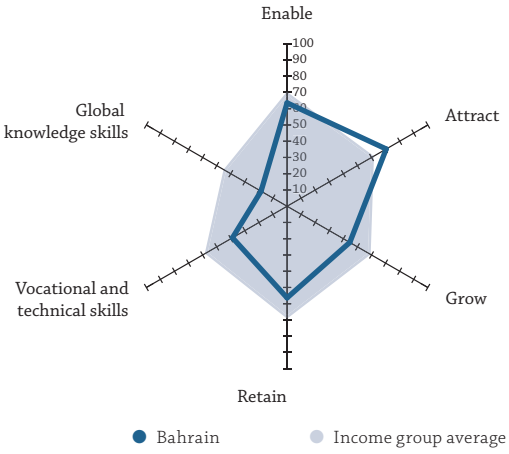
		Score	Rank
3	**GROW**	**31.91**	**101**
3.1	Formal Education	21.03	78
	Enrolment		
3.1.1	Vocational enrolment	42.30	36
3.1.2	Tertiary enrolment	18.32	86
	Quality		
3.1.3	Tertiary education expenditure	4.70	95
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	18.80	65
3.2	Lifelong Learning	35.21	111
3.2.1	Quality of management schools	37.89	109
3.2.2	Prevalence of training in firms	22.16	78
3.2.3	Employee development	45.56	78
3.3	Access to Growth Opportunities	39.49	96
	Networks		
3.3.1	Use of virtual social networks	85.43	25
3.3.2	Use of virtual professional networks	3.52	95
	Empowerment		
3.3.3	Delegation of authority	44.12	70
3.3.4	Personal rights	24.89	104
4	**RETAIN**	**54.55**	**55**
4.1	Sustainability	39.00	71
4.1.1	Pension system	34.34	59
4.1.2	Taxation	40.63	84
4.1.3	Brain retention	42.02	55
4.2	Lifestyle	70.10	42
4.2.1	Environmental performance	87.12	31
4.2.2	Personal safety	61.65	57
4.2.3	Physician density	43.80	25
4.2.4	Sanitation	87.84	66
5	**VOCATIONAL AND TECHNICAL SKILLS**	**54.34**	**36**
5.1	Mid-Level Skills	51.10	32
5.1.1	Workforce with secondary education	89.28	5
5.1.2	Population with secondary education	82.98	4
5.1.3	Technicians and associate professionals	14.72	83
5.1.4	Labour productivity per employee	17.42	63
5.2	Employability	57.57	50
5.2.1	Ease of finding skilled employees	42.94	97
5.2.2	Relevance of education system to the economy	34.82	94
5.2.3	Availability of scientists and engineers	52.79	51
5.2.4	Skills gap as major constraint	99.73	2
6	**GLOBAL KNOWLEDGE SKILLS**	**20.95**	**80**
6.1	High-Level Skills	30.58	59
6.1.1	Workforce with tertiary education	43.20	41
6.1.2	Population with tertiary education	42.56	19
6.1.3	Professionals	45.76	34
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	6.74	86
6.1.6	Quality of scientific institutions	40.48	82
6.1.7	Scientific journal articles	4.77	96
6.2	Talent Impact	11.32	104
6.2.1	Innovation output	17.41	94
6.2.2	High-value exports	10.99	72
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	5.57	70

BAHRAIN

Key Indicators

Rank (out of 118)	**47**
Income group	**High income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**1.38**
GDP per capita (PPP US$)	**46,946.34**
GDP (US$ billions)	**32.22**
GTCI score	**48.70**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



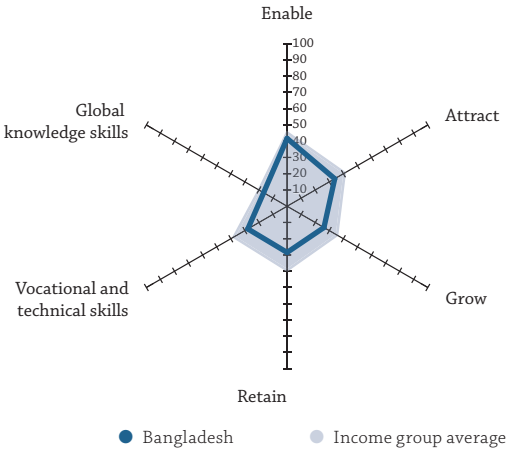
		Score	Rank
1	**ENABLE**	**63.58**	**31**
1.1	Regulatory Landscape	57.59	45
1.1.1	Government effectiveness	53.83	41
1.1.2	Business-government relations	87.42	10
1.1.3	Political stability	38.04	105
1.1.4	Regulatory quality	62.73	39
1.1.5	Corruption	45.95	46
1.2	Market Landscape	56.78	39
1.2.1	Competition intensity	71.47	46
1.2.2	Ease of doing business	60.39	61
1.2.3	Cluster development	57.51	25
1.2.4	R&D expenditure	0.71	101
1.2.5	ICT infrastructure	78.26	30
1.2.6	Technology utilisation	72.36	31
1.3	Business and Labour Landscape	76.37	15
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	80	46
	Management Practice		
1.3.3	Labour-employer cooperation	73.04	16
1.3.4	Professional management	64.75	28
1.3.5	Relationship of pay to productivity	64.05	9
2	**ATTRACT**	**70.42**	**10**
2.1	External Openness	74.67	6
	Attract Business		
2.1.1	FDI and technology transfer	64.98	30
2.1.2	Prevalence of foreign ownership	73.32	18
	Attract People		
2.1.3	Migrant stock	100.00	1
2.1.4	International students	68.88	12
2.1.5	Brain gain	66.17	11
2.2	Internal Openness	66.17	28
	Social Diversity		
2.2.1	Tolerance of minorities	26.67	88
2.2.2	Tolerance of immigrants	71.16	38
2.2.3	Social mobility	72.68	24
	Gender Equality		
2.2.4	Female graduates	78.89	28
2.2.5	Gender earnings gap	79.49	24
2.2.6	Business opportunities for women	68.12	28
3	**GROW**	**44.55**	**54**
3.1	Formal Education	23.77	70
	Enrolment		
3.1.1	Vocational enrolment	16.85	76
3.1.2	Tertiary enrolment	31.16	69
	Quality		
3.1.3	Tertiary education expenditure	n/a	n/a
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	23.31	54
3.2	Lifelong Learning	61.33	29
3.2.1	Quality of management schools	59.55	40
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	63.11	22
3.3	Access to Growth Opportunities	48.55	65
	Networks		
3.3.1	Use of virtual social networks	87.83	16
3.3.2	Use of virtual professional networks	30.63	30
	Empowerment		
3.3.3	Delegation of authority	49.57	43
3.3.4	Personal rights	26.16	102
4	**RETAIN**	**56.35**	**50**
4.1	Sustainability	54.49	33
4.1.1	Pension system	19.19	78
4.1.2	Taxation	81.50	4
4.1.3	Brain retention	62.77	16
4.2	Lifestyle	58.22	66
4.2.1	Environmental performance	61.53	75
4.2.2	Personal safety	60.66	60
4.2.3	Physician density	11.57	83
4.2.4	Sanitation	99.09	20
5	**VOCATIONAL AND TECHNICAL SKILLS**	**38.79**	**82**
5.1	Mid-Level Skills	19.81	94
5.1.1	Workforce with secondary education	10.45	95
5.1.2	Population with secondary education	2.65	103
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	46.34	16
5.2	Employability	57.76	48
5.2.1	Ease of finding skilled employees	57.88	37
5.2.2	Relevance of education system to the economy	59.90	26
5.2.3	Availability of scientists and engineers	55.50	40
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**18.50**	**90**
6.1	High-Level Skills	18.62	89
6.1.1	Workforce with tertiary education	15.70	88
6.1.2	Population with tertiary education	30.32	40
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	0.53	86
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	40.97	80
6.1.7	Scientific journal articles	5.60	89
6.2	Talent Impact	18.38	82
6.2.1	Innovation output	29.08	62
6.2.2	High-value exports	7.67	94
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	n/a	n/a

BANGLADESH

Key Indicators

Rank (out of 118)	**113**
Income group	**Lower-middle income**
Regional group	**Central and Southern Asia**
Population (millions)	**161**
GDP per capita (PPP US$)	**3,332.80**
GDP (US$ billions)	**195.08**
GTCI score	**29.12**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



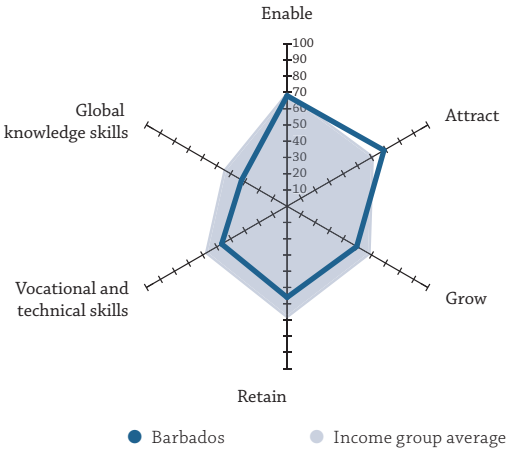
		Score	Rank
1	**ENABLE**	**41.70**	**101**
1.1	Regulatory Landscape	27.46	109
1.1.1	Government effectiveness	14.60	109
1.1.2	Business-government relations	49.21	80
1.1.3	Political stability	39.69	100
1.1.4	Regulatory quality	22.99	110
1.1.5	Corruption	10.81	112
1.2	Market Landscape	38.74	101
1.2.1	Competition intensity	66.31	71
1.2.2	Ease of doing business	14.64	117
1.2.3	Cluster development	45.98	58
1.2.4	R&D expenditure	n/a	n/a
1.2.5	ICT infrastructure	14.71	110
1.2.6	Technology utilisation	52.08	97
1.3	Business and Labour Landscape	58.90	66
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	60	81
	Management Practice		
1.3.3	Labour-employer cooperation	50.71	91
1.3.4	Professional management	42.19	99
1.3.5	Relationship of pay to productivity	41.62	92
2	**ATTRACT**	**33.85**	**113**
2.1	External Openness	23.69	114
	Attract Business		
2.1.1	FDI and technology transfer	45.67	106
2.1.2	Prevalence of foreign ownership	45.90	99
	Attract People		
2.1.3	Migrant stock	1.79	93
2.1.4	International students	0.31	94
2.1.5	Brain gain	24.78	100
2.2	Internal Openness	44.02	106
	Social Diversity		
2.2.1	Tolerance of minorities	14.44	109
2.2.2	Tolerance of immigrants	69.81	42
2.2.3	Social mobility	47.97	87
	Gender Equality		
2.2.4	Female graduates	32.41	92
2.2.5	Gender earnings gap	52.21	90
2.2.6	Business opportunities for women	47.25	101
3	**GROW**	**26.19**	**114**
3.1	Formal Education	8.91	110
	Enrolment		
3.1.1	Vocational enrolment	6.88	94
3.1.2	Tertiary enrolment	9.14	96
	Quality		
3.1.3	Tertiary education expenditure	1.45	105
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	18.16	67
3.2	Lifelong Learning	35.33	110
3.2.1	Quality of management schools	44.80	96
3.2.2	Prevalence of training in firms	24.41	77
3.2.3	Employee development	36.77	112
3.3	Access to Growth Opportunities	34.33	109
	Networks		
3.3.1	Use of virtual social networks	62.84	105
3.3.2	Use of virtual professional networks	0.88	110
	Empowerment		
3.3.3	Delegation of authority	27.39	117
3.3.4	Personal rights	46.21	78
4	**RETAIN**	**28.43**	**110**
4.1	Sustainability	26.48	115
4.1.1	Pension system	2.02	105
4.1.2	Taxation	48.89	44
4.1.3	Brain retention	28.53	100
4.2	Lifestyle	30.38	103
4.2.1	Environmental performance	8.72	116
4.2.2	Personal safety	53.27	69
4.2.3	Physician density	4.33	96
4.2.4	Sanitation	55.23	97
5	**VOCATIONAL AND TECHNICAL SKILLS**	**27.90**	**113**
5.1	Mid-Level Skills	3.60	112
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	n/a	n/a
5.1.3	Technicians and associate professionals	4.06	94
5.1.4	Labour productivity per employee	3.13	91
5.2	Employability	52.20	70
5.2.1	Ease of finding skilled employees	43.44	95
5.2.2	Relevance of education system to the economy	39.40	75
5.2.3	Availability of scientists and engineers	46.61	79
5.2.4	Skills gap as major constraint	79.36	44
6	**GLOBAL KNOWLEDGE SKILLS**	**16.67**	**94**
6.1	High-Level Skills	30.94	58
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	n/a	n/a
6.1.3	Professionals	17.27	80
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	70.22	7
6.1.6	Quality of scientific institutions	29.12	111
6.1.7	Scientific journal articles	7.16	84
6.2	Talent Impact	2.40	116
6.2.1	Innovation output	8.98	114
6.2.2	High-value exports	0.26	117
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	0.00	91
6.2.4	New business density	0.35	92

BARBADOS

Key Indicators

Rank (out of 118)	**36**
Income group	**High income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**0.28**
GDP per capita (PPP US$)	**16,390.86**
GDP (US$ billions)	**4.45**
GTCI score	**53.53**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**67.99**	**27**
1.1	Regulatory Landscape	72.21	23
1.1.1	Government effectiveness	72.23	22
1.1.2	Business-government relations	66.85	35
1.1.3	Political stability	96.28	3
1.1.4	Regulatory quality	53.49	59
1.1.5	Corruption	n/a	n/a
1.2	Market Landscape	62.40	31
1.2.1	Competition intensity	76.41	19
1.2.2	Ease of doing business	41.17	97
1.2.3	Cluster development	46.10	57
1.2.4	R&D expenditure	n/a	n/a
1.2.5	ICT infrastructure	81.46	22
1.2.6	Technology utilisation	66.86	43
1.3	Business and Labour Landscape	69.35	28
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	90	35
	Management Practice		
1.3.3	Labour-employer cooperation	64.28	29
1.3.4	Professional management	62.52	29
1.3.5	Relationship of pay to productivity	40.95	94
2	**ATTRACT**	**68.81**	**12**
2.1	External Openness	59.86	13
	Attract Business		
2.1.1	FDI and technology transfer	68.58	18
2.1.2	Prevalence of foreign ownership	74.41	15
	Attract People		
2.1.3	Migrant stock	26.61	31
2.1.4	International students	71.94	11
2.1.5	Brain gain	57.78	20
2.2	Internal Openness	77.76	14
	Social Diversity		
2.2.1	Tolerance of minorities	n/a	n/a
2.2.2	Tolerance of immigrants	n/a	n/a
2.2.3	Social mobility	74.85	20
	Gender Equality		
2.2.4	Female graduates	98.51	2
2.2.5	Gender earnings gap	64.93	49
2.2.6	Business opportunities for women	72.75	16

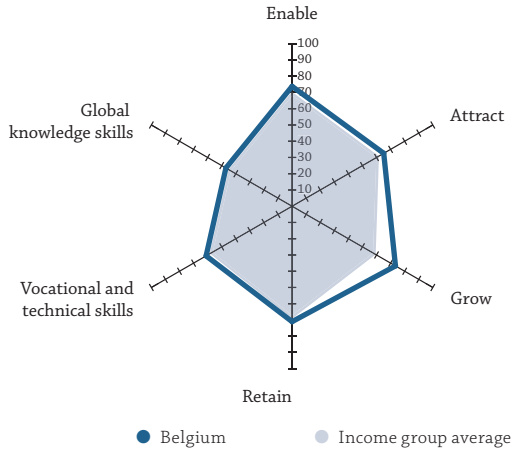
		Score	Rank
3	**GROW**	**49.48**	**38**
3.1	Formal Education	30.76	59
	Enrolment		
3.1.1	Vocational enrolment	0.69	109
3.1.2	Tertiary enrolment	58.01	30
	Quality		
3.1.3	Tertiary education expenditure	64.35	4
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	55.25	42
3.2.1	Quality of management schools	66.97	28
3.2.2	Prevalence of training in firms	42.35	47
3.2.3	Employee development	56.44	33
3.3	Access to Growth Opportunities	62.43	26
	Networks		
3.3.1	Use of virtual social networks	88.40	13
3.3.2	Use of virtual professional networks	51.45	16
	Empowerment		
3.3.3	Delegation of authority	47.42	53
3.3.4	Personal rights	n/a	n/a
4	**RETAIN**	**56.08**	**51**
4.1	Sustainability	61.42	21
4.1.1	Pension system	83.84	28
4.1.2	Taxation	46.41	54
4.1.3	Brain retention	54.01	29
4.2	Lifestyle	50.73	78
4.2.1	Environmental performance	33.33	107
4.2.2	Personal safety	n/a	n/a
4.2.3	Physician density	23.18	66
4.2.4	Sanitation	95.68	46
5	**VOCATIONAL AND TECHNICAL SKILLS**	**46.49**	**60**
5.1	Mid-Level Skills	32.57	70
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	n/a	n/a
5.1.3	Technicians and associate professionals	48.22	44
5.1.4	Labour productivity per employee	16.92	64
5.2	Employability	60.41	42
5.2.1	Ease of finding skilled employees	66.10	17
5.2.2	Relevance of education system to the economy	67.34	16
5.2.3	Availability of scientists and engineers	52.18	55
5.2.4	Skills gap as major constraint	56.03	72
6	**GLOBAL KNOWLEDGE SKILLS**	**32.33**	**50**
6.1	High-Level Skills	35.78	47
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	n/a	n/a
6.1.3	Professionals	34.55	53
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	50.56	13
6.1.6	Quality of scientific institutions	49.84	52
6.1.7	Scientific journal articles	8.19	80
6.2	Talent Impact	28.87	52
6.2.1	Innovation output	45.06	35
6.2.2	High-value exports	27.24	37
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	14.31	82
6.2.4	New business density	n/a	n/a

BELGIUM

Key Indicators

Rank (out of 118)	**16**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**11.29**
GDP per capita (PPP US$)	**43,991.62**
GDP (US$ billions)	**454.04**
GTCI score	**65.23**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**73.75**	**20**
1.1	Regulatory Landscape	72.12	24
1.1.1	Government effectiveness	77.11	21
1.1.2	Business-government relations	47.89	82
1.1.3	Political stability	80.18	33
1.1.4	Regulatory quality	74.33	22
1.1.5	Corruption	81.08	15
1.2	Market Landscape	71.99	17
1.2.1	Competition intensity	82.92	4
1.2.2	Ease of doing business	71.37	41
1.2.3	Cluster development	59.63	20
1.2.4	R&D expenditure	54.05	13
1.2.5	ICT infrastructure	86.70	14
1.2.6	Technology utilisation	77.25	18
1.3	Business and Labour Landscape	77.13	13
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	61.48	39
1.3.4	Professional management	81.30	11
1.3.5	Relationship of pay to productivity	53.90	47
2	**ATTRACT**	**65.11**	**18**
2.1	External Openness	54.87	17
	Attract Business		
2.1.1	FDI and technology transfer	67.71	21
2.1.2	Prevalence of foreign ownership	73.85	17
	Attract People		
2.1.3	Migrant stock	26.95	30
2.1.4	International students	51.97	17
2.1.5	Brain gain	53.88	23
2.2	Internal Openness	75.34	17
	Social Diversity		
2.2.1	Tolerance of minorities	64.44	29
2.2.2	Tolerance of immigrants	79.02	29
2.2.3	Social mobility	77.06	16
	Gender Equality		
2.2.4	Female graduates	75.95	39
2.2.5	Gender earnings gap	82.47	19
2.2.6	Business opportunities for women	73.11	15

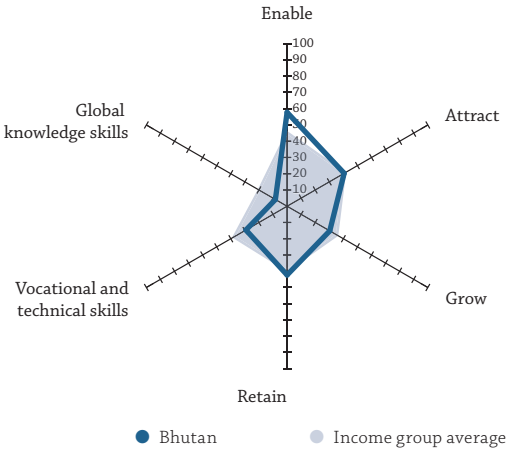
		Score	Rank
3	**GROW**	**73.45**	**6**
3.1	Formal Education	67.37	5
	Enrolment		
3.1.1	Vocational enrolment	98.50	2
3.1.2	Tertiary enrolment	64.46	22
	Quality		
3.1.3	Tertiary education expenditure	32.82	23
3.1.4	Reading, maths, science	74.32	14
3.1.5	University ranking	66.77	15
3.2	Lifelong Learning	76.70	4
3.2.1	Quality of management schools	84.13	2
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	69.27	11
3.3	Access to Growth Opportunities	76.28	13
	Networks		
3.3.1	Use of virtual social networks	85.51	24
3.3.2	Use of virtual professional networks	66.01	14
	Empowerment		
3.3.3	Delegation of authority	67.68	12
3.3.4	Personal rights	85.93	21
4	**RETAIN**	**71.01**	**19**
4.1	Sustainability	58.81	26
4.1.1	Pension system	90.91	15
4.1.2	Taxation	25.60	113
4.1.3	Brain retention	59.92	19
4.2	Lifestyle	83.21	11
4.2.1	Environmental performance	80.35	40
4.2.2	Personal safety	90.01	18
4.2.3	Physician density	63.04	4
4.2.4	Sanitation	99.43	17
5	**VOCATIONAL AND TECHNICAL SKILLS**	**61.08**	**21**
5.1	Mid-Level Skills	55.86	24
5.1.1	Workforce with secondary education	51.39	45
5.1.2	Population with secondary education	44.08	47
5.1.3	Technicians and associate professionals	75.63	20
5.1.4	Labour productivity per employee	52.32	11
5.2	Employability	66.30	21
5.2.1	Ease of finding skilled employees	64.36	25
5.2.2	Relevance of education system to the economy	74.44	5
5.2.3	Availability of scientists and engineers	60.10	30
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**47.02**	**21**
6.1	High-Level Skills	56.04	19
6.1.1	Workforce with tertiary education	66.99	12
6.1.2	Population with tertiary education	29.97	43
6.1.3	Professionals	61.82	13
6.1.4	Researchers	48.30	22
6.1.5	Senior officials and managers	40.45	31
6.1.6	Quality of scientific institutions	83.33	5
6.1.7	Scientific journal articles	61.39	20
6.2	Talent Impact	38.00	29
6.2.1	Innovation output	54.40	27
6.2.2	High-value exports	27.70	35
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	58.18	16
6.2.4	New business density	11.72	45

BHUTAN

Key Indicators

Rank (out of 118)	**98**
Income group	**Lower-middle income**
Regional group	**Central and Southern Asia**
Population (millions)	**0.77**
GDP per capita (PPP US$)	**8,076.96**
GDP (US$ billions)	**1.96**
GTCI score	**34.74**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**57.74**	**47**
1.1	Regulatory Landscape	55.63	48
1.1.1	Government effectiveness	44.59	56
1.1.2	Business-government relations	60.02	58
1.1.3	Political stability	87.36	21
1.1.4	Regulatory quality	21.32	112
1.1.5	Corruption	64.86	26
1.2	Market Landscape	46.51	76
1.2.1	Competition intensity	60.44	94
1.2.2	Ease of doing business	57.30	66
1.2.3	Cluster development	41.97	79
1.2.4	R&D expenditure	n/a	n/a
1.2.5	ICT infrastructure	24.30	101
1.2.6	Technology utilisation	48.53	106
1.3	Business and Labour Landscape	71.07	21
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	80	46
	Management Practice		
1.3.3	Labour-employer cooperation	63.39	32
1.3.4	Professional management	58.16	44
1.3.5	Relationship of pay to productivity	53.83	48

2	**ATTRACT**	**40.55**	**97**
2.1	External Openness	31.42	83
	Attract Business		
2.1.1	FDI and technology transfer	42.78	110
2.1.2	Prevalence of foreign ownership	25.98	117
	Attract People		
2.1.3	Migrant stock	14.40	47
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	42.53	49
2.2	Internal Openness	49.68	96
	Social Diversity		
2.2.1	Tolerance of minorities	26.67	88
2.2.2	Tolerance of immigrants	58.52	60
2.2.3	Social mobility	65.07	33
	Gender Equality		
2.2.4	Female graduates	13.63	95
2.2.5	Gender earnings gap	61.97	58
2.2.6	Business opportunities for women	72.23	18

3	**GROW**	**30.32**	**108**
3.1	Formal Education	5.59	113
	Enrolment		
3.1.1	Vocational enrolment	4.02	97
3.1.2	Tertiary enrolment	6.83	98
	Quality		
3.1.3	Tertiary education expenditure	11.49	86
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	40.84	97
3.2.1	Quality of management schools	46.33	90
3.2.2	Prevalence of training in firms	29.82	66
3.2.3	Employee development	46.38	74
3.3	Access to Growth Opportunities	44.53	77
	Networks		
3.3.1	Use of virtual social networks	69.38	94
3.3.2	Use of virtual professional networks	9.38	72
	Empowerment		
3.3.3	Delegation of authority	43.32	76
3.3.4	Personal rights	56.06	65

4	**RETAIN**	**42.30**	**82**
4.1	Sustainability	38.32	73
4.1.1	Pension system	13.13	85
4.1.2	Taxation	51.74	33
4.1.3	Brain retention	50.09	37
4.2	Lifestyle	46.28	88
4.2.1	Environmental performance	52.05	92
4.2.2	Personal safety	86.35	22
4.2.3	Physician density	3.07	98
4.2.4	Sanitation	43.64	99

5	**VOCATIONAL AND TECHNICAL SKILLS**	**29.24**	**108**
5.1	Mid-Level Skills	7.61	107
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	0.00	106
5.1.3	Technicians and associate professionals	15.23	82
5.1.4	Labour productivity per employee	n/a	n/a
5.2	Employability	50.86	78
5.2.1	Ease of finding skilled employees	37.43	108
5.2.2	Relevance of education system to the economy	50.81	46
5.2.3	Availability of scientists and engineers	34.10	115
5.2.4	Skills gap as major constraint	81.10	39

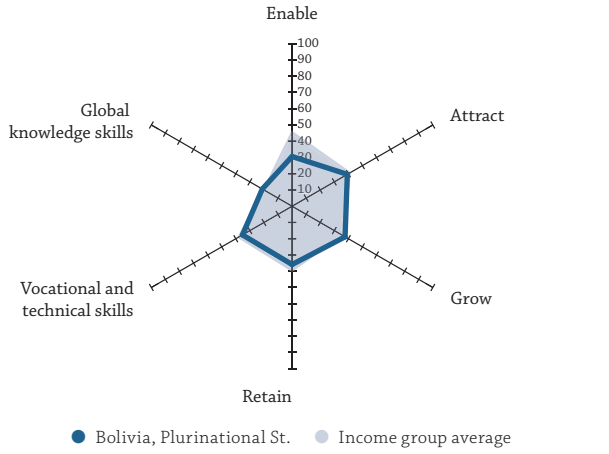
6	**GLOBAL KNOWLEDGE SKILLS**	**8.31**	**116**
6.1	High-Level Skills	16.37	99
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	5.53	89
6.1.3	Professionals	31.82	55
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	10.67	81
6.1.6	Quality of scientific institutions	28.75	113
6.1.7	Scientific journal articles	5.08	93
6.2	Talent Impact	0.25	118
6.2.1	Innovation output	0.00	118
6.2.2	High-value exports	0.56	114
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	0.17	93

BOLIVIA, PLURINATIONAL ST.

Key Indicators

Rank (out of 118)	**104**
Income group	**Lower-middle income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**10.72**
GDP per capita (PPP US$)	**6,880.90**
GDP (US$ billions)	**33.20**
GTCI score	**33.29**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**30.60**	**117**
1.1	Regulatory Landscape	31.62	103
1.1.1	Government effectiveness	19.70	102
1.1.2	Business-government relations	37.68	100
1.1.3	Political stability	52.83	82
1.1.4	Regulatory quality	24.91	108
1.1.5	Corruption	22.97	89
1.2	Market Landscape	32.64	113
1.2.1	Competition intensity	54.44	113
1.2.2	Ease of doing business	23.08	113
1.2.3	Cluster development	35.44	99
1.2.4	R&D expenditure	3.57	89
1.2.5	ICT infrastructure	33.76	90
1.2.6	Technology utilisation	45.56	114
1.3	Business and Labour Landscape	27.55	118
	Labour Market Flexibility		
1.3.1	Ease of hiring	11.00	113
1.3.2	Ease of redundancy	0	117
	Management Practice		
1.3.3	Labour-employer cooperation	44.14	105
1.3.4	Professional management	41.36	101
1.3.5	Relationship of pay to productivity	41.27	93

		Score	Rank
2	**ATTRACT**	**39.24**	**103**
2.1	External Openness	29.25	99
	Attract Business		
2.1.1	FDI and technology transfer	41.74	113
2.1.2	Prevalence of foreign ownership	38.06	112
	Attract People		
2.1.3	Migrant stock	2.79	88
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	34.43	75
2.2	Internal Openness	49.22	99
	Social Diversity		
2.2.1	Tolerance of minorities	35.56	76
2.2.2	Tolerance of immigrants	60.65	56
2.2.3	Social mobility	46.79	92
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	60.52	66
2.2.6	Business opportunities for women	42.57	113

		Score	Rank
3	**GROW**	**37.64**	**79**
3.1	Formal Education	25.42	68
	Enrolment		
3.1.1	Vocational enrolment	n/a	n/a
3.1.2	Tertiary enrolment	32.62	68
	Quality		
3.1.3	Tertiary education expenditure	43.64	14
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	47.94	71
3.2.1	Quality of management schools	34.75	113
3.2.2	Prevalence of training in firms	70.84	14
3.2.3	Employee development	38.23	108
3.3	Access to Growth Opportunities	39.55	95
	Networks		
3.3.1	Use of virtual social networks	54.52	114
3.3.2	Use of virtual professional networks	8.44	76
	Empowerment		
3.3.3	Delegation of authority	42.40	82
3.3.4	Personal rights	52.82	72

		Score	Rank
4	**RETAIN**	**35.85**	**98**
4.1	Sustainability	30.30	106
4.1.1	Pension system	11.11	86
4.1.2	Taxation	41.75	80
4.1.3	Brain retention	38.05	72
4.2	Lifestyle	41.39	93
4.2.1	Environmental performance	63.44	67
4.2.2	Personal safety	52.77	70
4.2.3	Physician density	5.84	91
4.2.4	Sanitation	43.52	100

		Score	Rank
5	**VOCATIONAL AND TECHNICAL SKILLS**	**35.24**	**93**
5.1	Mid-Level Skills	28.37	79
5.1.1	Workforce with secondary education	50.14	50
5.1.2	Population with secondary education	26.07	71
5.1.3	Technicians and associate professionals	31.47	61
5.1.4	Labour productivity per employee	5.80	86
5.2	Employability	42.10	110
5.2.1	Ease of finding skilled employees	45.06	85
5.2.2	Relevance of education system to the economy	35.17	92
5.2.3	Availability of scientists and engineers	36.97	109
5.2.4	Skills gap as major constraint	51.21	78

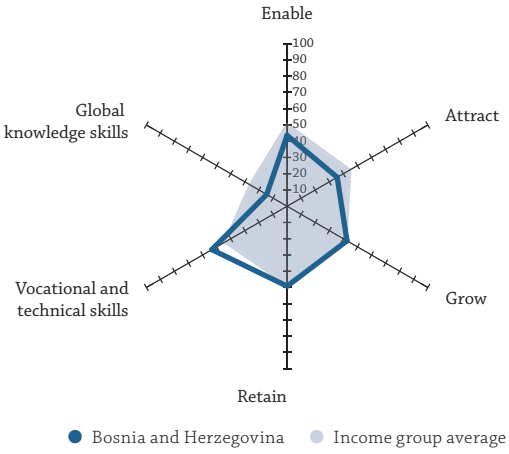
		Score	Rank
6	**GLOBAL KNOWLEDGE SKILLS**	**21.17**	**79**
6.1	High-Level Skills	17.22	94
6.1.1	Workforce with tertiary education	23.30	82
6.1.2	Population with tertiary education	35.95	27
6.1.3	Professionals	21.82	70
6.1.4	Researchers	1.93	73
6.1.5	Senior officials and managers	5.06	89
6.1.6	Quality of scientific institutions	30.70	109
6.1.7	Scientific journal articles	1.81	111
6.2	Talent Impact	25.11	66
6.2.1	Innovation output	21.18	84
6.2.2	High-value exports	2.76	105
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	73.35	7
6.2.4	New business density	3.13	80

BOSNIA AND HERZEGOVINA

Key Indicators

Rank (out of 118)	**78**
Income group	**Upper-middle income**
Regional group	**Europe**
Population (millions)	**3.81**
GDP per capita (PPP US$)	**10,509.65**
GDP (US$ billions)	**16**
GTCI score	**39.81**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**43.56**	**96**
1.1	Regulatory Landscape	43.55	77
1.1.1	Government effectiveness	23.37	95
1.1.2	Business-government relations	61.96	49
1.1.3	Political stability	60.39	68
1.1.4	Regulatory quality	43.65	77
1.1.5	Corruption	28.38	69
1.2	Market Landscape	43.32	89
1.2.1	Competition intensity	56.60	106
1.2.2	Ease of doing business	54.41	71
1.2.3	Cluster development	32.67	106
1.2.4	R&D expenditure	7.62	72
1.2.5	ICT infrastructure	51.66	68
1.2.6	Technology utilisation	56.96	76
1.3	Business and Labour Landscape	43.79	108
	Labour Market Flexibility		
1.3.1	Ease of hiring	44.33	95
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	41.25	114
1.3.4	Professional management	32.01	118
1.3.5	Relationship of pay to productivity	31.37	115

2	**ATTRACT**	**35.60**	**111**
2.1	External Openness	25.82	112
	Attract Business		
2.1.1	FDI and technology transfer	37.50	115
2.1.2	Prevalence of foreign ownership	38.59	111
	Attract People		
2.1.3	Migrant stock	1.86	92
2.1.4	International students	37.83	21
2.1.5	Brain gain	13.30	115
2.2	Internal Openness	45.39	104
	Social Diversity		
2.2.1	Tolerance of minorities	28.89	84
2.2.2	Tolerance of immigrants	47.94	77
2.2.3	Social mobility	34.80	115
	Gender Equality		
2.2.4	Female graduates	77.80	34
2.2.5	Gender earnings gap	n/a	n/a
2.2.6	Business opportunities for women	37.50	118

3	**GROW**	**42.57**	**63**
3.1	Formal Education	41.93	39
	Enrolment		
3.1.1	Vocational enrolment	83.86	5
3.1.2	Tertiary enrolment	n/a	n/a
	Quality		
3.1.3	Tertiary education expenditure	n/a	n/a
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	44.87	83
3.2.1	Quality of management schools	38.07	108
3.2.2	Prevalence of training in firms	64.64	21
3.2.3	Employee development	31.89	116
3.3	Access to Growth Opportunities	40.92	92
	Networks		
3.3.1	Use of virtual social networks	69.55	92
3.3.2	Use of virtual professional networks	10.29	70
	Empowerment		
3.3.3	Delegation of authority	43.08	77
3.3.4	Personal rights	40.76	86

4	**RETAIN**	**49.18**	**67**
4.1	Sustainability	37.93	75
4.1.1	Pension system	70.71	34
4.1.2	Taxation	26.90	111
4.1.3	Brain retention	16.19	115
4.2	Lifestyle	60.44	60
4.2.1	Environmental performance	48.86	98
4.2.2	Personal safety	74.08	37
4.2.3	Physician density	24.72	64
4.2.4	Sanitation	94.09	52

5	**VOCATIONAL AND TECHNICAL SKILLS**	**53.42**	**39**
5.1	Mid-Level Skills	60.82	15
5.1.1	Workforce with secondary education	87.88	6
5.1.2	Population with secondary education	68.26	16
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	26.33	47
5.2	Employability	46.02	95
5.2.1	Ease of finding skilled employees	36.22	112
5.2.2	Relevance of education system to the economy	22.60	114
5.2.3	Availability of scientists and engineers	34.78	113
5.2.4	Skills gap as major constraint	90.48	13

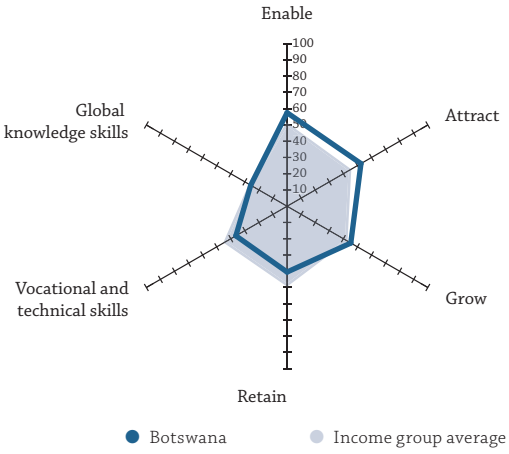
6	**GLOBAL KNOWLEDGE SKILLS**	**14.50**	**98**
6.1	High-Level Skills	19.36	83
6.1.1	Workforce with tertiary education	23.30	82
6.1.2	Population with tertiary education	17.45	71
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	2.55	67
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	35.26	97
6.1.7	Scientific journal articles	18.25	59
6.2	Talent Impact	9.64	107
6.2.1	Innovation output	9.52	110
6.2.2	High-value exports	6.62	96
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	17.79	79
6.2.4	New business density	4.64	76

BOTSWANA

Key Indicators

Rank (out of 118)	**63**
Income group	**Upper-middle income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**2.26**
GDP per capita (PPP US$)	**15,807.09**
GDP (US$ billions)	**14.39**
GTCI score	**43**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



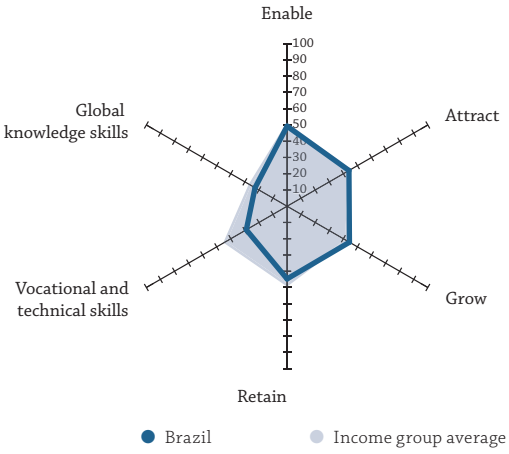
		Score	Rank
1	**ENABLE**	**57.54**	**48**
1.1	Regulatory Landscape	65.57	32
1.1.1	Government effectiveness	46.06	52
1.1.2	Business-government relations	70.22	26
1.1.3	Political stability	88.01	16
1.1.4	Regulatory quality	61.41	43
1.1.5	Corruption	62.16	27
1.2	Market Landscape	42.72	91
1.2.1	Competition intensity	67.18	68
1.2.2	Ease of doing business	56.86	67
1.2.3	Cluster development	38.55	92
1.2.4	R&D expenditure	5.71	77
1.2.5	ICT infrastructure	32.61	92
1.2.6	Technology utilisation	55.41	83
1.3	Business and Labour Landscape	64.32	49
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	60	81
	Management Practice		
1.3.3	Labour-employer cooperation	54.20	71
1.3.4	Professional management	61.70	33
1.3.5	Relationship of pay to productivity	45.71	81
2	**ATTRACT**	**52.48**	**39**
2.1	External Openness	38.40	56
	Attract Business		
2.1.1	FDI and technology transfer	50.58	90
2.1.2	Prevalence of foreign ownership	70.04	28
	Attract People		
2.1.3	Migrant stock	15.51	46
2.1.4	International students	8.31	67
2.1.5	Brain gain	47.55	34
2.2	Internal Openness	66.57	26
	Social Diversity		
2.2.1	Tolerance of minorities	54.44	43
2.2.2	Tolerance of immigrants	69.46	43
2.2.3	Social mobility	59.42	45
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	85.40	16
2.2.6	Business opportunities for women	64.12	38
3	**GROW**	**45.27**	**51**
3.1	Formal Education	33.39	54
	Enrolment		
3.1.1	Vocational enrolment	11.16	81
3.1.2	Tertiary enrolment	22.41	81
	Quality		
3.1.3	Tertiary education expenditure	100.00	1
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	52.80	55
3.2.1	Quality of management schools	42.07	101
3.2.2	Prevalence of training in firms	63.98	22
3.2.3	Employee development	52.34	48
3.3	Access to Growth Opportunities	49.63	61
	Networks		
3.3.1	Use of virtual social networks	70.28	89
3.3.2	Use of virtual professional networks	17.11	58
	Empowerment		
3.3.3	Delegation of authority	40.40	87
3.3.4	Personal rights	70.74	42
4	**RETAIN**	**40.48**	**90**
4.1	Sustainability	36.04	85
4.1.1	Pension system	8.08	92
4.1.2	Taxation	58.36	18
4.1.3	Brain retention	41.69	58
4.2	Lifestyle	44.92	91
4.2.1	Environmental performance	62.75	70
4.2.2	Personal safety	54.46	67
4.2.3	Physician density	4.07	97
4.2.4	Sanitation	58.41	94
5	**VOCATIONAL AND TECHNICAL SKILLS**	**36.38**	**89**
5.1	Mid-Level Skills	27.98	82
5.1.1	Workforce with secondary education	21.45	89
5.1.2	Population with secondary education	n/a	n/a
5.1.3	Technicians and associate professionals	34.52	59
5.1.4	Labour productivity per employee	n/a	n/a
5.2	Employability	44.78	98
5.2.1	Ease of finding skilled employees	39.74	103
5.2.2	Relevance of education system to the economy	42.74	67
5.2.3	Availability of scientists and engineers	39.41	101
5.2.4	Skills gap as major constraint	57.24	71
6	**GLOBAL KNOWLEDGE SKILLS**	**25.85**	**69**
6.1	High-Level Skills	18.80	87
6.1.1	Workforce with tertiary education	25.57	80
6.1.2	Population with tertiary education	n/a	n/a
6.1.3	Professionals	20.61	74
6.1.4	Researchers	1.92	74
6.1.5	Senior officials and managers	19.10	63
6.1.6	Quality of scientific institutions	38.09	91
6.1.7	Scientific journal articles	7.50	82
6.2	Talent Impact	32.89	40
6.2.1	Innovation output	15.26	98
6.2.2	High-value exports	14.31	65
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	26.09	69
6.2.4	New business density	75.91	7

BRAZIL

Key Indicators

Rank (out of 118)	**81**
Income group	**Upper-middle income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**207.85**
GDP per capita (PPP US$)	**15,359.33**
GDP (US$ billions)	**1,774.72**
GTCI score	**38.99**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**49.24**	**78**
1.1	Regulatory Landscape	42.33	83
1.1.1	Government effectiveness	32.35	79
1.1.2	Business-government relations	45.19	90
1.1.3	Political stability	61.64	65
1.1.4	Regulatory quality	44.09	75
1.1.5	Corruption	28.38	69
1.2	Market Landscape	52.84	55
1.2.1	Competition intensity	72.85	40
1.2.2	Ease of doing business	42.76	94
1.2.3	Cluster development	52.52	34
1.2.4	R&D expenditure	27.14	31
1.2.5	ICT infrastructure	58.95	60
1.2.6	Technology utilisation	62.84	56
1.3	Business and Labour Landscape	52.56	88
	Labour Market Flexibility		
1.3.1	Ease of hiring	22.33	104
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	42.78	110
1.3.4	Professional management	56.81	51
1.3.5	Relationship of pay to productivity	40.88	95
2	**ATTRACT**	**43.96**	**73**
2.1	External Openness	29.52	97
	Attract Business		
2.1.1	FDI and technology transfer	59.91	57
2.1.2	Prevalence of foreign ownership	53.18	77
	Attract People		
2.1.3	Migrant stock	0.60	108
2.1.4	International students	0.89	90
2.1.5	Brain gain	33.00	77
2.2	Internal Openness	58.40	54
	Social Diversity		
2.2.1	Tolerance of minorities	48.89	50
2.2.2	Tolerance of immigrants	68.60	45
2.2.3	Social mobility	51.16	75
	Gender Equality		
2.2.4	Female graduates	79.71	26
2.2.5	Gender earnings gap	58.82	75
2.2.6	Business opportunities for women	43.20	111

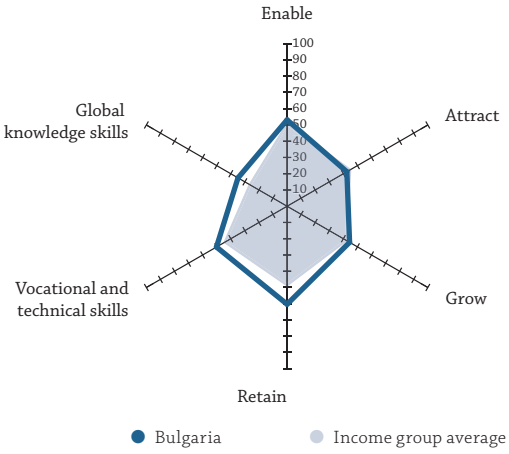
		Score	Rank
3	**GROW**	**44.30**	**56**
3.1	Formal Education	23.97	69
	Enrolment		
3.1.1	Vocational enrolment	7.51	90
3.1.2	Tertiary enrolment	n/a	n/a
	Quality		
3.1.3	Tertiary education expenditure	20.71	60
3.1.4	Reading, maths, science	14.94	52
3.1.5	University ranking	52.74	25
3.2	Lifelong Learning	50.24	63
3.2.1	Quality of management schools	49.21	76
3.2.2	Prevalence of training in firms	51.19	36
3.2.3	Employee development	50.31	55
3.3	Access to Growth Opportunities	58.69	36
	Networks		
3.3.1	Use of virtual social networks	80.86	44
3.3.2	Use of virtual professional networks	26.88	35
	Empowerment		
3.3.3	Delegation of authority	52.12	36
3.3.4	Personal rights	74.90	35
4	**RETAIN**	**44.71**	**77**
4.1	Sustainability	40.09	69
4.1.1	Pension system	54.55	46
4.1.2	Taxation	21.44	116
4.1.3	Brain retention	44.30	47
4.2	Lifestyle	49.33	80
4.2.1	Environmental performance	78.01	44
4.2.2	Personal safety	14.65	109
4.2.3	Physician density	24.22	65
4.2.4	Sanitation	80.45	75
5	**VOCATIONAL AND TECHNICAL SKILLS**	**28.97**	**111**
5.1	Mid-Level Skills	32.93	69
5.1.1	Workforce with secondary education	47.21	54
5.1.2	Population with secondary education	41.20	50
5.1.3	Technicians and associate professionals	30.46	63
5.1.4	Labour productivity per employee	12.84	72
5.2	Employability	25.00	118
5.2.1	Ease of finding skilled employees	38.40	106
5.2.2	Relevance of education system to the economy	24.05	113
5.2.3	Availability of scientists and engineers	37.57	105
5.2.4	Skills gap as major constraint	0.00	91
6	**GLOBAL KNOWLEDGE SKILLS**	**22.77**	**76**
6.1	High-Level Skills	25.18	72
6.1.1	Workforce with tertiary education	21.52	84
6.1.2	Population with tertiary education	20.64	65
6.1.3	Professionals	27.27	64
6.1.4	Researchers	8.36	52
6.1.5	Senior officials and managers	28.65	47
6.1.6	Quality of scientific institutions	42.97	74
6.1.7	Scientific journal articles	26.86	49
6.2	Talent Impact	20.35	78
6.2.1	Innovation output	26.21	71
6.2.2	High-value exports	15.81	59
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	22.83	76
6.2.4	New business density	16.54	37

BULGARIA

Key Indicators

Rank (out of 118)	**49**
Income group	**Upper-middle income**
Regional group	**Europe**
Population (millions)	**7.18**
GDP per capita (PPP US$)	**17,511.76**
GDP (US$ billions)	**48.95**
GTCI score	**47.56**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



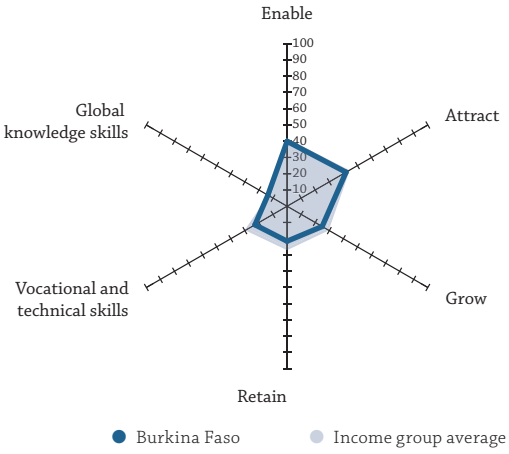
		Score	Rank
1	**ENABLE**	**53.13**	**60**
1.1	Regulatory Landscape	45.79	67
1.1.1	Government effectiveness	39.40	65
1.1.2	Business-government relations	33.25	110
1.1.3	Political stability	64.08	58
1.1.4	Regulatory quality	59.79	45
1.1.5	Corruption	32.43	63
1.2	Market Landscape	51.30	60
1.2.1	Competition intensity	60.19	96
1.2.2	Ease of doing business	73.72	36
1.2.3	Cluster development	35.98	97
1.2.4	R&D expenditure	15.24	50
1.2.5	ICT infrastructure	66.24	49
1.2.6	Technology utilisation	56.46	78
1.3	Business and Labour Landscape	62.29	55
	Labour Market Flexibility		
1.3.1	Ease of hiring	72.33	47
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	49.82	94
1.3.4	Professional management	41.28	102
1.3.5	Relationship of pay to productivity	48.02	69
2	**ATTRACT**	**42.46**	**84**
2.1	External Openness	30.24	91
	Attract Business		
2.1.1	FDI and technology transfer	56.83	68
2.1.2	Prevalence of foreign ownership	50.68	89
	Attract People		
2.1.3	Migrant stock	2.99	87
2.1.4	International students	20.61	35
2.1.5	Brain gain	20.10	111
2.2	Internal Openness	54.68	72
	Social Diversity		
2.2.1	Tolerance of minorities	56.67	38
2.2.2	Tolerance of immigrants	28.16	106
2.2.3	Social mobility	39.28	112
	Gender Equality		
2.2.4	Female graduates	79.41	27
2.2.5	Gender earnings gap	65.58	48
2.2.6	Business opportunities for women	59.00	59
3	**GROW**	**44.40**	**55**
3.1	Formal Education	40.16	41
	Enrolment		
3.1.1	Vocational enrolment	69.29	15
3.1.2	Tertiary enrolment	63.03	25
	Quality		
3.1.3	Tertiary education expenditure	12.11	85
3.1.4	Reading, maths, science	36.17	42
3.1.5	University ranking	20.18	63
3.2	Lifelong Learning	44.59	85
3.2.1	Quality of management schools	42.59	100
3.2.2	Prevalence of training in firms	51.85	34
3.2.3	Employee development	39.35	102
3.3	Access to Growth Opportunities	48.46	66
	Networks		
3.3.1	Use of virtual social networks	78.10	60
3.3.2	Use of virtual professional networks	17.90	56
	Empowerment		
3.3.3	Delegation of authority	36.44	106
3.3.4	Personal rights	61.40	56
4	**RETAIN**	**60.29**	**43**
4.1	Sustainability	46.84	50
4.1.1	Pension system	78.79	31
4.1.2	Taxation	43.69	71
4.1.3	Brain retention	18.06	113
4.2	Lifestyle	73.74	35
4.2.1	Environmental performance	86.41	33
4.2.2	Personal safety	74.64	36
4.2.3	Physician density	49.81	14
4.2.4	Sanitation	84.09	71
5	**VOCATIONAL AND TECHNICAL SKILLS**	**50.18**	**47**
5.1	Mid-Level Skills	49.79	39
5.1.1	Workforce with secondary education	76.04	15
5.1.2	Population with secondary education	70.36	11
5.1.3	Technicians and associate professionals	35.03	58
5.1.4	Labour productivity per employee	17.72	61
5.2	Employability	50.58	79
5.2.1	Ease of finding skilled employees	38.64	105
5.2.2	Relevance of education system to the economy	38.14	81
5.2.3	Availability of scientists and engineers	45.65	85
5.2.4	Skills gap as major constraint	79.89	40
6	**GLOBAL KNOWLEDGE SKILLS**	**34.88**	**42**
6.1	High-Level Skills	39.24	38
6.1.1	Workforce with tertiary education	47.73	36
6.1.2	Population with tertiary education	40.26	23
6.1.3	Professionals	46.67	31
6.1.4	Researchers	20.38	38
6.1.5	Senior officials and managers	35.96	33
6.1.6	Quality of scientific institutions	44.96	69
6.1.7	Scientific journal articles	38.72	42
6.2	Talent Impact	30.52	46
6.2.1	Innovation output	45.42	34
6.2.2	High-value exports	20.39	49
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	5.01	88
6.2.4	New business density	51.25	12

BURKINA FASO

Key Indicators

Rank (out of 118)	**117**
Income group	**Low income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**18.11**
GDP per capita (PPP US$)	**1,659.22**
GDP (US$ billions)	**11.10**
GTCI score	**27.45**
GTCI score (income group average)	**30.03**

GTCI 2017 Country Profile by Pillar



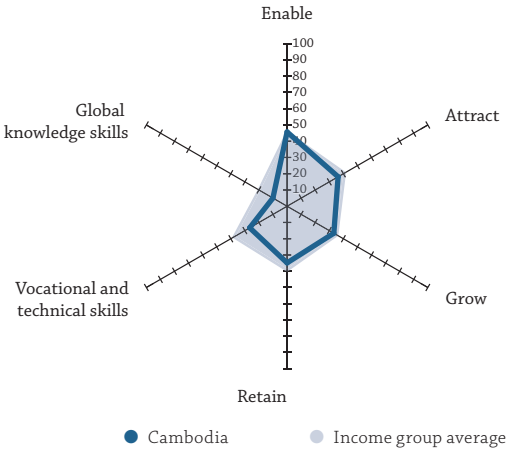
		Score	Rank
1	**ENABLE**	**39.95**	**105**
1.1	Regulatory Landscape	38.50	88
1.1.1	Government effectiveness	20.72	101
1.1.2	Business-government relations	63.72	40
1.1.3	Political stability	41.95	97
1.1.4	Regulatory quality	37.72	88
1.1.5	Corruption	28.38	69
1.2	Market Landscape	30.41	115
1.2.1	Competition intensity	59.42	98
1.2.2	Ease of doing business	29.52	108
1.2.3	Cluster development	31.62	111
1.2.4	R&D expenditure	4.52	83
1.2.5	ICT infrastructure	12.28	112
1.2.6	Technology utilisation	45.12	116
1.3	Business and Labour Landscape	50.93	94
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	51.06	86
1.3.4	Professional management	32.03	117
1.3.5	Relationship of pay to productivity	34.88	111
2	**ATTRACT**	**41.86**	**86**
2.1	External Openness	30.49	89
	Attract Business		
2.1.1	FDI and technology transfer	54.09	76
2.1.2	Prevalence of foreign ownership	51.06	86
	Attract People		
2.1.3	Migrant stock	8.43	60
2.1.4	International students	14.95	49
2.1.5	Brain gain	23.90	104
2.2	Internal Openness	53.23	79
	Social Diversity		
2.2.1	Tolerance of minorities	52.22	45
2.2.2	Tolerance of immigrants	88.13	15
2.2.3	Social mobility	42.26	108
	Gender Equality		
2.2.4	Female graduates	7.61	96
2.2.5	Gender earnings gap	66.50	43
2.2.6	Business opportunities for women	62.65	44
3	**GROW**	**24.91**	**118**
3.1	Formal Education	7.33	112
	Enrolment		
3.1.1	Vocational enrolment	7.16	92
3.1.2	Tertiary enrolment	1.06	108
	Quality		
3.1.3	Tertiary education expenditure	21.10	58
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	35.13	112
3.2.1	Quality of management schools	46.90	88
3.2.2	Prevalence of training in firms	28.23	72
3.2.3	Employee development	30.26	117
3.3	Access to Growth Opportunities	32.29	111
	Networks		
3.3.1	Use of virtual social networks	53.50	116
3.3.2	Use of virtual professional networks	0.99	109
	Empowerment		
3.3.3	Delegation of authority	18.70	118
3.3.4	Personal rights	55.96	66
4	**RETAIN**	**21.51**	**117**
4.1	Sustainability	26.34	116
4.1.1	Pension system	0.00	107
4.1.2	Taxation	45.53	63
4.1.3	Brain retention	33.49	84
4.2	Lifestyle	16.68	116
4.2.1	Environmental performance	12.34	114
4.2.2	Personal safety	45.29	81
4.2.3	Physician density	0.32	111
4.2.4	Sanitation	8.75	113
5	**VOCATIONAL AND TECHNICAL SKILLS**	**22.82**	**118**
5.1	Mid-Level Skills	1.73	118
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	3.80	100
5.1.3	Technicians and associate professionals	0.51	95
5.1.4	Labour productivity per employee	0.89	99
5.2	Employability	43.91	103
5.2.1	Ease of finding skilled employees	52.77	55
5.2.2	Relevance of education system to the economy	31.15	103
5.2.3	Availability of scientists and engineers	41.61	93
5.2.4	Skills gap as major constraint	50.13	80
6	**GLOBAL KNOWLEDGE SKILLS**	**13.65**	**104**
6.1	High-Level Skills	10.35	112
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	n/a	n/a
6.1.3	Professionals	1.52	99
6.1.4	Researchers	0.50	87
6.1.5	Senior officials and managers	0.00	98
6.1.6	Quality of scientific institutions	39.79	86
6.1.7	Scientific journal articles	9.96	76
6.2	Talent Impact	16.95	87
6.2.1	Innovation output	18.49	91
6.2.2	High-value exports	28.79	29
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	19.81	78
6.2.4	New business density	0.70	89

CAMBODIA

Key Indicators

Rank (out of 118)	**108**
Income group	**Lower-middle income**
Regional group	**Eastern, Southeastern Asia and Oceania**
Population (millions)	**15.58**
GDP per capita (PPP US$)	**3,483.33**
GDP (US$ billions)	**18.05**
GTCI score	**31.10**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**45.70**	**90**
1.1	Regulatory Landscape	33.82	100
1.1.1	Government effectiveness	17.26	104
1.1.2	Business-government relations	49.38	79
1.1.3	Political stability	60.98	66
1.1.4	Regulatory quality	36.06	96
1.1.5	Corruption	5.41	115
1.2	Market Landscape	45.33	84
1.2.1	Competition intensity	61.51	89
1.2.2	Ease of doing business	38.03	102
1.2.3	Cluster development	45.70	61
1.2.4	R&D expenditure	n/a	n/a
1.2.5	ICT infrastructure	26.85	100
1.2.6	Technology utilisation	54.57	87
1.3	Business and Labour Landscape	57.94	72
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	54.89	68
1.3.4	Professional management	45.16	87
1.3.5	Relationship of pay to productivity	52.97	52
2	**ATTRACT**	**36.24**	**108**
2.1	External Openness	32.60	79
	Attract Business		
2.1.1	FDI and technology transfer	59.35	58
2.1.2	Prevalence of foreign ownership	61.04	51
	Attract People		
2.1.3	Migrant stock	0.89	104
2.1.4	International students	0.16	97
2.1.5	Brain gain	41.58	54
2.2	Internal Openness	39.88	113
	Social Diversity		
2.2.1	Tolerance of minorities	30.00	80
2.2.2	Tolerance of immigrants	0.00	116
2.2.3	Social mobility	45.76	94
	Gender Equality		
2.2.4	Female graduates	31.77	93
2.2.5	Gender earnings gap	71.03	34
2.2.6	Business opportunities for women	60.75	52

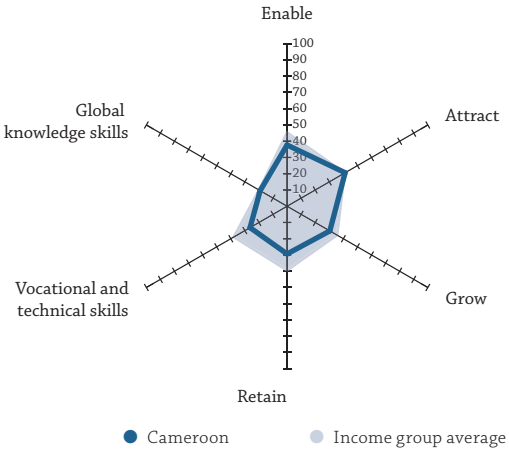
		Score	Rank
3	**GROW**	**33.21**	**96**
3.1	Formal Education	5.41	114
	Enrolment		
3.1.1	Vocational enrolment	4.84	95
3.1.2	Tertiary enrolment	11.50	93
	Quality		
3.1.3	Tertiary education expenditure	5.29	94
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	55.45	41
3.2.1	Quality of management schools	36.73	111
3.2.2	Prevalence of training in firms	85.09	5
3.2.3	Employee development	44.53	83
3.3	Access to Growth Opportunities	38.77	98
	Networks		
3.3.1	Use of virtual social networks	73.22	82
3.3.2	Use of virtual professional networks	1.98	102
	Empowerment		
3.3.3	Delegation of authority	39.75	92
3.3.4	Personal rights	40.14	87
4	**RETAIN**	**34.84**	**100**
4.1	Sustainability	45.45	52
4.1.1	Pension system	n/a	n/a
4.1.2	Taxation	49.20	43
4.1.3	Brain retention	41.70	56
4.2	Lifestyle	24.23	108
4.2.1	Environmental performance	26.39	110
4.2.2	Personal safety	34.08	96
4.2.3	Physician density	1.90	102
4.2.4	Sanitation	34.55	104
5	**VOCATIONAL AND TECHNICAL SKILLS**	**26.55**	**114**
5.1	Mid-Level Skills	9.89	106
5.1.1	Workforce with secondary education	25.63	82
5.1.2	Population with secondary education	5.80	96
5.1.3	Technicians and associate professionals	6.60	90
5.1.4	Labour productivity per employee	1.52	97
5.2	Employability	43.21	108
5.2.1	Ease of finding skilled employees	38.85	104
5.2.2	Relevance of education system to the economy	35.96	88
5.2.3	Availability of scientists and engineers	34.23	114
5.2.4	Skills gap as major constraint	63.81	60
6	**GLOBAL KNOWLEDGE SKILLS**	**10.07**	**113**
6.1	High-Level Skills	8.04	118
6.1.1	Workforce with tertiary education	4.37	96
6.1.2	Population with tertiary education	2.52	98
6.1.3	Professionals	5.15	97
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	3.37	91
6.1.6	Quality of scientific institutions	30.29	110
6.1.7	Scientific journal articles	2.53	107
6.2	Talent Impact	12.10	98
6.2.1	Innovation output	21.18	84
6.2.2	High-value exports	3.01	104
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	n/a	n/a

CAMEROON

Key Indicators

Rank (out of 118)	**109**
Income group	**Lower-middle income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**23.34**
GDP per capita (PPP US$)	**3,122.64**
GDP (US$ billions)	**29.20**
GTCI score	**30.68**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



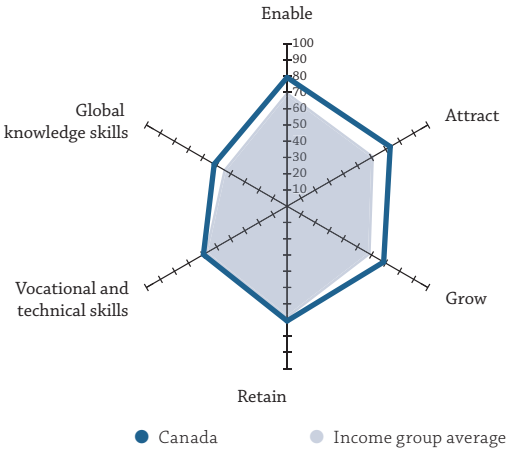
		Score	Rank
1	**ENABLE**	**37.68**	**111**
1.1	Regulatory Landscape	28.18	108
1.1.1	Government effectiveness	15.45	107
1.1.2	Business-government relations	50.95	74
1.1.3	Political stability	37.95	106
1.1.4	Regulatory quality	23.04	109
1.1.5	Corruption	13.51	107
1.2	Market Landscape	37.39	105
1.2.1	Competition intensity	59.80	97
1.2.2	Ease of doing business	16.59	116
1.2.3	Cluster development	38.94	89
1.2.4	R&D expenditure	n/a	n/a
1.2.5	ICT infrastructure	14.83	109
1.2.6	Technology utilisation	56.79	77
1.3	Business and Labour Landscape	47.47	103
	Labour Market Flexibility		
1.3.1	Ease of hiring	72.33	47
1.3.2	Ease of redundancy	30	113
	Management Practice		
1.3.3	Labour-employer cooperation	50.94	89
1.3.4	Professional management	41.02	105
1.3.5	Relationship of pay to productivity	43.07	87
2	**ATTRACT**	**41.24**	**92**
2.1	External Openness	29.62	95
	Attract Business		
2.1.1	FDI and technology transfer	49.80	95
2.1.2	Prevalence of foreign ownership	58.11	62
	Attract People		
2.1.3	Migrant stock	3.45	83
2.1.4	International students	7.03	70
2.1.5	Brain gain	29.69	85
2.2	Internal Openness	52.86	83
	Social Diversity		
2.2.1	Tolerance of minorities	24.44	94
2.2.2	Tolerance of immigrants	68.35	46
2.2.3	Social mobility	50.64	76
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	63.15	56
2.2.6	Business opportunities for women	57.69	67
3	**GROW**	**30.37**	**107**
3.1	Formal Education	14.72	95
	Enrolment		
3.1.1	Vocational enrolment	47.62	30
3.1.2	Tertiary enrolment	7.77	97
	Quality		
3.1.3	Tertiary education expenditure	3.47	101
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	44.74	84
3.2.1	Quality of management schools	55.70	53
3.2.2	Prevalence of training in firms	29.16	69
3.2.3	Employee development	49.38	61
3.3	Access to Growth Opportunities	31.65	112
	Networks		
3.3.1	Use of virtual social networks	62.86	104
3.3.2	Use of virtual professional networks	3.52	96
	Empowerment		
3.3.3	Delegation of authority	39.52	96
3.3.4	Personal rights	20.69	109
4	**RETAIN**	**29.36**	**107**
4.1	Sustainability	31.96	102
4.1.1	Pension system	15.15	84
4.1.2	Taxation	51.16	35
4.1.3	Brain retention	29.57	95
4.2	Lifestyle	26.76	106
4.2.1	Environmental performance	37.38	106
4.2.2	Personal safety	30.54	100
4.2.3	Physician density	0.71	108
4.2.4	Sanitation	38.41	102
5	**VOCATIONAL AND TECHNICAL SKILLS**	**26.31**	**115**
5.1	Mid-Level Skills	4.23	110
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	6.43	94
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	2.02	94
5.2	Employability	48.39	88
5.2.1	Ease of finding skilled employees	55.88	44
5.2.2	Relevance of education system to the economy	43.81	62
5.2.3	Availability of scientists and engineers	44.13	89
5.2.4	Skills gap as major constraint	49.73	81
6	**GLOBAL KNOWLEDGE SKILLS**	**19.15**	**87**
6.1	High-Level Skills	18.50	90
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	1.50	102
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	40.17	83
6.1.7	Scientific journal articles	13.84	67
6.2	Talent Impact	19.79	79
6.2.1	Innovation output	22.44	83
6.2.2	High-value exports	10.04	82
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	26.90	68
6.2.4	New business density	n/a	n/a

CANADA

Key Indicators

Rank (out of 118)	**13**
Income group	**High income**
Regional group	**Northern America**
Population (millions)	**35.85**
GDP per capita (PPP US$)	**44,310.12**
GDP (US$ billions)	**1,550.54**
GTCI score	**67.16**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**79.25**	**7**
1.1	Regulatory Landscape	87.63	9
1.1.1	Government effectiveness	87.49	10
1.1.2	Business-government relations	79.23	15
1.1.3	Political stability	91.93	9
1.1.4	Regulatory quality	90.30	5
1.1.5	Corruption	89.19	9
1.2	Market Landscape	69.99	19
1.2.1	Competition intensity	75.89	23
1.2.2	Ease of doing business	85.97	12
1.2.3	Cluster development	63.27	18
1.2.4	R&D expenditure	38.33	23
1.2.5	ICT infrastructure	82.61	19
1.2.6	Technology utilisation	73.89	27
1.3	Business and Labour Landscape	80.14	10
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	68.09	23
1.3.4	Professional management	80.93	13
1.3.5	Relationship of pay to productivity	62.68	13

2	**ATTRACT**	**73.27**	**7**
2.1	External Openness	65.37	10
	Attract Business		
2.1.1	FDI and technology transfer	65.27	27
2.1.2	Prevalence of foreign ownership	76.37	11
	Attract People		
2.1.3	Migrant stock	47.95	15
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	71.88	9
2.2	Internal Openness	81.18	6
	Social Diversity		
2.2.1	Tolerance of minorities	73.33	11
2.2.2	Tolerance of immigrants	98.06	3
2.2.3	Social mobility	79.43	13
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	87.53	15
2.2.6	Business opportunities for women	67.55	30

		Score	Rank
3	**GROW**	**68.63**	**12**
3.1	Formal Education	54.40	17
	Enrolment		
3.1.1	Vocational enrolment	9.09	87
3.1.2	Tertiary enrolment	n/a	n/a
	Quality		
3.1.3	Tertiary education expenditure	40.66	18
3.1.4	Reading, maths, science	81.44	6
3.1.5	University ranking	86.41	5
3.2	Lifelong Learning	70.73	12
3.2.1	Quality of management schools	79.31	5
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	62.15	24
3.3	Access to Growth Opportunities	80.75	10
	Networks		
3.3.1	Use of virtual social networks	87.19	18
3.3.2	Use of virtual professional networks	79.67	7
	Empowerment		
3.3.3	Delegation of authority	67.75	11
3.3.4	Personal rights	88.40	12

4	**RETAIN**	**70.57**	**21**
4.1	Sustainability	62.89	17
4.1.1	Pension system	66.67	37
4.1.2	Taxation	56.86	20
4.1.3	Brain retention	65.13	13
4.2	Lifestyle	78.25	22
4.2.1	Environmental performance	89.51	25
4.2.2	Personal safety	97.19	8
4.2.3	Physician density	26.51	60
4.2.4	Sanitation	99.77	14

5	**VOCATIONAL AND TECHNICAL SKILLS**	**59.43**	**26**
5.1	Mid-Level Skills	51.44	31
5.1.1	Workforce with secondary education	50.28	49
5.1.2	Population with secondary education	32.58	61
5.1.3	Technicians and associate professionals	80.20	13
5.1.4	Labour productivity per employee	42.69	23
5.2	Employability	67.41	15
5.2.1	Ease of finding skilled employees	64.11	26
5.2.2	Relevance of education system to the economy	68.41	14
5.2.3	Availability of scientists and engineers	69.71	10
5.2.4	Skills gap as major constraint	n/a	n/a

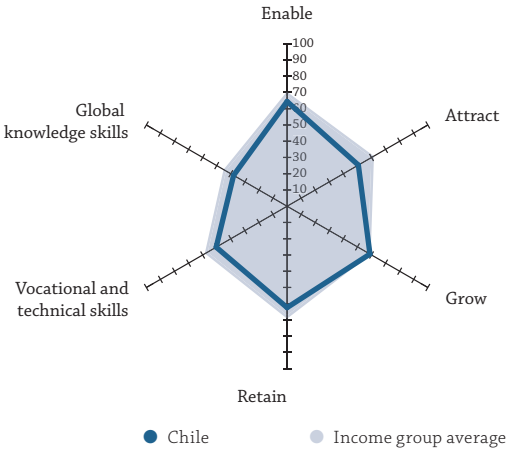
6	**GLOBAL KNOWLEDGE SKILLS**	**51.79**	**16**
6.1	High-Level Skills	66.12	4
6.1.1	Workforce with tertiary education	83.17	3
6.1.2	Population with tertiary education	80.71	2
6.1.3	Professionals	57.58	18
6.1.4	Researchers	54.18	12
6.1.5	Senior officials and managers	47.19	18
6.1.6	Quality of scientific institutions	73.17	18
6.1.7	Scientific journal articles	66.81	16
6.2	Talent Impact	37.46	31
6.2.1	Innovation output	60.14	21
6.2.2	High-value exports	22.75	42
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	59.70	14
6.2.4	New business density	7.25	61

CHILE

Key Indicators

Rank (out of 118)	**34**
Income group	**High income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**17.95**
GDP per capita (PPP US$)	**22,316.21**
GDP (US$ billions)	**240.22**
GTCI score	**54.11**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



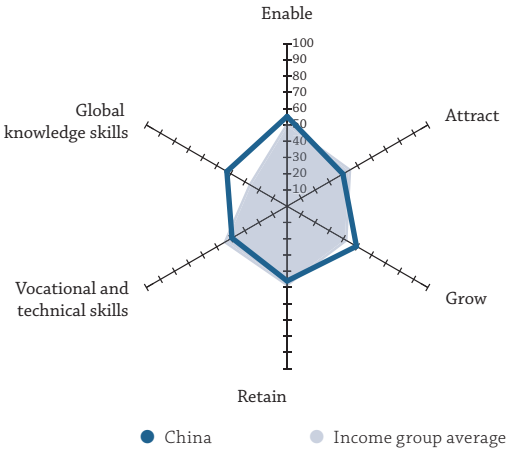
		Score	Rank
1	**ENABLE**	**64.43**	**30**
1.1	Regulatory Landscape	74.41	21
1.1.1	Government effectiveness	69.71	26
1.1.2	Business-government relations	73.82	20
1.1.3	Political stability	74.57	43
1.1.4	Regulatory quality	82.33	16
1.1.5	Corruption	71.62	22
1.2	Market Landscape	55.11	47
1.2.1	Competition intensity	76.18	21
1.2.2	Ease of doing business	69.42	45
1.2.3	Cluster development	44.38	68
1.2.4	R&D expenditure	8.33	69
1.2.5	ICT infrastructure	62.40	57
1.2.6	Technology utilisation	69.94	36
1.3	Business and Labour Landscape	63.78	52
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	80	46
	Management Practice		
1.3.3	Labour-employer cooperation	58.34	50
1.3.4	Professional management	60.61	38
1.3.5	Relationship of pay to productivity	53.29	50
2	**ATTRACT**	**50.64**	**43**
2.1	External Openness	41.04	47
	Attract Business		
2.1.1	FDI and technology transfer	70.46	13
2.1.2	Prevalence of foreign ownership	74.03	16
	Attract People		
2.1.3	Migrant stock	5.61	71
2.1.4	International students	1.12	87
2.1.5	Brain gain	53.97	22
2.2	Internal Openness	60.24	44
	Social Diversity		
2.2.1	Tolerance of minorities	68.89	17
2.2.2	Tolerance of immigrants	68.20	47
2.2.3	Social mobility	62.61	37
	Gender Equality		
2.2.4	Female graduates	67.86	65
2.2.5	Gender earnings gap	50.19	93
2.2.6	Business opportunities for women	43.69	107
3	**GROW**	**58.87**	**22**
3.1	Formal Education	45.70	33
	Enrolment		
3.1.1	Vocational enrolment	45.78	35
3.1.2	Tertiary enrolment	75.27	8
	Quality		
3.1.3	Tertiary education expenditure	25.93	42
3.1.4	Reading, maths, science	33.89	45
3.1.5	University ranking	47.63	30
3.2	Lifelong Learning	64.74	26
3.2.1	Quality of management schools	70.97	20
3.2.2	Prevalence of training in firms	71.37	13
3.2.3	Employee development	51.87	49
3.3	Access to Growth Opportunities	66.16	20
	Networks		
3.3.1	Use of virtual social networks	82.03	35
3.3.2	Use of virtual professional networks	47.19	18
	Empowerment		
3.3.3	Delegation of authority	45.23	64
3.3.4	Personal rights	90.19	10
4	**RETAIN**	**62.36**	**37**
4.1	Sustainability	60.65	22
4.1.1	Pension system	59.60	42
4.1.2	Taxation	59.31	17
4.1.3	Brain retention	63.04	15
4.2	Lifestyle	64.06	54
4.2.1	Environmental performance	75.72	50
4.2.2	Personal safety	68.55	42
4.2.3	Physician density	13.01	81
4.2.4	Sanitation	98.98	23
5	**VOCATIONAL AND TECHNICAL SKILLS**	**50.37**	**46**
5.1	Mid-Level Skills	50.79	36
5.1.1	Workforce with secondary education	76.46	14
5.1.2	Population with secondary education	50.11	37
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	25.81	48
5.2	Employability	49.94	80
5.2.1	Ease of finding skilled employees	54.38	48
5.2.2	Relevance of education system to the economy	39.59	74
5.2.3	Availability of scientists and engineers	59.95	31
5.2.4	Skills gap as major constraint	45.84	85
6	**GLOBAL KNOWLEDGE SKILLS**	**38.01**	**34**
6.1	High-Level Skills	28.09	67
6.1.1	Workforce with tertiary education	31.72	67
6.1.2	Population with tertiary education	28.71	48
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	4.65	62
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	51.21	46
6.1.7	Scientific journal articles	24.16	53
6.2	Talent Impact	47.94	17
6.2.1	Innovation output	36.98	47
6.2.2	High-value exports	8.35	90
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	100.00	1
6.2.4	New business density	46.43	13

CHINA

Key Indicators

Rank (out of 118)	**54**
Income group	**Upper-middle income**
Regional group	**Eastern, Southeastern Asia and Oceania**
Population (millions)	**1,371.22**
GDP per capita (PPP US$)	**14,238.67**
GDP (US$ billions)	**10,866.44**
GTCI score	**45.34**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**55.22**	**52**
1.1	Regulatory Landscape	46.46	64
1.1.1	Government effectiveness	46.58	49
1.1.2	Business-government relations	69.11	31
1.1.3	Political stability	50.21	85
1.1.4	Regulatory quality	39.38	84
1.1.5	Corruption	27.03	76
1.2	Market Landscape	56.58	40
1.2.1	Competition intensity	73.46	35
1.2.2	Ease of doing business	52.90	76
1.2.3	Cluster development	58.77	22
1.2.4	R&D expenditure	47.62	16
1.2.5	ICT infrastructure	45.78	74
1.2.6	Technology utilisation	60.97	64
1.3	Business and Labour Landscape	62.61	54
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	50	97
	Management Practice		
1.3.3	Labour-employer cooperation	56.60	56
1.3.4	Professional management	57.05	50
1.3.5	Relationship of pay to productivity	60.38	17

2	**ATTRACT**	**39.67**	**100**
2.1	External Openness	33.71	75
	Attract Business		
2.1.1	FDI and technology transfer	56.95	67
2.1.2	Prevalence of foreign ownership	57.37	63
	Attract People		
2.1.3	Migrant stock	0.00	118
2.1.4	International students	1.27	85
2.1.5	Brain gain	52.94	27
2.2	Internal Openness	45.63	102
	Social Diversity		
2.2.1	Tolerance of minorities	15.56	107
2.2.2	Tolerance of immigrants	29.94	105
2.2.3	Social mobility	53.36	67
	Gender Equality		
2.2.4	Female graduates	54.67	77
2.2.5	Gender earnings gap	62.07	57
2.2.6	Business opportunities for women	58.20	62

		Score	Rank
3	**GROW**	**49.28**	**39**
3.1	Formal Education	52.72	23
	Enrolment		
3.1.1	Vocational enrolment	48.06	28
3.1.2	Tertiary enrolment	24.89	77
	Quality		
3.1.3	Tertiary education expenditure	n/a	n/a
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	85.20	7
3.2	Lifelong Learning	67.25	20
3.2.1	Quality of management schools	48.97	77
3.2.2	Prevalence of training in firms	100.00	1
3.2.3	Employee development	52.77	47
3.3	Access to Growth Opportunities	27.88	118
	Networks		
3.3.1	Use of virtual social networks	61.94	107
3.3.2	Use of virtual professional networks	0.69	111
	Empowerment		
3.3.3	Delegation of authority	48.89	45
3.3.4	Personal rights	0.00	117

4	**RETAIN**	**45.98**	**71**
4.1	Sustainability	42.53	58
4.1.1	Pension system	26.26	67
4.1.2	Taxation	48.50	46
4.1.3	Brain retention	52.84	30
4.2	Lifestyle	49.42	79
4.2.1	Environmental performance	52.26	91
4.2.2	Personal safety	47.28	76
4.2.3	Physician density	24.85	63
4.2.4	Sanitation	73.30	83

5	**VOCATIONAL AND TECHNICAL SKILLS**	**39.14**	**81**
5.1	Mid-Level Skills	13.02	101
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	18.97	88
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	7.07	84
5.2	Employability	65.27	28
5.2.1	Ease of finding skilled employees	57.22	38
5.2.2	Relevance of education system to the economy	48.63	50
5.2.3	Availability of scientists and engineers	57.90	35
5.2.4	Skills gap as major constraint	97.32	3

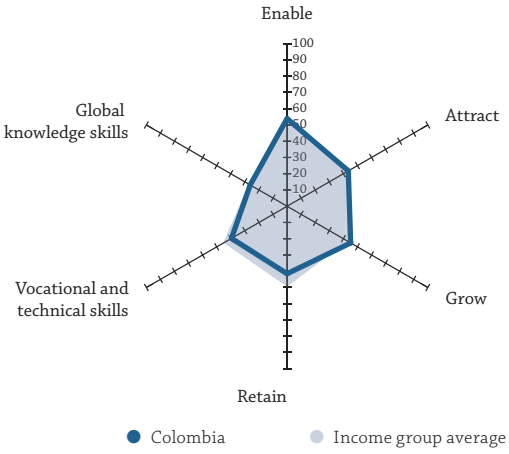
6	**GLOBAL KNOWLEDGE SKILLS**	**42.78**	**27**
6.1	High-Level Skills	25.16	73
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	13.48	76
6.1.3	Professionals	17.27	80
6.1.4	Researchers	13.09	46
6.1.5	Senior officials and managers	9.55	83
6.1.6	Quality of scientific institutions	54.01	40
6.1.7	Scientific journal articles	43.58	40
6.2	Talent Impact	60.39	4
6.2.1	Innovation output	60.50	19
6.2.2	High-value exports	42.21	10
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	78.46	3
6.2.4	New business density	n/a	n/a

COLOMBIA

Key Indicators

Rank (out of 118)	**71**
Income group	**Upper-middle income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**48.23**
GDP per capita (PPP US$)	**13,800.79**
GDP (US$ billions)	**292.08**
GTCI score	**41.63**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**53.91**	**57**
1.1	Regulatory Landscape	42.53	82
1.1.1	Government effectiveness	33.68	75
1.1.2	Business-government relations	60.41	56
1.1.3	Political stability	33.47	110
1.1.4	Regulatory quality	58.08	50
1.1.5	Corruption	27.03	76
1.2	Market Landscape	49.51	67
1.2.1	Competition intensity	73.92	34
1.2.2	Ease of doing business	67.37	51
1.2.3	Cluster development	44.94	62
1.2.4	R&D expenditure	5.24	79
1.2.5	ICT infrastructure	49.49	71
1.2.6	Technology utilisation	56.07	81
1.3	Business and Labour Landscape	69.70	27
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	60.34	42
1.3.4	Professional management	54.81	60
1.3.5	Relationship of pay to productivity	44.35	83

2	**ATTRACT**	**43.48**	**76**
2.1	External Openness	30.94	85
	Attract Business		
2.1.1	FDI and technology transfer	59.93	56
2.1.2	Prevalence of foreign ownership	58.44	60
	Attract People		
2.1.3	Migrant stock	0.45	111
2.1.4	International students	0.00	98
2.1.5	Brain gain	35.86	73
2.2	Internal Openness	56.02	64
	Social Diversity		
2.2.1	Tolerance of minorities	25.56	92
2.2.2	Tolerance of immigrants	74.96	35
2.2.3	Social mobility	49.61	79
	Gender Equality		
2.2.4	Female graduates	66.52	67
2.2.5	Gender earnings gap	66.49	44
2.2.6	Business opportunities for women	52.98	85

		Score	Rank
3	**GROW**	**45.17**	**52**
3.1	Formal Education	25.81	67
	Enrolment		
3.1.1	Vocational enrolment	15.42	77
3.1.2	Tertiary enrolment	44.73	52
	Quality		
3.1.3	Tertiary education expenditure	18.13	69
3.1.4	Reading, maths, science	9.82	57
3.1.5	University ranking	40.97	33
3.2	Lifelong Learning	58.94	35
3.2.1	Quality of management schools	50.54	71
3.2.2	Prevalence of training in firms	81.40	7
3.2.3	Employee development	44.88	81
3.3	Access to Growth Opportunities	50.75	58
	Networks		
3.3.1	Use of virtual social networks	73.15	84
3.3.2	Use of virtual professional networks	24.29	43
	Empowerment		
3.3.3	Delegation of authority	48.32	48
3.3.4	Personal rights	57.24	63

4	**RETAIN**	**41.52**	**85**
4.1	Sustainability	34.92	90
4.1.1	Pension system	30.30	65
4.1.2	Taxation	36.44	92
4.1.3	Brain retention	38.03	73
4.2	Lifestyle	48.11	83
4.2.1	Environmental performance	72.47	55
4.2.2	Personal safety	22.68	104
4.2.3	Physician density	18.78	72
4.2.4	Sanitation	78.52	78

5	**VOCATIONAL AND TECHNICAL SKILLS**	**39.51**	**79**
5.1	Mid-Level Skills	35.36	67
5.1.1	Workforce with secondary education	56.41	33
5.1.2	Population with secondary education	35.04	58
5.1.3	Technicians and associate professionals	37.56	55
5.1.4	Labour productivity per employee	12.43	74
5.2	Employability	43.66	105
5.2.1	Ease of finding skilled employees	51.93	57
5.2.2	Relevance of education system to the economy	35.75	90
5.2.3	Availability of scientists and engineers	46.21	83
5.2.4	Skills gap as major constraint	40.75	87

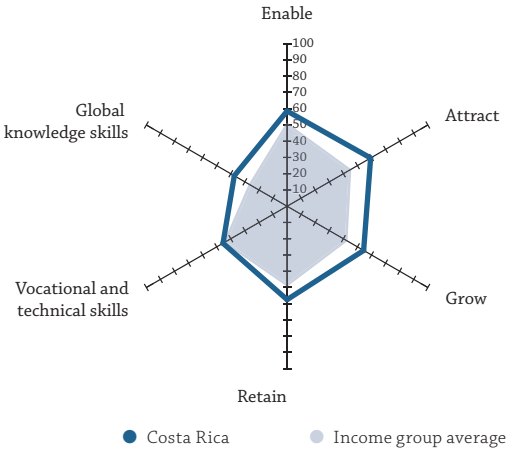
6	**GLOBAL KNOWLEDGE SKILLS**	**26.20**	**68**
6.1	High-Level Skills	24.32	75
6.1.1	Workforce with tertiary education	42.72	42
6.1.2	Population with tertiary education	27.13	50
6.1.3	Professionals	7.27	91
6.1.4	Researchers	1.91	75
6.1.5	Senior officials and managers	33.71	38
6.1.6	Quality of scientific institutions	44.66	70
6.1.7	Scientific journal articles	12.85	68
6.2	Talent Impact	28.08	53
6.2.1	Innovation output	26.03	72
6.2.2	High-value exports	11.63	69
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	63.22	12
6.2.4	New business density	11.43	46

COSTA RICA

Key Indicators

Rank (out of 118)	**39**
Income group	**Upper-middle income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**4.81**
GDP per capita (PPP US$)	**15,377.23**
GDP (US$ billions)	**51.11**
GTCI score	**52.14**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



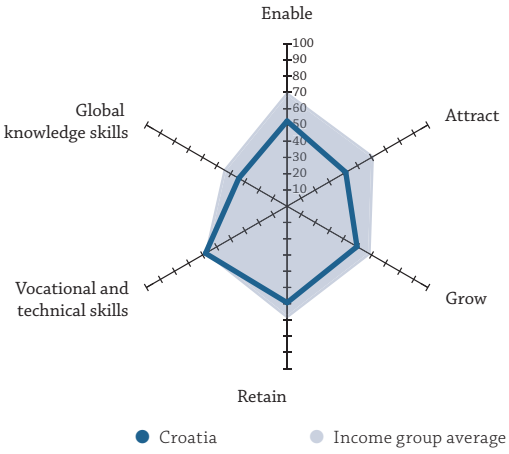
		Score	Rank
1	**ENABLE**	**58.56**	**46**
1.1	Regulatory Landscape	60.16	40
1.1.1	Government effectiveness	48.31	45
1.1.2	Business-government relations	64.38	38
1.1.3	Political stability	78.05	37
1.1.4	Regulatory quality	58.70	47
1.1.5	Corruption	51.35	38
1.2	Market Landscape	53.70	51
1.2.1	Competition intensity	70.79	53
1.2.2	Ease of doing business	63.75	54
1.2.3	Cluster development	50.41	40
1.2.4	R&D expenditure	10.95	59
1.2.5	ICT infrastructure	59.21	59
1.2.6	Technology utilisation	67.10	42
1.3	Business and Labour Landscape	61.82	56
	Labour Market Flexibility		
1.3.1	Ease of hiring	22.33	104
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	71.96	17
1.3.4	Professional management	59.66	40
1.3.5	Relationship of pay to productivity	55.14	39
2	**ATTRACT**	**59.35**	**25**
2.1	External Openness	51.17	25
	Attract Business		
2.1.1	FDI and technology transfer	71.27	12
2.1.2	Prevalence of foreign ownership	67.87	32
	Attract People		
2.1.3	Migrant stock	19.20	42
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	46.35	40
2.2	Internal Openness	67.52	24
	Social Diversity		
2.2.1	Tolerance of minorities	62.22	31
2.2.2	Tolerance of immigrants	81.38	25
2.2.3	Social mobility	66.00	31
	Gender Equality		
2.2.4	Female graduates	85.67	17
2.2.5	Gender earnings gap	56.00	84
2.2.6	Business opportunities for women	53.85	78
3	**GROW**	**54.39**	**30**
3.1	Formal Education	35.91	48
	Enrolment		
3.1.1	Vocational enrolment	47.42	31
3.1.2	Tertiary enrolment	46.37	49
	Quality		
3.1.3	Tertiary education expenditure	n/a	n/a
3.1.4	Reading, maths, science	27.97	46
3.1.5	University ranking	21.90	60
3.2	Lifelong Learning	64.74	25
3.2.1	Quality of management schools	68.82	26
3.2.2	Prevalence of training in firms	67.68	20
3.2.3	Employee development	57.73	29
3.3	Access to Growth Opportunities	62.52	25
	Networks		
3.3.1	Use of virtual social networks	79.37	53
3.3.2	Use of virtual professional networks	30.59	31
	Empowerment		
3.3.3	Delegation of authority	56.65	27
3.3.4	Personal rights	83.48	23
4	**RETAIN**	**57.47**	**49**
4.1	Sustainability	53.20	39
4.1.1	Pension system	55.56	45
4.1.2	Taxation	47.12	52
4.1.3	Brain retention	56.93	25
4.2	Lifestyle	61.73	57
4.2.1	Environmental performance	80.12	41
4.2.2	Personal safety	58.93	64
4.2.3	Physician density	14.14	80
4.2.4	Sanitation	93.75	54
5	**VOCATIONAL AND TECHNICAL SKILLS**	**45.53**	**62**
5.1	Mid-Level Skills	32.11	71
5.1.1	Workforce with secondary education	27.44	79
5.1.2	Population with secondary education	23.32	80
5.1.3	Technicians and associate professionals	63.45	29
5.1.4	Labour productivity per employee	14.24	68
5.2	Employability	58.95	43
5.2.1	Ease of finding skilled employees	66.74	14
5.2.2	Relevance of education system to the economy	59.00	28
5.2.3	Availability of scientists and engineers	60.99	29
5.2.4	Skills gap as major constraint	49.06	82
6	**GLOBAL KNOWLEDGE SKILLS**	**37.52**	**36**
6.1	High-Level Skills	29.21	62
6.1.1	Workforce with tertiary education	40.78	44
6.1.2	Population with tertiary education	34.95	30
6.1.3	Professionals	31.21	56
6.1.4	Researchers	15.96	42
6.1.5	Senior officials and managers	15.73	67
6.1.6	Quality of scientific institutions	59.31	34
6.1.7	Scientific journal articles	6.52	87
6.2	Talent Impact	45.83	21
6.2.1	Innovation output	37.88	43
6.2.2	High-value exports	100.00	1
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	39.21	54
6.2.4	New business density	6.21	66

CROATIA

Key Indicators

Rank (out of 118)	**45**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**4.22**
GDP per capita (PPP US$)	**21,880.48**
GDP (US$ billions)	**48.73**
GTCI score	**49.22**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**52.39**	**64**
1.1	Regulatory Landscape	53.21	51
1.1.1	Government effectiveness	56.78	40
1.1.2	Business-government relations	30.38	113
1.1.3	Political stability	77.30	40
1.1.4	Regulatory quality	55.64	54
1.1.5	Corruption	45.95	46
1.2	Market Landscape	53.58	52
1.2.1	Competition intensity	64.95	77
1.2.2	Ease of doing business	71.77	38
1.2.3	Cluster development	34.15	104
1.2.4	R&D expenditure	19.05	40
1.2.5	ICT infrastructure	72.38	37
1.2.6	Technology utilisation	59.21	66
1.3	Business and Labour Landscape	50.39	97
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	60	81
	Management Practice		
1.3.3	Labour-employer cooperation	42.61	111
1.3.4	Professional management	44.09	92
1.3.5	Relationship of pay to productivity	49.57	66

2	**ATTRACT**	**41.70**	**87**
2.1	External Openness	28.76	102
	Attract Business		
2.1.1	FDI and technology transfer	46.19	102
2.1.2	Prevalence of foreign ownership	50.15	91
	Attract People		
2.1.3	Migrant stock	29.86	25
2.1.4	International students	2.59	79
2.1.5	Brain gain	15.01	114
2.2	Internal Openness	54.64	73
	Social Diversity		
2.2.1	Tolerance of minorities	48.89	50
2.2.2	Tolerance of immigrants	39.04	96
2.2.3	Social mobility	42.94	104
	Gender Equality		
2.2.4	Female graduates	75.88	40
2.2.5	Gender earnings gap	70.39	38
2.2.6	Business opportunities for women	50.69	92

3	**GROW**	**49.66**	**36**
3.1	Formal Education	47.11	29
	Enrolment		
3.1.1	Vocational enrolment	81.65	6
3.1.2	Tertiary enrolment	54.47	39
	Quality		
3.1.3	Tertiary education expenditure	19.49	65
3.1.4	Reading, maths, science	59.37	32
3.1.5	University ranking	20.59	62
3.2	Lifelong Learning	49.70	65
3.2.1	Quality of management schools	50.30	72
3.2.2	Prevalence of training in firms	60.55	27
3.2.3	Employee development	38.24	107
3.3	Access to Growth Opportunities	52.16	51
	Networks		
3.3.1	Use of virtual social networks	73.65	80
3.3.2	Use of virtual professional networks	26.81	36
	Empowerment		
3.3.3	Delegation of authority	40.67	86
3.3.4	Personal rights	67.51	46

4	**RETAIN**	**59.33**	**46**
4.1	Sustainability	41.36	64
4.1.1	Pension system	82.83	29
4.1.2	Taxation	23.64	114
4.1.3	Brain retention	17.61	114
4.2	Lifestyle	77.30	24
4.2.1	Environmental performance	93.09	15
4.2.2	Personal safety	80.91	27
4.2.3	Physician density	38.59	33
4.2.4	Sanitation	96.59	41

5	**VOCATIONAL AND TECHNICAL SKILLS**	**57.93**	**28**
5.1	Mid-Level Skills	61.38	12
5.1.1	Workforce with secondary education	86.07	7
5.1.2	Population with secondary education	74.00	9
5.1.3	Technicians and associate professionals	58.38	33
5.1.4	Labour productivity per employee	27.09	43
5.2	Employability	54.48	65
5.2.1	Ease of finding skilled employees	43.98	93
5.2.2	Relevance of education system to the economy	35.64	91
5.2.3	Availability of scientists and engineers	47.80	74
5.2.4	Skills gap as major constraint	90.48	13

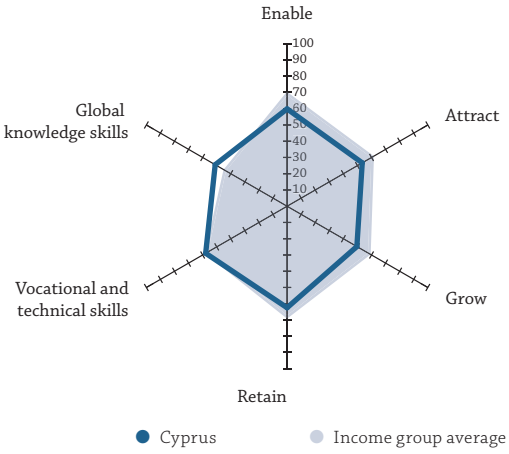
6	**GLOBAL KNOWLEDGE SKILLS**	**34.34**	**44**
6.1	High-Level Skills	40.82	35
6.1.1	Workforce with tertiary education	39.00	49
6.1.2	Population with tertiary education	30.31	41
6.1.3	Professionals	40.61	42
6.1.4	Researchers	18.40	39
6.1.5	Senior officials and managers	24.16	55
6.1.6	Quality of scientific institutions	50.21	50
6.1.7	Scientific journal articles	83.03	4
6.2	Talent Impact	27.87	55
6.2.1	Innovation output	41.11	40
6.2.2	High-value exports	21.12	44
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	22.54	77
6.2.4	New business density	26.70	23

CYPRUS

Key Indicators

Rank (out of 118)	**30**
Income group	**High income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**1.17**
GDP per capita (PPP US$)	**30,734.18**
GDP (US$ billions)	**19.32**
GTCI score	**55.70**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**59.89**	**41**
1.1	Regulatory Landscape	68.59	27
1.1.1	Government effectiveness	69.52	28
1.1.2	Business-government relations	62.09	48
1.1.3	Political stability	79.47	35
1.1.4	Regulatory quality	72.43	27
1.1.5	Corruption	59.46	30
1.2	Market Landscape	56.42	41
1.2.1	Competition intensity	71.50	45
1.2.2	Ease of doing business	69.98	44
1.2.3	Cluster development	48.19	50
1.2.4	R&D expenditure	11.19	57
1.2.5	ICT infrastructure	68.67	45
1.2.6	Technology utilisation	68.99	37
1.3	Business and Labour Landscape	54.64	83
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	60	81
	Management Practice		
1.3.3	Labour-employer cooperation	61.68	37
1.3.4	Professional management	46.14	84
1.3.5	Relationship of pay to productivity	49.73	65

		Score	Rank
2	**ATTRACT**	**53.39**	**37**
2.1	External Openness	51.13	26
	Attract Business		
2.1.1	FDI and technology transfer	53.69	79
2.1.2	Prevalence of foreign ownership	53.98	76
	Attract People		
2.1.3	Migrant stock	36.99	18
2.1.4	International students	74.82	10
2.1.5	Brain gain	36.17	70
2.2	Internal Openness	55.65	67
	Social Diversity		
2.2.1	Tolerance of minorities	30.00	80
2.2.2	Tolerance of immigrants	47.88	78
2.2.3	Social mobility	53.41	66
	Gender Equality		
2.2.4	Female graduates	80.31	25
2.2.5	Gender earnings gap	64.88	50
2.2.6	Business opportunities for women	57.44	69

		Score	Rank
3	**GROW**	**49.58**	**37**
3.1	Formal Education	26.29	65
	Enrolment		
3.1.1	Vocational enrolment	16.99	75
3.1.2	Tertiary enrolment	46.43	48
	Quality		
3.1.3	Tertiary education expenditure	30.93	28
3.1.4	Reading, maths, science	37.09	40
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	56.78	39
3.2.1	Quality of management schools	62.43	34
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	51.14	52
3.3	Access to Growth Opportunities	65.67	21
	Networks		
3.3.1	Use of virtual social networks	81.99	36
3.3.2	Use of virtual professional networks	37.07	25
	Empowerment		
3.3.3	Delegation of authority	49.78	42
3.3.4	Personal rights	93.84	7

		Score	Rank
4	**RETAIN**	**62.44**	**36**
4.1	Sustainability	53.15	40
4.1.1	Pension system	n/a	n/a
4.1.2	Taxation	61.30	15
4.1.3	Brain retention	44.99	44
4.2	Lifestyle	71.74	38
4.2.1	Environmental performance	80.52	39
4.2.2	Personal safety	76.54	34
4.2.3	Physician density	29.90	53
4.2.4	Sanitation	100.00	1

		Score	Rank
5	**VOCATIONAL AND TECHNICAL SKILLS**	**57.85**	**29**
5.1	Mid-Level Skills	48.78	41
5.1.1	Workforce with secondary education	50.56	48
5.1.2	Population with secondary education	45.58	44
5.1.3	Technicians and associate professionals	60.41	31
5.1.4	Labour productivity per employee	38.56	27
5.2	Employability	66.92	16
5.2.1	Ease of finding skilled employees	71.31	5
5.2.2	Relevance of education system to the economy	64.33	18
5.2.3	Availability of scientists and engineers	65.12	20
5.2.4	Skills gap as major constraint	n/a	n/a

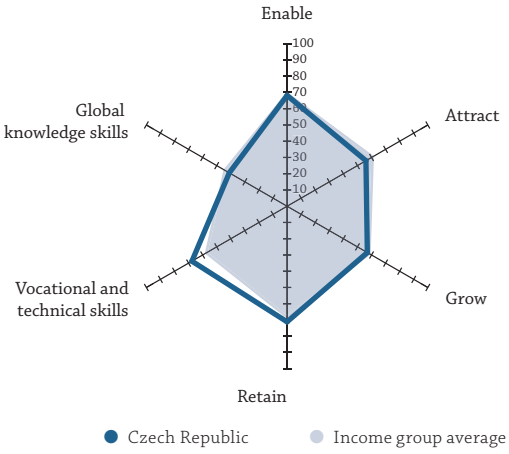
		Score	Rank
6	**GLOBAL KNOWLEDGE SKILLS**	**51.08**	**17**
6.1	High-Level Skills	43.14	33
6.1.1	Workforce with tertiary education	69.74	9
6.1.2	Population with tertiary education	43.09	17
6.1.3	Professionals	51.52	24
6.1.4	Researchers	9.29	49
6.1.5	Senior officials and managers	23.03	60
6.1.6	Quality of scientific institutions	51.99	44
6.1.7	Scientific journal articles	53.30	28
6.2	Talent Impact	59.03	5
6.2.1	Innovation output	39.14	41
6.2.2	High-value exports	58.60	6
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	79.34	6

CZECH REPUBLIC

Key Indicators

Rank (out of 118)	**23**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**10.55**
GDP per capita (PPP US$)	**32,167.06**
GDP (US$ billions)	**181.81**
GTCI score	**60.17**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



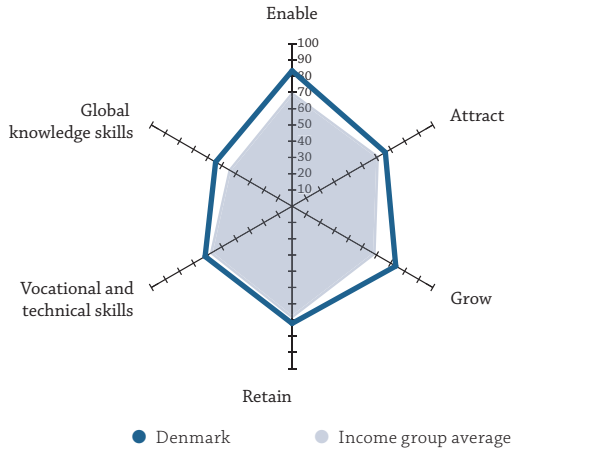
		Score	Rank
1	**ENABLE**	**68.15**	**26**
1.1	Regulatory Landscape	64.18	37
1.1.1	Government effectiveness	66.27	32
1.1.2	Business-government relations	44.63	93
1.1.3	Political stability	86.61	22
1.1.4	Regulatory quality	70.69	30
1.1.5	Corruption	52.70	35
1.2	Market Landscape	64.31	28
1.2.1	Competition intensity	79.12	12
1.2.2	Ease of doing business	74.17	34
1.2.3	Cluster development	48.05	51
1.2.4	R&D expenditure	45.24	19
1.2.5	ICT infrastructure	73.40	36
1.2.6	Technology utilisation	65.89	47
1.3	Business and Labour Landscape	75.97	16
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	61.59	38
1.3.4	Professional management	67.95	25
1.3.5	Relationship of pay to productivity	61.32	15
2	**ATTRACT**	**56.02**	**30**
2.1	External Openness	48.83	32
	Attract Business		
2.1.1	FDI and technology transfer	67.32	22
2.1.2	Prevalence of foreign ownership	83.64	6
	Attract People		
2.1.3	Migrant stock	8.32	61
2.1.4	International students	48.89	18
2.1.5	Brain gain	35.98	71
2.2	Internal Openness	63.22	35
	Social Diversity		
2.2.1	Tolerance of minorities	68.89	17
2.2.2	Tolerance of immigrants	44.47	86
2.2.3	Social mobility	65.92	32
	Gender Equality		
2.2.4	Female graduates	82.05	23
2.2.5	Gender earnings gap	59.45	70
2.2.6	Business opportunities for women	58.51	60
3	**GROW**	**57.01**	**24**
3.1	Formal Education	53.91	20
	Enrolment		
3.1.1	Vocational enrolment	86.65	4
3.1.2	Tertiary enrolment	57.95	31
	Quality		
3.1.3	Tertiary education expenditure	21.51	56
3.1.4	Reading, maths, science	69.17	18
3.1.5	University ranking	34.28	37
3.2	Lifelong Learning	59.45	34
3.2.1	Quality of management schools	54.91	58
3.2.2	Prevalence of training in firms	68.21	18
3.2.3	Employee development	55.25	38
3.3	Access to Growth Opportunities	57.67	37
	Networks		
3.3.1	Use of virtual social networks	81.60	39
3.3.2	Use of virtual professional networks	21.92	46
	Empowerment		
3.3.3	Delegation of authority	51.02	38
3.3.4	Personal rights	76.13	34
4	**RETAIN**	**71.12**	**18**
4.1	Sustainability	59.18	24
4.1.1	Pension system	94.95	3
4.1.2	Taxation	38.97	87
4.1.3	Brain retention	43.61	51
4.2	Lifestyle	83.07	12
4.2.1	Environmental performance	88.78	27
4.2.2	Personal safety	97.85	6
4.2.3	Physician density	46.68	18
4.2.4	Sanitation	98.98	23
5	**VOCATIONAL AND TECHNICAL SKILLS**	**67.61**	**5**
5.1	Mid-Level Skills	80.49	1
5.1.1	Workforce with secondary education	98.61	3
5.1.2	Population with secondary education	100.00	1
5.1.3	Technicians and associate professionals	92.89	4
5.1.4	Labour productivity per employee	30.45	36
5.2	Employability	54.73	62
5.2.1	Ease of finding skilled employees	46.87	76
5.2.2	Relevance of education system to the economy	47.40	52
5.2.3	Availability of scientists and engineers	50.38	64
5.2.4	Skills gap as major constraint	74.26	51
6	**GLOBAL KNOWLEDGE SKILLS**	**41.07**	**30**
6.1	High-Level Skills	40.94	34
6.1.1	Workforce with tertiary education	35.76	57
6.1.2	Population with tertiary education	6.25	87
6.1.3	Professionals	38.48	47
6.1.4	Researchers	39.20	26
6.1.5	Senior officials and managers	26.40	52
6.1.6	Quality of scientific institutions	61.13	32
6.1.7	Scientific journal articles	79.32	9
6.2	Talent Impact	41.21	24
6.2.1	Innovation output	63.91	17
6.2.2	High-value exports	28.11	33
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	53.15	25
6.2.4	New business density	19.67	33

DENMARK

Key Indicators

Rank (out of 118)	**8**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**5.68**
GDP per capita (PPP US$)	**46,635.24**
GDP (US$ billions)	**295.16**
GTCI score	**68.59**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**83.35**	**3**
1.1	Regulatory Landscape	87.39	10
1.1.1	Government effectiveness	88.85	8
1.1.2	Business-government relations	74.56	19
1.1.3	Political stability	86.02	23
1.1.4	Regulatory quality	87.52	11
1.1.5	Corruption	100.00	1
1.2	Market Landscape	77.51	7
1.2.1	Competition intensity	71.69	44
1.2.2	Ease of doing business	94.33	3
1.2.3	Cluster development	57.74	23
1.2.4	R&D expenditure	72.62	6
1.2.5	ICT infrastructure	90.15	12
1.2.6	Technology utilisation	78.55	15
1.3	Business and Labour Landscape	85.16	4
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	84.27	2
1.3.4	Professional management	83.40	8
1.3.5	Relationship of pay to productivity	58.13	27
2	**ATTRACT**	**66.26**	**15**
2.1	External Openness	52.32	23
	Attract Business		
2.1.1	FDI and technology transfer	65.00	29
2.1.2	Prevalence of foreign ownership	73.15	20
	Attract People		
2.1.3	Migrant stock	22.13	38
2.1.4	International students	52.73	16
2.1.5	Brain gain	48.57	33
2.2	Internal Openness	80.20	10
	Social Diversity		
2.2.1	Tolerance of minorities	73.33	11
2.2.2	Tolerance of immigrants	88.78	13
2.2.3	Social mobility	81.08	11
	Gender Equality		
2.2.4	Female graduates	71.45	53
2.2.5	Gender earnings gap	89.97	12
2.2.6	Business opportunities for women	76.60	8

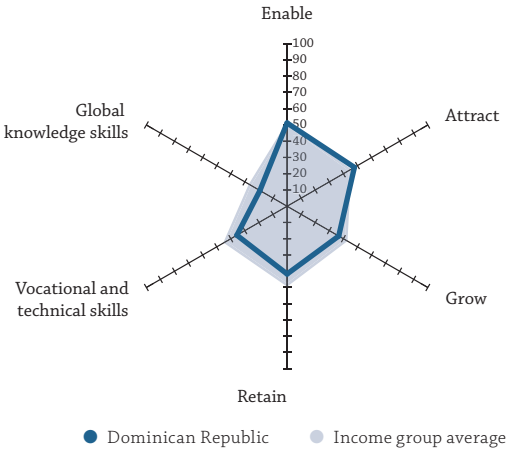
		Score	Rank
3	**GROW**	**73.65**	**3**
3.1	Formal Education	64.28	6
	Enrolment		
3.1.1	Vocational enrolment	52.02	27
3.1.2	Tertiary enrolment	72.84	11
	Quality		
3.1.3	Tertiary education expenditure	57.78	5
3.1.4	Reading, maths, science	68.15	21
3.1.5	University ranking	70.60	14
3.2	Lifelong Learning	70.04	13
3.2.1	Quality of management schools	72.51	16
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	67.57	16
3.3	Access to Growth Opportunities	86.63	2
	Networks		
3.3.1	Use of virtual social networks	86.22	21
3.3.2	Use of virtual professional networks	85.74	4
	Empowerment		
3.3.3	Delegation of authority	84.94	1
3.3.4	Personal rights	89.63	11
4	**RETAIN**	**72.10**	**15**
4.1	Sustainability	59.12	25
4.1.1	Pension system	92.93	8
4.1.2	Taxation	28.89	109
4.1.3	Brain retention	55.55	27
4.2	Lifestyle	85.08	8
4.2.1	Environmental performance	97.26	4
4.2.2	Personal safety	98.66	5
4.2.3	Physician density	44.87	23
4.2.4	Sanitation	99.55	16
5	**VOCATIONAL AND TECHNICAL SKILLS**	**61.80**	**17**
5.1	Mid-Level Skills	59.90	18
5.1.1	Workforce with secondary education	55.99	35
5.1.2	Population with secondary education	60.19	25
5.1.3	Technicians and associate professionals	78.68	15
5.1.4	Labour productivity per employee	44.75	19
5.2	Employability	63.71	32
5.2.1	Ease of finding skilled employees	66.86	13
5.2.2	Relevance of education system to the economy	64.91	17
5.2.3	Availability of scientists and engineers	59.35	34
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**54.34**	**14**
6.1	High-Level Skills	61.57	9
6.1.1	Workforce with tertiary education	52.10	26
6.1.2	Population with tertiary education	37.89	26
6.1.3	Professionals	75.45	3
6.1.4	Researchers	87.71	2
6.1.5	Senior officials and managers	15.17	69
6.1.6	Quality of scientific institutions	75.12	16
6.1.7	Scientific journal articles	87.56	3
6.2	Talent Impact	47.12	18
6.2.1	Innovation output	65.71	12
6.2.2	High-value exports	37.90	16
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	59.72	13
6.2.4	New business density	25.13	26

DOMINICAN REPUBLIC

Key Indicators

Rank (out of 118)	**84**
Income group	**Upper-middle income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**10.53**
GDP per capita (PPP US$)	**14,211.72**
GDP (US$ billions)	**67.10**
GTCI score	**38.73**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**51.23**	**69**
1.1	Regulatory Landscape	44.36	74
1.1.1	Government effectiveness	24.41	94
1.1.2	Business-government relations	64.02	39
1.1.3	Political stability	66.77	52
1.1.4	Regulatory quality	44.99	73
1.1.5	Corruption	21.62	90
1.2	Market Landscape	50.82	62
1.2.1	Competition intensity	72.35	43
1.2.2	Ease of doing business	49.49	80
1.2.3	Cluster development	42.33	78
1.2.4	R&D expenditure	n/a	n/a
1.2.5	ICT infrastructure	31.33	97
1.2.6	Technology utilisation	58.61	69
1.3	Business and Labour Landscape	58.49	69
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	55.26	65
1.3.4	Professional management	41.11	104
1.3.5	Relationship of pay to productivity	40.43	97
2	**ATTRACT**	**47.83**	**56**
2.1	External Openness	38.14	59
	Attract Business		
2.1.1	FDI and technology transfer	62.09	44
2.1.2	Prevalence of foreign ownership	67.54	34
	Attract People		
2.1.3	Migrant stock	8.55	59
2.1.4	International students	12.03	56
2.1.5	Brain gain	40.48	57
2.2	Internal Openness	57.53	57
	Social Diversity		
2.2.1	Tolerance of minorities	43.33	61
2.2.2	Tolerance of immigrants	59.44	57
2.2.3	Social mobility	44.71	98
	Gender Equality		
2.2.4	Female graduates	85.17	18
2.2.5	Gender earnings gap	63.99	54
2.2.6	Business opportunities for women	48.52	98

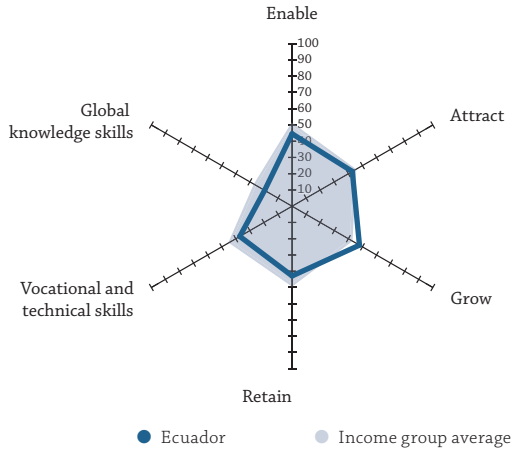
		Score	Rank
3	**GROW**	**36.68**	**85**
3.1	Formal Education	13.64	98
	Enrolment		
3.1.1	Vocational enrolment	10.18	85
3.1.2	Tertiary enrolment	41.19	54
	Quality		
3.1.3	Tertiary education expenditure	3.18	103
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	53.15	49
3.2.1	Quality of management schools	45.40	94
3.2.2	Prevalence of training in firms	70.71	15
3.2.3	Employee development	43.34	89
3.3	Access to Growth Opportunities	43.25	85
	Networks		
3.3.1	Use of virtual social networks	73.84	79
3.3.2	Use of virtual professional networks	12.73	67
	Empowerment		
3.3.3	Delegation of authority	44.49	67
3.3.4	Personal rights	41.94	85
4	**RETAIN**	**41.69**	**84**
4.1	Sustainability	36.90	81
4.1.1	Pension system	25.25	69
4.1.2	Taxation	45.60	62
4.1.3	Brain retention	39.84	68
4.2	Lifestyle	46.49	86
4.2.1	Environmental performance	71.33	56
4.2.2	Personal safety	13.77	112
4.2.3	Physician density	19.02	71
4.2.4	Sanitation	81.82	74
5	**VOCATIONAL AND TECHNICAL SKILLS**	**35.66**	**91**
5.1	Mid-Level Skills	30.43	74
5.1.1	Workforce with secondary education	44.71	58
5.1.2	Population with secondary education	31.56	66
5.1.3	Technicians and associate professionals	30.46	63
5.1.4	Labour productivity per employee	14.98	66
5.2	Employability	40.89	112
5.2.1	Ease of finding skilled employees	45.18	83
5.2.2	Relevance of education system to the economy	27.48	110
5.2.3	Availability of scientists and engineers	39.03	102
5.2.4	Skills gap as major constraint	51.88	76
6	**GLOBAL KNOWLEDGE SKILLS**	**19.31**	**86**
6.1	High-Level Skills	20.74	81
6.1.1	Workforce with tertiary education	34.95	59
6.1.2	Population with tertiary education	19.22	70
6.1.3	Professionals	21.82	70
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	16.85	65
6.1.6	Quality of scientific institutions	31.57	107
6.1.7	Scientific journal articles	0.00	118
6.2	Talent Impact	17.89	84
6.2.1	Innovation output	18.67	88
6.2.2	High-value exports	10.11	80
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	36.00	59
6.2.4	New business density	6.79	62

ECUADOR

Key Indicators

Rank (out of 118)	**79**
Income group	**Upper-middle income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**16.14**
GDP per capita (PPP US$)	**11,388.16**
GDP (US$ billions)	**100.87**
GTCI score	**39.13**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**44.57**	**93**
1.1	Regulatory Landscape	34.15	98
1.1.1	Government effectiveness	22.43	98
1.1.2	Business-government relations	45.17	91
1.1.3	Political stability	61.75	64
1.1.4	Regulatory quality	21.12	113
1.1.5	Corruption	20.27	93
1.2	Market Landscape	43.33	88
1.2.1	Competition intensity	66.23	72
1.2.2	Ease of doing business	42.37	95
1.2.3	Cluster development	40.06	88
1.2.4	R&D expenditure	7.86	71
1.2.5	ICT infrastructure	45.27	75
1.2.6	Technology utilisation	58.18	70
1.3	Business and Labour Landscape	56.23	76
	Labour Market Flexibility		
1.3.1	Ease of hiring	44.33	95
1.3.2	Ease of redundancy	80	46
	Management Practice		
1.3.3	Labour-employer cooperation	57.83	51
1.3.4	Professional management	47.84	78
1.3.5	Relationship of pay to productivity	51.16	59
2	**ATTRACT**	**42.79**	**83**
2.1	External Openness	26.92	110
	Attract Business		
2.1.1	FDI and technology transfer	44.64	108
2.1.2	Prevalence of foreign ownership	42.40	104
	Attract People		
2.1.3	Migrant stock	5.14	73
2.1.4	International students	2.87	78
2.1.5	Brain gain	39.57	59
2.2	Internal Openness	58.67	52
	Social Diversity		
2.2.1	Tolerance of minorities	27.78	86
2.2.2	Tolerance of immigrants	79.97	28
2.2.3	Social mobility	53.30	68
	Gender Equality		
2.2.4	Female graduates	72.12	50
2.2.5	Gender earnings gap	66.11	45
2.2.6	Business opportunities for women	52.73	86

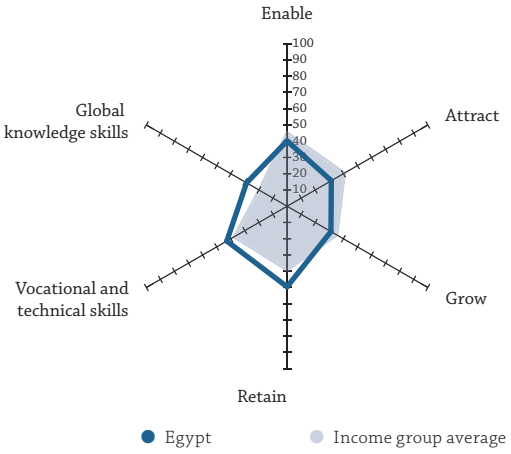
		Score	Rank
3	**GROW**	**47.87**	**46**
3.1	Formal Education	36.81	45
	Enrolment		
3.1.1	Vocational enrolment	69.36	14
3.1.2	Tertiary enrolment	34.58	62
	Quality		
3.1.3	Tertiary education expenditure	24.54	45
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	18.77	66
3.2	Lifelong Learning	60.58	30
3.2.1	Quality of management schools	54.60	59
3.2.2	Prevalence of training in firms	82.45	6
3.2.3	Employee development	44.68	82
3.3	Access to Growth Opportunities	46.21	72
	Networks		
3.3.1	Use of virtual social networks	63.36	103
3.3.2	Use of virtual professional networks	20.37	49
	Empowerment		
3.3.3	Delegation of authority	47.04	56
3.3.4	Personal rights	54.06	69
4	**RETAIN**	**42.88**	**81**
4.1	Sustainability	37.85	76
4.1.1	Pension system	25.25	69
4.1.2	Taxation	47.41	50
4.1.3	Brain retention	40.87	63
4.2	Lifestyle	47.91	85
4.2.1	Environmental performance	55.02	85
4.2.2	Personal safety	31.95	99
4.2.3	Physician density	22.06	67
4.2.4	Sanitation	82.61	73
5	**VOCATIONAL AND TECHNICAL SKILLS**	**37.14**	**88**
5.1	Mid-Level Skills	27.70	83
5.1.1	Workforce with secondary education	37.47	64
5.1.2	Population with secondary education	37.81	54
5.1.3	Technicians and associate professionals	21.83	75
5.1.4	Labour productivity per employee	13.70	69
5.2	Employability	46.58	92
5.2.1	Ease of finding skilled employees	48.71	64
5.2.2	Relevance of education system to the economy	44.11	61
5.2.3	Availability of scientists and engineers	38.94	103
5.2.4	Skills gap as major constraint	54.56	75
6	**GLOBAL KNOWLEDGE SKILLS**	**19.53**	**84**
6.1	High-Level Skills	18.02	91
6.1.1	Workforce with tertiary education	33.33	63
6.1.2	Population with tertiary education	17.43	72
6.1.3	Professionals	24.55	66
6.1.4	Researchers	2.10	69
6.1.5	Senior officials and managers	6.74	86
6.1.6	Quality of scientific institutions	39.91	84
6.1.7	Scientific journal articles	2.11	108
6.2	Talent Impact	21.04	76
6.2.1	Innovation output	9.34	112
6.2.2	High-value exports	13.00	67
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	40.79	51
6.2.4	New business density	n/a	n/a

EGYPT

Key Indicators

Rank (out of 118)	**88**
Income group	**Lower-middle income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**91.51**
GDP per capita (PPP US$)	**10,891.26**
GDP (US$ billions)	**330.78**
GTCI score	**37.33**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



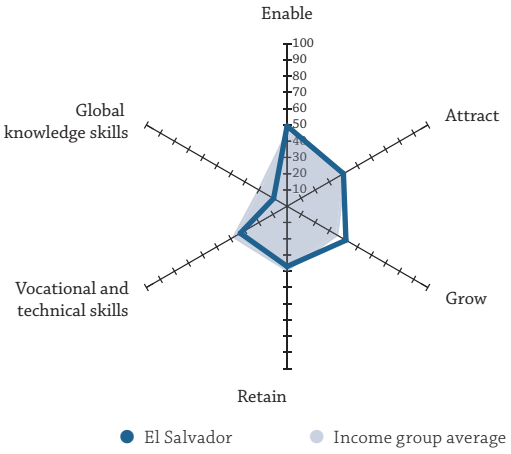
		Score	Rank
1	**ENABLE**	**40.18**	**104**
1.1	Regulatory Landscape	25.61	112
1.1.1	Government effectiveness	13.20	111
1.1.2	Business-government relations	39.94	98
1.1.3	Political stability	21.72	114
1.1.4	Regulatory quality	27.54	107
1.1.5	Corruption	25.68	79
1.2	Market Landscape	42.06	96
1.2.1	Competition intensity	53.95	114
1.2.2	Ease of doing business	36.50	104
1.2.3	Cluster development	54.48	30
1.2.4	R&D expenditure	15.95	47
1.2.5	ICT infrastructure	44.12	77
1.2.6	Technology utilisation	47.37	110
1.3	Business and Labour Landscape	52.85	85
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	40	104
	Management Practice		
1.3.3	Labour-employer cooperation	52.15	82
1.3.4	Professional management	35.49	115
1.3.5	Relationship of pay to productivity	36.62	108
2	**ATTRACT**	**31.42**	**116**
2.1	External Openness	26.80	111
	Attract Business		
2.1.1	FDI and technology transfer	56.21	71
2.1.2	Prevalence of foreign ownership	39.33	109
	Attract People		
2.1.3	Migrant stock	1.03	101
2.1.4	International students	9.07	64
2.1.5	Brain gain	28.36	89
2.2	Internal Openness	36.04	116
	Social Diversity		
2.2.1	Tolerance of minorities	15.56	107
2.2.2	Tolerance of immigrants	22.37	111
2.2.3	Social mobility	34.36	117
	Gender Equality		
2.2.4	Female graduates	58.03	75
2.2.5	Gender earnings gap	30.07	108
2.2.6	Business opportunities for women	55.88	71
3	**GROW**	**31.16**	**102**
3.1	Formal Education	33.60	53
	Enrolment		
3.1.1	Vocational enrolment	47.00	33
3.1.2	Tertiary enrolment	25.04	76
	Quality		
3.1.3	Tertiary education expenditure	n/a	n/a
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	28.76	48
3.2	Lifelong Learning	18.96	118
3.2.1	Quality of management schools	25.51	118
3.2.2	Prevalence of training in firms	2.37	89
3.2.3	Employee development	28.99	118
3.3	Access to Growth Opportunities	40.93	91
	Networks		
3.3.1	Use of virtual social networks	79.52	50
3.3.2	Use of virtual professional networks	6.54	89
	Empowerment		
3.3.3	Delegation of authority	52.77	31
3.3.4	Personal rights	24.89	104
4	**RETAIN**	**49.57**	**65**
4.1	Sustainability	42.47	59
4.1.1	Pension system	54.55	46
4.1.2	Taxation	40.54	85
4.1.3	Brain retention	32.32	88
4.2	Lifestyle	56.68	67
4.2.1	Environmental performance	54.78	86
4.2.2	Personal safety	41.57	86
4.2.3	Physician density	36.39	39
4.2.4	Sanitation	93.98	53
5	**VOCATIONAL AND TECHNICAL SKILLS**	**42.84**	**69**
5.1	Mid-Level Skills	34.04	68
5.1.1	Workforce with secondary education	49.30	52
5.1.2	Population with secondary education	n/a	n/a
5.1.3	Technicians and associate professionals	38.07	54
5.1.4	Labour productivity per employee	14.74	67
5.2	Employability	51.63	74
5.2.1	Ease of finding skilled employees	47.88	68
5.2.2	Relevance of education system to the economy	18.92	117
5.2.3	Availability of scientists and engineers	55.01	43
5.2.4	Skills gap as major constraint	84.72	29
6	**GLOBAL KNOWLEDGE SKILLS**	**28.78**	**58**
6.1	High-Level Skills	33.97	52
6.1.1	Workforce with tertiary education	30.10	72
6.1.2	Population with tertiary education	n/a	n/a
6.1.3	Professionals	38.48	47
6.1.4	Researchers	6.50	58
6.1.5	Senior officials and managers	84.27	4
6.1.6	Quality of scientific institutions	26.69	115
6.1.7	Scientific journal articles	17.78	60
6.2	Talent Impact	23.59	70
6.2.1	Innovation output	18.85	87
6.2.2	High-value exports	10.57	74
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	41.36	49
6.2.4	New business density	n/a	n/a

EL SALVADOR

Key Indicators

Rank (out of 118)	**95**
Income group	**Lower-middle income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**6.13**
GDP per capita (PPP US$)	**8,602.07**
GDP (US$ billions)	**25.85**
GTCI score	**35.17**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**49.33**	**75**
1.1	Regulatory Landscape	45.55	69
1.1.1	Government effectiveness	36.17	71
1.1.2	Business-government relations	49.46	78
1.1.3	Political stability	58.20	74
1.1.4	Regulatory quality	54.21	57
1.1.5	Corruption	29.73	66
1.2	Market Landscape	44.44	87
1.2.1	Competition intensity	68.77	59
1.2.2	Ease of doing business	52.58	77
1.2.3	Cluster development	44.47	67
1.2.4	R&D expenditure	0.48	103
1.2.5	ICT infrastructure	43.09	78
1.2.6	Technology utilisation	57.28	74
1.3	Business and Labour Landscape	58.00	71
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	52.48	79
1.3.4	Professional management	44.02	93
1.3.5	Relationship of pay to productivity	37.82	106

2	**ATTRACT**	**40.05**	**99**
2.1	External Openness	27.62	108
	Attract Business		
2.1.1	FDI and technology transfer	49.75	96
2.1.2	Prevalence of foreign ownership	55.23	69
	Attract People		
2.1.3	Migrant stock	1.36	97
2.1.4	International students	2.03	81
2.1.5	Brain gain	29.74	84
2.2	Internal Openness	52.47	84
	Social Diversity		
2.2.1	Tolerance of minorities	44.44	58
2.2.2	Tolerance of immigrants	57.85	61
2.2.3	Social mobility	43.26	103
	Gender Equality		
2.2.4	Female graduates	69.19	58
2.2.5	Gender earnings gap	57.65	79
2.2.6	Business opportunities for women	42.45	114

3	**GROW**	**41.81**	**67**
3.1	Formal Education	16.75	93
	Enrolment		
3.1.1	Vocational enrolment	40.15	41
3.1.2	Tertiary enrolment	23.96	79
	Quality		
3.1.3	Tertiary education expenditure	2.88	104
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	56.14	40
3.2.1	Quality of management schools	48.25	82
3.2.2	Prevalence of training in firms	75.99	10
3.2.3	Employee development	44.17	85
3.3	Access to Growth Opportunities	52.55	49
	Networks		
3.3.1	Use of virtual social networks	74.75	76
3.3.2	Use of virtual professional networks	12.30	68
	Empowerment		
3.3.3	Delegation of authority	51.93	37
3.3.4	Personal rights	71.21	41

4	**RETAIN**	**37.04**	**95**
4.1	Sustainability	33.13	100
4.1.1	Pension system	22.22	74
4.1.2	Taxation	43.66	72
4.1.3	Brain retention	33.51	83
4.2	Lifestyle	40.95	94
4.2.1	Environmental performance	57.80	83
4.2.2	Personal safety	14.02	110
4.2.3	Physician density	20.40	70
4.2.4	Sanitation	71.59	86

5	**VOCATIONAL AND TECHNICAL SKILLS**	**33.21**	**99**
5.1	Mid-Level Skills	22.92	89
5.1.1	Workforce with secondary education	16.16	92
5.1.2	Population with secondary education	23.67	79
5.1.3	Technicians and associate professionals	28.93	68
5.1.4	Labour productivity per employee	n/a	n/a
5.2	Employability	43.50	106
5.2.1	Ease of finding skilled employees	47.03	74
5.2.2	Relevance of education system to the economy	31.08	104
5.2.3	Availability of scientists and engineers	35.56	111
5.2.4	Skills gap as major constraint	60.32	66

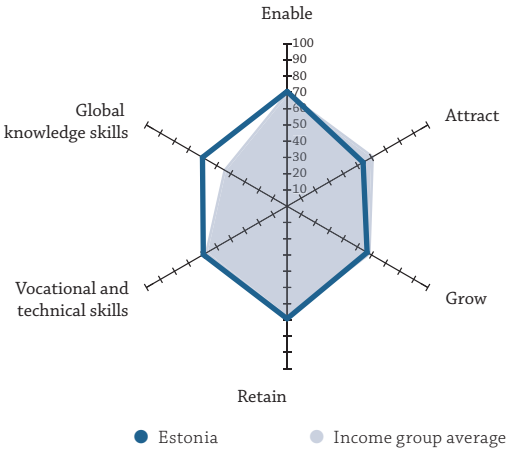
6	**GLOBAL KNOWLEDGE SKILLS**	**9.59**	**115**
6.1	High-Level Skills	11.76	111
6.1.1	Workforce with tertiary education	0.00	99
6.1.2	Population with tertiary education	15.99	74
6.1.3	Professionals	11.82	87
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	7.30	85
6.1.6	Quality of scientific institutions	34.80	98
6.1.7	Scientific journal articles	0.67	116
6.2	Talent Impact	7.42	113
6.2.1	Innovation output	17.06	95
6.2.2	High-value exports	9.75	85
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	0.04	90
6.2.4	New business density	2.84	82

ESTONIA

Key Indicators

Rank (out of 118)	**20**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**1.31**
GDP per capita (PPP US$)	**28,094.80**
GDP (US$ billions)	**22.69**
GTCI score	**61.72**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**70.61**	**23**
1.1	Regulatory Landscape	74.88	20
1.1.1	Government effectiveness	66.95	30
1.1.2	Business-government relations	67.98	33
1.1.3	Political stability	81.35	31
1.1.4	Regulatory quality	86.51	13
1.1.5	Corruption	71.62	22
1.2	Market Landscape	66.84	24
1.2.1	Competition intensity	76.79	18
1.2.2	Ease of doing business	84.85	14
1.2.3	Cluster development	45.93	59
1.2.4	R&D expenditure	41.19	20
1.2.5	ICT infrastructure	79.16	25
1.2.6	Technology utilisation	73.11	29
1.3	Business and Labour Landscape	70.11	25
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	80	46
	Management Practice		
1.3.3	Labour-employer cooperation	66.16	26
1.3.4	Professional management	72.84	24
1.3.5	Relationship of pay to productivity	64.87	8
2	**ATTRACT**	**54.01**	**32**
2.1	External Openness	45.62	35
	Attract Business		
2.1.1	FDI and technology transfer	64.10	35
2.1.2	Prevalence of foreign ownership	79.28	7
	Attract People		
2.1.3	Migrant stock	33.86	21
2.1.4	International students	14.92	50
2.1.5	Brain gain	35.93	72
2.2	Internal Openness	62.41	38
	Social Diversity		
2.2.1	Tolerance of minorities	42.22	65
2.2.2	Tolerance of immigrants	25.38	108
2.2.3	Social mobility	75.39	19
	Gender Equality		
2.2.4	Female graduates	96.20	3
2.2.5	Gender earnings gap	63.48	55
2.2.6	Business opportunities for women	71.77	20

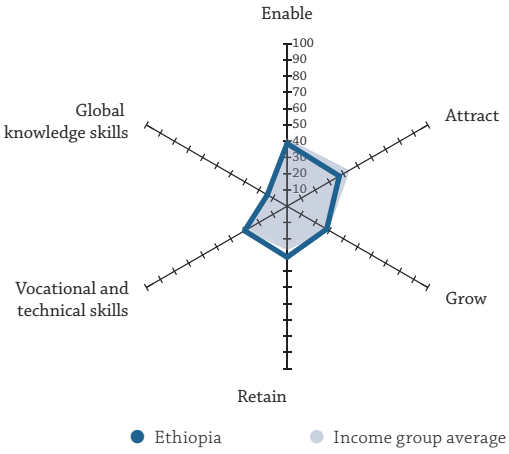
		Score	Rank
3	**GROW**	**56.84**	**25**
3.1	Formal Education	48.48	27
	Enrolment		
3.1.1	Vocational enrolment	41.21	38
3.1.2	Tertiary enrolment	65.04	21
	Quality		
3.1.3	Tertiary education expenditure	22.75	53
3.1.4	Reading, maths, science	83.59	5
3.1.5	University ranking	29.82	45
3.2	Lifelong Learning	54.02	47
3.2.1	Quality of management schools	62.41	35
3.2.2	Prevalence of training in firms	41.95	49
3.2.3	Employee development	57.70	30
3.3	Access to Growth Opportunities	68.02	17
	Networks		
3.3.1	Use of virtual social networks	88.07	15
3.3.2	Use of virtual professional networks	26.10	40
	Empowerment		
3.3.3	Delegation of authority	59.13	24
3.3.4	Personal rights	98.77	2
4	**RETAIN**	**69.21**	**23**
4.1	Sustainability	60.01	23
4.1.1	Pension system	93.94	6
4.1.2	Taxation	50.28	39
4.1.3	Brain retention	35.80	80
4.2	Lifestyle	78.41	21
4.2.1	Environmental performance	96.10	8
4.2.2	Personal safety	78.98	31
4.2.3	Physician density	41.73	29
4.2.4	Sanitation	96.82	39
5	**VOCATIONAL AND TECHNICAL SKILLS**	**59.53**	**23**
5.1	Mid-Level Skills	58.10	21
5.1.1	Workforce with secondary education	69.08	22
5.1.2	Population with secondary education	74.37	8
5.1.3	Technicians and associate professionals	60.41	31
5.1.4	Labour productivity per employee	28.56	41
5.2	Employability	60.95	39
5.2.1	Ease of finding skilled employees	44.99	86
5.2.2	Relevance of education system to the economy	56.00	33
5.2.3	Availability of scientists and engineers	49.11	70
5.2.4	Skills gap as major constraint	93.70	7
6	**GLOBAL KNOWLEDGE SKILLS**	**60.11**	**4**
6.1	High-Level Skills	58.72	15
6.1.1	Workforce with tertiary education	64.08	16
6.1.2	Population with tertiary education	62.59	6
6.1.3	Professionals	59.09	16
6.1.4	Researchers	40.27	25
6.1.5	Senior officials and managers	50.56	13
6.1.6	Quality of scientific institutions	69.26	22
6.1.7	Scientific journal articles	65.18	17
6.2	Talent Impact	61.50	2
6.2.1	Innovation output	64.45	14
6.2.2	High-value exports	34.45	20
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	54.11	24
6.2.4	New business density	92.98	3

ETHIOPIA

Key Indicators

Rank (out of 118)	**110**
Income group	**Low income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**99.39**
GDP per capita (PPP US$)	**1,625.61**
GDP (US$ billions)	**61.54**
GTCI score	**29.90**
GTCI score (income group average)	**30.03**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**38.59**	**109**
1.1	Regulatory Landscape	29.46	106
1.1.1	Government effectiveness	23.26	97
1.1.2	Business-government relations	49.86	77
1.1.3	Political stability	30.44	112
1.1.4	Regulatory quality	22.10	111
1.1.5	Corruption	21.62	90
1.2	Market Landscape	30.72	114
1.2.1	Competition intensity	54.58	112
1.2.2	Ease of doing business	27.44	110
1.2.3	Cluster development	38.18	93
1.2.4	R&D expenditure	14.29	51
1.2.5	ICT infrastructure	2.94	117
1.2.6	Technology utilisation	46.89	112
1.3	Business and Labour Landscape	55.58	77
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	50.66	92
1.3.4	Professional management	43.48	96
1.3.5	Relationship of pay to productivity	47.11	72

		Score	Rank
2	**ATTRACT**	**37.10**	**106**
2.1	External Openness	33.77	73
	Attract Business		
2.1.1	FDI and technology transfer	50.78	89
2.1.2	Prevalence of foreign ownership	41.56	105
	Attract People		
2.1.3	Migrant stock	2.23	90
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	40.51	56
2.2	Internal Openness	40.44	111
	Social Diversity		
2.2.1	Tolerance of minorities	12.22	111
2.2.2	Tolerance of immigrants	64.27	51
2.2.3	Social mobility	48.88	83
	Gender Equality		
2.2.4	Female graduates	0.00	97
2.2.5	Gender earnings gap	61.17	61
2.2.6	Business opportunities for women	56.10	70

		Score	Rank
3	**GROW**	**28.14**	**111**
3.1	Formal Education	14.30	96
	Enrolment		
3.1.1	Vocational enrolment	9.07	88
3.1.2	Tertiary enrolment	2.49	105
	Quality		
3.1.3	Tertiary education expenditure	45.65	13
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	40.53	98
3.2.1	Quality of management schools	45.82	91
3.2.2	Prevalence of training in firms	35.09	59
3.2.3	Employee development	40.67	97
3.3	Access to Growth Opportunities	29.58	114
	Networks		
3.3.1	Use of virtual social networks	56.56	111
3.3.2	Use of virtual professional networks	0.00	113
	Empowerment		
3.3.3	Delegation of authority	39.36	97
3.3.4	Personal rights	22.42	107

		Score	Rank
4	**RETAIN**	**31.35**	**105**
4.1	Sustainability	43.77	55
4.1.1	Pension system	n/a	n/a
4.1.2	Taxation	45.07	65
4.1.3	Brain retention	42.47	53
4.2	Lifestyle	18.94	114
4.2.1	Environmental performance	16.29	113
4.2.2	Personal safety	41.29	87
4.2.3	Physician density	0.00	114
4.2.4	Sanitation	18.18	110

		Score	Rank
5	**VOCATIONAL AND TECHNICAL SKILLS**	**30.21**	**106**
5.1	Mid-Level Skills	2.44	115
5.1.1	Workforce with secondary education	3.34	96
5.1.2	Population with secondary education	3.99	99
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	0.00	104
5.2	Employability	57.98	44
5.2.1	Ease of finding skilled employees	44.48	89
5.2.2	Relevance of education system to the economy	44.68	59
5.2.3	Availability of scientists and engineers	46.93	77
5.2.4	Skills gap as major constraint	95.84	5

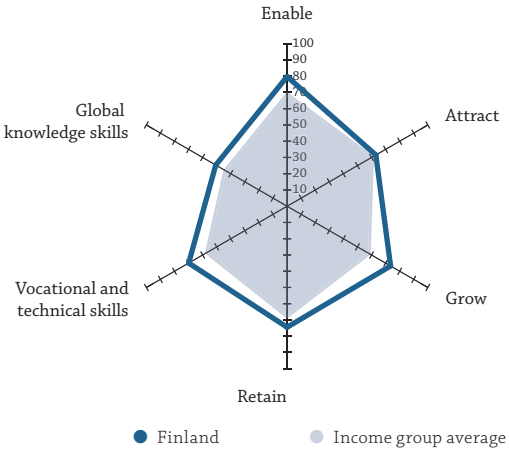
		Score	Rank
6	**GLOBAL KNOWLEDGE SKILLS**	**14.03**	**103**
6.1	High-Level Skills	16.71	97
6.1.1	Workforce with tertiary education	26.38	78
6.1.2	Population with tertiary education	0.90	103
6.1.3	Professionals	20.00	76
6.1.4	Researchers	0.47	88
6.1.5	Senior officials and managers	15.73	67
6.1.6	Quality of scientific institutions	43.09	73
6.1.7	Scientific journal articles	10.37	75
6.2	Talent Impact	11.35	103
6.2.1	Innovation output	13.29	100
6.2.2	High-value exports	15.69	60
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	16.41	80
6.2.4	New business density	0.00	95

FINLAND

Key Indicators

Rank (out of 118)	**9**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**5.48**
GDP per capita (PPP US$)	**40,600.92**
GDP (US$ billions)	**229.81**
GTCI score	**68.56**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**79.76**	**6**
1.1	Regulatory Landscape	94.39	2
1.1.1	Government effectiveness	94.88	3
1.1.2	Business-government relations	91.67	5
1.1.3	Political stability	94.68	5
1.1.4	Regulatory quality	92.07	3
1.1.5	Corruption	98.65	2
1.2	Market Landscape	75.56	11
1.2.1	Competition intensity	62.65	82
1.2.2	Ease of doing business	87.86	9
1.2.3	Cluster development	65.10	15
1.2.4	R&D expenditure	78.57	4
1.2.5	ICT infrastructure	78.52	28
1.2.6	Technology utilisation	80.63	10
1.3	Business and Labour Landscape	69.33	29
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	80	46
	Management Practice		
1.3.3	Labour-employer cooperation	68.98	20
1.3.4	Professional management	86.44	3
1.3.5	Relationship of pay to productivity	55.58	38
2	**ATTRACT**	**63.05**	**21**
2.1	External Openness	42.59	40
	Attract Business		
2.1.1	FDI and technology transfer	56.55	70
2.1.2	Prevalence of foreign ownership	64.86	45
	Attract People		
2.1.3	Migrant stock	12.51	52
2.1.4	International students	36.78	23
2.1.5	Brain gain	42.24	52
2.2	Internal Openness	83.52	4
	Social Diversity		
2.2.1	Tolerance of minorities	96.67	3
2.2.2	Tolerance of immigrants	76.76	32
2.2.3	Social mobility	89.98	1
	Gender Equality		
2.2.4	Female graduates	78.00	33
2.2.5	Gender earnings gap	81.27	20
2.2.6	Business opportunities for women	78.44	4

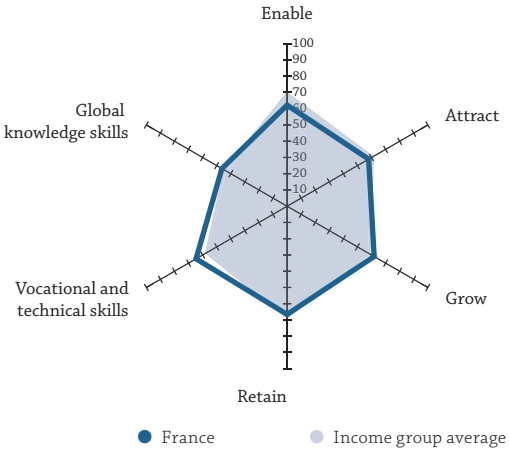
		Score	Rank
3	**GROW**	**73.53**	**4**
3.1	Formal Education	75.59	1
	Enrolment		
3.1.1	Vocational enrolment	100.00	1
3.1.2	Tertiary enrolment	82.07	3
	Quality		
3.1.3	Tertiary education expenditure	49.14	8
3.1.4	Reading, maths, science	85.43	4
3.1.5	University ranking	61.32	17
3.2	Lifelong Learning	72.13	11
3.2.1	Quality of management schools	74.02	12
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	70.24	10
3.3	Access to Growth Opportunities	72.86	16
	Networks		
3.3.1	Use of virtual social networks	89.41	10
3.3.2	Use of virtual professional networks	36.65	26
	Empowerment		
3.3.3	Delegation of authority	76.99	5
3.3.4	Personal rights	88.40	12
4	**RETAIN**	**74.44**	**9**
4.1	Sustainability	66.80	10
4.1.1	Pension system	89.90	18
4.1.2	Taxation	38.26	88
4.1.3	Brain retention	72.25	7
4.2	Lifestyle	82.08	15
4.2.1	Environmental performance	100.00	1
4.2.2	Personal safety	93.70	12
4.2.3	Physician density	37.36	35
4.2.4	Sanitation	97.27	35
5	**VOCATIONAL AND TECHNICAL SKILLS**	**69.91**	**2**
5.1	Mid-Level Skills	59.93	17
5.1.1	Workforce with secondary education	61.70	26
5.1.2	Population with secondary education	54.35	31
5.1.3	Technicians and associate professionals	80.20	13
5.1.4	Labour productivity per employee	43.47	20
5.2	Employability	79.90	1
5.2.1	Ease of finding skilled employees	76.79	1
5.2.2	Relevance of education system to the economy	78.57	4
5.2.3	Availability of scientists and engineers	84.33	1
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**50.69**	**18**
6.1	High-Level Skills	63.54	5
6.1.1	Workforce with tertiary education	65.37	14
6.1.2	Population with tertiary education	38.26	25
6.1.3	Professionals	64.55	12
6.1.4	Researchers	86.78	3
6.1.5	Senior officials and managers	29.21	46
6.1.6	Quality of scientific institutions	79.30	10
6.1.7	Scientific journal articles	81.34	7
6.2	Talent Impact	37.84	30
6.2.1	Innovation output	70.20	10
6.2.2	High-value exports	20.77	46
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	40.67	52
6.2.4	New business density	19.73	32

FRANCE

Key Indicators

Rank (out of 118)	**24**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**66.81**
GDP per capita (PPP US$)	**39,677.99**
GDP (US$ billions)	**2,421.68**
GTCI score	**59.93**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



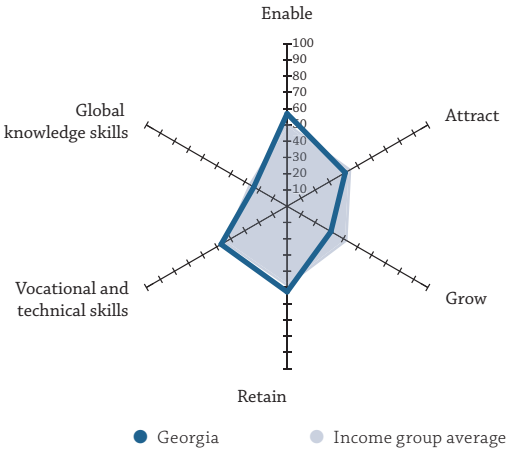
		Score	Rank
1	**ENABLE**	**62.21**	**34**
1.1	Regulatory Landscape	65.66	31
1.1.1	Government effectiveness	77.22	20
1.1.2	Business-government relations	36.18	103
1.1.3	Political stability	71.06	46
1.1.4	Regulatory quality	72.20	28
1.1.5	Corruption	71.62	22
1.2	Market Landscape	71.48	18
1.2.1	Competition intensity	75.35	28
1.2.2	Ease of doing business	78.04	25
1.2.3	Cluster development	57.65	24
1.2.4	R&D expenditure	52.86	15
1.2.5	ICT infrastructure	90.79	11
1.2.6	Technology utilisation	74.18	24
1.3	Business and Labour Landscape	49.48	99
	Labour Market Flexibility		
1.3.1	Ease of hiring	22.33	104
1.3.2	Ease of redundancy	60	81
	Management Practice		
1.3.3	Labour-employer cooperation	46.84	102
1.3.4	Professional management	65.55	27
1.3.5	Relationship of pay to productivity	52.69	54
2	**ATTRACT**	**57.96**	**26**
2.1	External Openness	53.12	19
	Attract Business		
2.1.1	FDI and technology transfer	65.67	25
2.1.2	Prevalence of foreign ownership	73.28	19
	Attract People		
2.1.3	Migrant stock	26.52	32
2.1.4	International students	53.31	14
2.1.5	Brain gain	46.80	37
2.2	Internal Openness	62.81	36
	Social Diversity		
2.2.1	Tolerance of minorities	40.00	70
2.2.2	Tolerance of immigrants	77.01	31
2.2.3	Social mobility	61.91	38
	Gender Equality		
2.2.4	Female graduates	68.04	64
2.2.5	Gender earnings gap	80.78	21
2.2.6	Business opportunities for women	49.12	96
3	**GROW**	**61.86**	**18**
3.1	Formal Education	54.27	18
	Enrolment		
3.1.1	Vocational enrolment	40.23	40
3.1.2	Tertiary enrolment	54.92	38
	Quality		
3.1.3	Tertiary education expenditure	27.73	33
3.1.4	Reading, maths, science	69.04	19
3.1.5	University ranking	79.45	10
3.2	Lifelong Learning	67.79	18
3.2.1	Quality of management schools	75.73	10
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	59.85	26
3.3	Access to Growth Opportunities	63.52	23
	Networks		
3.3.1	Use of virtual social networks	81.16	43
3.3.2	Use of virtual professional networks	43.98	22
	Empowerment		
3.3.3	Delegation of authority	48.44	46
3.3.4	Personal rights	80.50	29
4	**RETAIN**	**66.56**	**25**
4.1	Sustainability	54.24	36
4.1.1	Pension system	86.87	23
4.1.2	Taxation	33.62	101
4.1.3	Brain retention	42.22	54
4.2	Lifestyle	78.87	19
4.2.1	Environmental performance	95.37	10
4.2.2	Personal safety	80.55	28
4.2.3	Physician density	41.05	31
4.2.4	Sanitation	98.52	29
5	**VOCATIONAL AND TECHNICAL SKILLS**	**64.66**	**7**
5.1	Mid-Level Skills	64.95	7
5.1.1	Workforce with secondary education	59.89	27
5.1.2	Population with secondary education	56.23	28
5.1.3	Technicians and associate professionals	96.95	3
5.1.4	Labour productivity per employee	46.75	15
5.2	Employability	64.37	29
5.2.1	Ease of finding skilled employees	69.62	7
5.2.2	Relevance of education system to the economy	58.36	30
5.2.3	Availability of scientists and engineers	65.13	19
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**46.33**	**24**
6.1	High-Level Skills	51.78	22
6.1.1	Workforce with tertiary education	58.90	21
6.1.2	Population with tertiary education	33.53	33
6.1.3	Professionals	50.61	26
6.1.4	Researchers	50.11	18
6.1.5	Senior officials and managers	41.57	29
6.1.6	Quality of scientific institutions	77.30	13
6.1.7	Scientific journal articles	50.47	31
6.2	Talent Impact	40.88	25
6.2.1	Innovation output	59.25	22
6.2.2	High-value exports	38.97	15
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	52.34	27
6.2.4	New business density	12.94	44

GEORGIA

Key Indicators

Rank (out of 118)	**70**
Income group	**Upper-middle income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**3.68**
GDP per capita (PPP US$)	**9,679.19**
GDP (US$ billions)	**13.97**
GTCI score	**42.10**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**56.96**	**50**
1.1	Regulatory Landscape	56.31	46
1.1.1	Government effectiveness	50.75	43
1.1.2	Business-government relations	59.13	61
1.1.3	Political stability	56.05	77
1.1.4	Regulatory quality	68.32	33
1.1.5	Corruption	47.30	44
1.2	Market Landscape	48.59	69
1.2.1	Competition intensity	62.32	84
1.2.2	Ease of doing business	80.92	22
1.2.3	Cluster development	33.67	105
1.2.4	R&D expenditure	3.57	89
1.2.5	ICT infrastructure	57.93	62
1.2.6	Technology utilisation	53.12	93
1.3	Business and Labour Landscape	65.97	44
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	56.06	58
1.3.4	Professional management	55.95	53
1.3.5	Relationship of pay to productivity	51.17	58
2	**ATTRACT**	**41.29**	**91**
2.1	External Openness	29.33	98
	Attract Business		
2.1.1	FDI and technology transfer	47.27	99
2.1.2	Prevalence of foreign ownership	49.81	93
	Attract People		
2.1.3	Migrant stock	9.16	58
2.1.4	International students	14.58	52
2.1.5	Brain gain	25.83	96
2.2	Internal Openness	53.26	78
	Social Diversity		
2.2.1	Tolerance of minorities	22.22	98
2.2.2	Tolerance of immigrants	42.00	90
2.2.3	Social mobility	56.49	54
	Gender Equality		
2.2.4	Female graduates	83.26	22
2.2.5	Gender earnings gap	50.46	92
2.2.6	Business opportunities for women	65.12	36

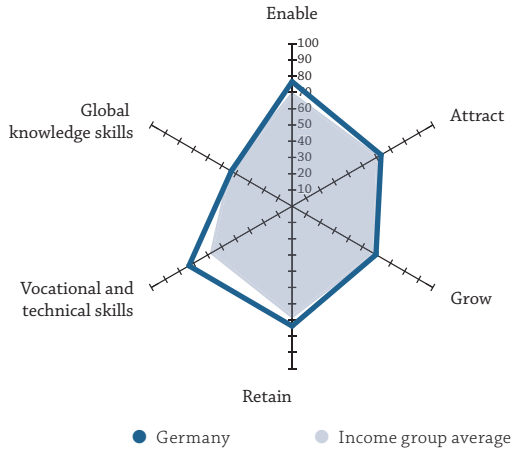
		Score	Rank
3	**GROW**	**31.15**	**103**
3.1	Formal Education	17.94	88
	Enrolment		
3.1.1	Vocational enrolment	10.66	84
3.1.2	Tertiary enrolment	33.36	64
	Quality		
3.1.3	Tertiary education expenditure	27.73	33
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	31.82	116
3.2.1	Quality of management schools	46.87	89
3.2.2	Prevalence of training in firms	9.37	88
3.2.3	Employee development	39.22	103
3.3	Access to Growth Opportunities	43.69	82
	Networks		
3.3.1	Use of virtual social networks	82.84	32
3.3.2	Use of virtual professional networks	8.69	75
	Empowerment		
3.3.3	Delegation of authority	37.02	104
3.3.4	Personal rights	46.20	79
4	**RETAIN**	**52.67**	**59**
4.1	Sustainability	41.42	63
4.1.1	Pension system	28.28	66
4.1.2	Taxation	64.01	13
4.1.3	Brain retention	31.98	89
4.2	Lifestyle	63.93	55
4.2.1	Environmental performance	52.00	93
4.2.2	Personal safety	64.21	51
4.2.3	Physician density	55.07	8
4.2.4	Sanitation	84.43	70
5	**VOCATIONAL AND TECHNICAL SKILLS**	**46.86**	**57**
5.1	Mid-Level Skills	44.39	52
5.1.1	Workforce with secondary education	83.29	9
5.1.2	Population with secondary education	60.30	24
5.1.3	Technicians and associate professionals	24.87	71
5.1.4	Labour productivity per employee	9.12	79
5.2	Employability	49.33	81
5.2.1	Ease of finding skilled employees	36.04	113
5.2.2	Relevance of education system to the economy	35.83	89
5.2.3	Availability of scientists and engineers	38.33	104
5.2.4	Skills gap as major constraint	87.13	24
6	**GLOBAL KNOWLEDGE SKILLS**	**23.65**	**74**
6.1	High-Level Skills	25.00	74
6.1.1	Workforce with tertiary education	50.00	30
6.1.2	Population with tertiary education	4.95	90
6.1.3	Professionals	38.79	45
6.1.4	Researchers	7.00	57
6.1.5	Senior officials and managers	20.22	62
6.1.6	Quality of scientific institutions	30.75	108
6.1.7	Scientific journal articles	23.27	55
6.2	Talent Impact	22.31	73
6.2.1	Innovation output	23.16	80
6.2.2	High-value exports	9.92	83
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	23.54	74
6.2.4	New business density	32.62	20

GERMANY

Key Indicators

Rank (out of 118)	**17**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**81.41**
GDP per capita (PPP US$)	**47,268.43**
GDP (US$ billions)	**3,355.77**
GTCI score	**64.94**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



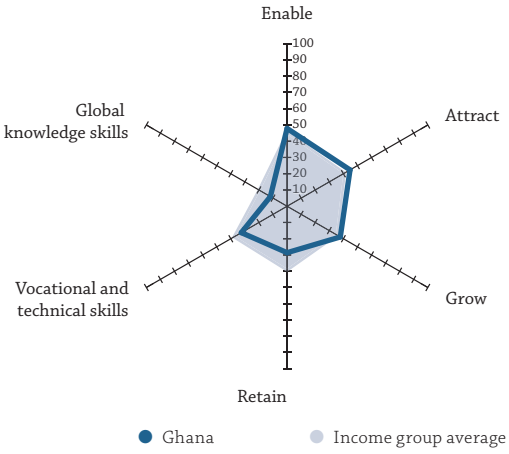
		Score	Rank
1	**ENABLE**	**76.65**	**14**
1.1	Regulatory Landscape	83.56	12
1.1.1	Government effectiveness	86.69	11
1.1.2	Business-government relations	71.85	23
1.1.3	Political stability	85.79	24
1.1.4	Regulatory quality	87.00	12
1.1.5	Corruption	86.49	10
1.2	Market Landscape	81.00	3
1.2.1	Competition intensity	82.83	5
1.2.2	Ease of doing business	85.59	13
1.2.3	Cluster development	74.40	3
1.2.4	R&D expenditure	67.62	8
1.2.5	ICT infrastructure	96.55	4
1.2.6	Technology utilisation	79.03	13
1.3	Business and Labour Landscape	65.38	45
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	60	81
	Management Practice		
1.3.3	Labour-employer cooperation	69.79	18
1.3.4	Professional management	78.42	15
1.3.5	Relationship of pay to productivity	63.00	11
2	**ATTRACT**	**63.21**	**20**
2.1	External Openness	52.50	22
	Attract Business		
2.1.1	FDI and technology transfer	66.10	24
2.1.2	Prevalence of foreign ownership	65.64	44
	Attract People		
2.1.3	Migrant stock	32.67	22
2.1.4	International students	36.77	24
2.1.5	Brain gain	61.31	18
2.2	Internal Openness	73.92	18
	Social Diversity		
2.2.1	Tolerance of minorities	63.33	30
2.2.2	Tolerance of immigrants	80.54	26
2.2.3	Social mobility	73.62	23
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	91.10	11
2.2.6	Business opportunities for women	61.03	51
3	**GROW**	**59.61**	**20**
3.1	Formal Education	59.33	13
	Enrolment		
3.1.1	Vocational enrolment	39.37	42
3.1.2	Tertiary enrolment	53.90	41
	Quality		
3.1.3	Tertiary education expenditure	49.14	8
3.1.4	Reading, maths, science	77.51	12
3.1.5	University ranking	76.72	11
3.2	Lifelong Learning	60.18	32
3.2.1	Quality of management schools	70.12	24
3.2.2	Prevalence of training in firms	42.22	48
3.2.3	Employee development	68.21	13
3.3	Access to Growth Opportunities	59.33	33
	Networks		
3.3.1	Use of virtual social networks	79.47	52
3.3.2	Use of virtual professional networks	13.23	66
	Empowerment		
3.3.3	Delegation of authority	64.80	19
3.3.4	Personal rights	79.82	30
4	**RETAIN**	**73.72**	**11**
4.1	Sustainability	65.04	12
4.1.1	Pension system	86.87	23
4.1.2	Taxation	42.60	77
4.1.3	Brain retention	65.64	12
4.2	Lifestyle	82.41	14
4.2.1	Environmental performance	88.02	30
4.2.2	Personal safety	92.41	14
4.2.3	Physician density	50.11	13
4.2.4	Sanitation	99.09	20
5	**VOCATIONAL AND TECHNICAL SKILLS**	**73.24**	**1**
5.1	Mid-Level Skills	72.69	4
5.1.1	Workforce with secondary education	80.22	11
5.1.2	Population with secondary education	70.00	13
5.1.3	Technicians and associate professionals	97.46	2
5.1.4	Labour productivity per employee	43.08	21
5.2	Employability	73.79	3
5.2.1	Ease of finding skilled employees	65.00	22
5.2.2	Relevance of education system to the economy	72.62	10
5.2.3	Availability of scientists and engineers	66.39	15
5.2.4	Skills gap as major constraint	91.15	12
6	**GLOBAL KNOWLEDGE SKILLS**	**43.20**	**26**
6.1	High-Level Skills	47.20	27
6.1.1	Workforce with tertiary education	43.53	40
6.1.2	Population with tertiary education	23.19	58
6.1.3	Professionals	52.42	21
6.1.4	Researchers	53.96	14
6.1.5	Senior officials and managers	27.53	51
6.1.6	Quality of scientific institutions	79.67	9
6.1.7	Scientific journal articles	50.09	32
6.2	Talent Impact	39.21	27
6.2.1	Innovation output	72.17	8
6.2.2	High-value exports	28.27	32
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	49.08	32
6.2.4	New business density	7.31	60

GHANA

Key Indicators

Rank (out of 118)	**102**
Income group	**Lower-middle income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**27.41**
GDP per capita (PPP US$)	**4,200.55**
GDP (US$ billions)	**37.86**
GTCI score	**33.89**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



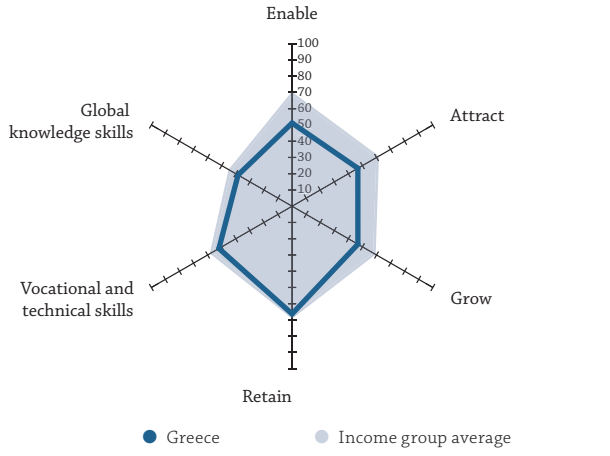
		Score	Rank
1	**ENABLE**	**47.85**	**82**
1.1	Regulatory Landscape	43.02	80
1.1.1	Government effectiveness	28.93	83
1.1.2	Business-government relations	42.00	95
1.1.3	Political stability	58.69	73
1.1.4	Regulatory quality	44.94	74
1.1.5	Corruption	40.54	52
1.2	Market Landscape	41.64	97
1.2.1	Competition intensity	63.13	80
1.2.2	Ease of doing business	42.79	92
1.2.3	Cluster development	43.68	72
1.2.4	R&D expenditure	8.81	66
1.2.5	ICT infrastructure	36.32	85
1.2.6	Technology utilisation	55.11	86
1.3	Business and Labour Landscape	58.88	67
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	50	97
	Management Practice		
1.3.3	Labour-employer cooperation	52.23	81
1.3.4	Professional management	57.38	47
1.3.5	Relationship of pay to productivity	45.78	80
2	**ATTRACT**	**44.71**	**71**
2.1	External Openness	34.59	69
	Attract Business		
2.1.1	FDI and technology transfer	51.73	83
2.1.2	Prevalence of foreign ownership	59.14	58
	Attract People		
2.1.3	Migrant stock	3.06	86
2.1.4	International students	20.18	40
2.1.5	Brain gain	38.84	63
2.2	Internal Openness	54.84	69
	Social Diversity		
2.2.1	Tolerance of minorities	56.67	38
2.2.2	Tolerance of immigrants	61.50	53
2.2.3	Social mobility	53.84	64
	Gender Equality		
2.2.4	Female graduates	26.22	94
2.2.5	Gender earnings gap	72.83	32
2.2.6	Business opportunities for women	57.96	64
3	**GROW**	**37.80**	**78**
3.1	Formal Education	12.44	101
	Enrolment		
3.1.1	Vocational enrolment	3.76	101
3.1.2	Tertiary enrolment	11.19	95
	Quality		
3.1.3	Tertiary education expenditure	27.73	33
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	7.06	75
3.2	Lifelong Learning	52.14	58
3.2.1	Quality of management schools	58.18	44
3.2.2	Prevalence of training in firms	48.42	41
3.2.3	Employee development	49.82	57
3.3	Access to Growth Opportunities	48.82	63
	Networks		
3.3.1	Use of virtual social networks	62.33	106
3.3.2	Use of virtual professional networks	6.64	88
	Empowerment		
3.3.3	Delegation of authority	47.77	52
3.3.4	Personal rights	78.55	32
4	**RETAIN**	**28.58**	**108**
4.1	Sustainability	35.23	86
4.1.1	Pension system	7.07	93
4.1.2	Taxation	54.74	25
4.1.3	Brain retention	43.89	48
4.2	Lifestyle	21.93	111
4.2.1	Environmental performance	40.67	102
4.2.2	Personal safety	42.81	85
4.2.3	Physician density	0.96	105
4.2.4	Sanitation	3.30	116
5	**VOCATIONAL AND TECHNICAL SKILLS**	**32.50**	**101**
5.1	Mid-Level Skills	10.64	105
5.1.1	Workforce with secondary education	21.31	90
5.1.2	Population with secondary education	12.90	92
5.1.3	Technicians and associate professionals	5.08	93
5.1.4	Labour productivity per employee	3.27	90
5.2	Employability	54.37	66
5.2.1	Ease of finding skilled employees	50.89	60
5.2.2	Relevance of education system to the economy	42.87	66
5.2.3	Availability of scientists and engineers	43.83	91
5.2.4	Skills gap as major constraint	79.89	40
6	**GLOBAL KNOWLEDGE SKILLS**	**11.87**	**109**
6.1	High-Level Skills	10.35	113
6.1.1	Workforce with tertiary education	3.88	98
6.1.2	Population with tertiary education	4.39	92
6.1.3	Professionals	8.48	90
6.1.4	Researchers	0.40	90
6.1.5	Senior officials and managers	2.25	94
6.1.6	Quality of scientific institutions	43.69	72
6.1.7	Scientific journal articles	9.35	77
6.2	Talent Impact	13.39	97
6.2.1	Innovation output	17.95	93
6.2.2	High-value exports	7.80	93
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	14.41	81
6.2.4	New business density	n/a	n/a

GREECE

Key Indicators

Rank (out of 118)	**43**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**10.82**
GDP per capita (PPP US$)	**26,680.09**
GDP (US$ billions)	**195.21**
GTCI score	**50.21**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



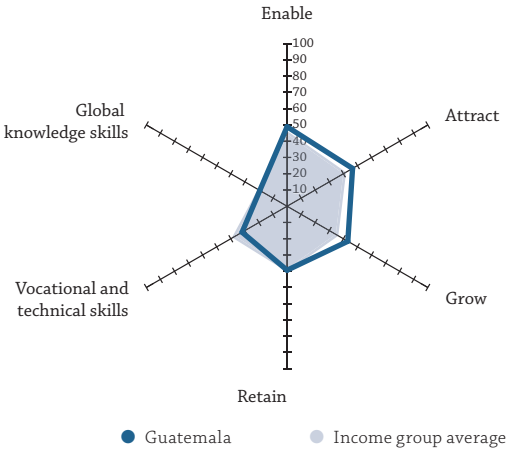
		Score	Rank
1	**ENABLE**	**51.18**	**70**
1.1	Regulatory Landscape	48.05	58
1.1.1	Government effectiveness	48.19	46
1.1.2	Business-government relations	36.03	106
1.1.3	Political stability	62.61	62
1.1.4	Regulatory quality	54.23	56
1.1.5	Corruption	39.19	53
1.2	Market Landscape	53.10	54
1.2.1	Competition intensity	67.81	64
1.2.2	Ease of doing business	63.42	56
1.2.3	Cluster development	32.47	109
1.2.4	R&D expenditure	18.81	41
1.2.5	ICT infrastructure	77.24	32
1.2.6	Technology utilisation	58.89	67
1.3	Business and Labour Landscape	52.40	89
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	49.54	95
1.3.4	Professional management	44.65	89
1.3.5	Relationship of pay to productivity	42.14	90
2	**ATTRACT**	**46.72**	**57**
2.1	External Openness	34.39	71
	Attract Business		
2.1.1	FDI and technology transfer	50.93	88
2.1.2	Prevalence of foreign ownership	54.21	74
	Attract People		
2.1.3	Migrant stock	24.87	36
2.1.4	International students	21.68	33
2.1.5	Brain gain	20.24	110
2.2	Internal Openness	59.06	47
	Social Diversity		
2.2.1	Tolerance of minorities	54.44	43
2.2.2	Tolerance of immigrants	69.30	44
2.2.3	Social mobility	47.03	91
	Gender Equality		
2.2.4	Female graduates	75.33	42
2.2.5	Gender earnings gap	54.96	87
2.2.6	Business opportunities for women	53.30	82
3	**GROW**	**46.75**	**49**
3.1	Formal Education	50.65	26
	Enrolment		
3.1.1	Vocational enrolment	38.55	43
3.1.2	Tertiary enrolment	100.00	1
	Quality		
3.1.3	Tertiary education expenditure	32.84	22
3.1.4	Reading, maths, science	50.11	37
3.1.5	University ranking	31.75	42
3.2	Lifelong Learning	38.65	105
3.2.1	Quality of management schools	48.65	80
3.2.2	Prevalence of training in firms	21.90	79
3.2.3	Employee development	45.39	79
3.3	Access to Growth Opportunities	50.96	56
	Networks		
3.3.1	Use of virtual social networks	71.89	87
3.3.2	Use of virtual professional networks	25.53	42
	Empowerment		
3.3.3	Delegation of authority	42.56	81
3.3.4	Personal rights	63.86	52
4	**RETAIN**	**66.25**	**26**
4.1	Sustainability	48.38	45
4.1.1	Pension system	85.86	27
4.1.2	Taxation	29.83	107
4.1.3	Brain retention	29.46	96
4.2	Lifestyle	84.11	10
4.2.1	Environmental performance	90.91	21
4.2.2	Personal safety	67.03	46
4.2.3	Physician density	79.63	2
4.2.4	Sanitation	98.86	26
5	**VOCATIONAL AND TECHNICAL SKILLS**	**51.98**	**40**
5.1	Mid-Level Skills	40.74	58
5.1.1	Workforce with secondary education	55.43	37
5.1.2	Population with secondary education	37.40	55
5.1.3	Technicians and associate professionals	34.52	59
5.1.4	Labour productivity per employee	35.61	29
5.2	Employability	63.21	33
5.2.1	Ease of finding skilled employees	59.84	30
5.2.2	Relevance of education system to the economy	32.21	101
5.2.3	Availability of scientists and engineers	71.93	6
5.2.4	Skills gap as major constraint	88.87	18
6	**GLOBAL KNOWLEDGE SKILLS**	**38.40**	**33**
6.1	High-Level Skills	44.03	31
6.1.1	Workforce with tertiary education	49.68	32
6.1.2	Population with tertiary education	34.36	31
6.1.3	Professionals	53.64	20
6.1.4	Researchers	31.68	31
6.1.5	Senior officials and managers	23.60	57
6.1.6	Quality of scientific institutions	46.14	64
6.1.7	Scientific journal articles	69.13	14
6.2	Talent Impact	32.77	41
6.2.1	Innovation output	33.93	56
6.2.2	High-value exports	27.51	36
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	36.86	57
6.2.4	New business density	n/a	n/a

GUATEMALA

Key Indicators

Rank (out of 118)	**85**
Income group	**Lower-middle income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**16.34**
GDP per capita (PPP US$)	**7,706.74**
GDP (US$ billions)	**63.79**
GTCI score	**38.22**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



Rank		Score	Rank
1	**ENABLE**	**48.91**	**79**
1.1	Regulatory Landscape	36.07	93
1.1.1	Government effectiveness	16.22	105
1.1.2	Business-government relations	62.31	46
1.1.3	Political stability	45.66	92
1.1.4	Regulatory quality	41.32	80
1.1.5	Corruption	14.86	102
1.2	Market Landscape	46.01	78
1.2.1	Competition intensity	75.54	27
1.2.2	Ease of doing business	53.98	73
1.2.3	Cluster development	47.21	54
1.2.4	R&D expenditure	0.71	101
1.2.5	ICT infrastructure	31.84	94
1.2.6	Technology utilisation	66.78	44
1.3	Business and Labour Landscape	64.64	47
	Labour Market Flexibility		
1.3.1	Ease of hiring	44.33	95
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	68.49	22
1.3.4	Professional management	56.25	52
1.3.5	Relationship of pay to productivity	54.10	44

2	**ATTRACT**	**46.52**	**60**
2.1	External Openness	41.18	46
	Attract Business		
2.1.1	FDI and technology transfer	62.06	45
2.1.2	Prevalence of foreign ownership	62.74	49
	Attract People		
2.1.3	Migrant stock	0.87	105
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	39.03	61
2.2	Internal Openness	51.87	88
	Social Diversity		
2.2.1	Tolerance of minorities	26.67	88
2.2.2	Tolerance of immigrants	41.57	93
2.2.3	Social mobility	59.98	41
	Gender Equality		
2.2.4	Female graduates	73.50	47
2.2.5	Gender earnings gap	55.93	85
2.2.6	Business opportunities for women	53.60	80

		Score	Rank
3	**GROW**	**43.15**	**61**
3.1	Formal Education	18.95	86
	Enrolment		
3.1.1	Vocational enrolment	57.48	26
3.1.2	Tertiary enrolment	13.78	92
	Quality		
3.1.3	Tertiary education expenditure	4.53	97
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	60.55	31
3.2.1	Quality of management schools	60.44	39
3.2.2	Prevalence of training in firms	63.98	22
3.2.3	Employee development	57.22	32
3.3	Access to Growth Opportunities	49.96	60
	Networks		
3.3.1	Use of virtual social networks	76.08	69
3.3.2	Use of virtual professional networks	9.34	74
	Empowerment		
3.3.3	Delegation of authority	50.55	40
3.3.4	Personal rights	63.86	52

4	**RETAIN**	**39.36**	**91**
4.1	Sustainability	40.47	66
4.1.1	Pension system	19.19	78
4.1.2	Taxation	51.63	34
4.1.3	Brain retention	50.59	35
4.2	Lifestyle	38.26	97
4.2.1	Environmental performance	60.73	77
4.2.2	Personal safety	21.54	106
4.2.3	Physician density	11.79	82
4.2.4	Sanitation	58.98	92

5	**VOCATIONAL AND TECHNICAL SKILLS**	**31.97**	**103**
5.1	Mid-Level Skills	19.32	95
5.1.1	Workforce with secondary education	23.12	86
5.1.2	Population with secondary education	22.92	82
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	11.92	75
5.2	Employability	44.62	99
5.2.1	Ease of finding skilled employees	49.33	61
5.2.2	Relevance of education system to the economy	28.52	109
5.2.3	Availability of scientists and engineers	44.58	88
5.2.4	Skills gap as major constraint	56.03	72

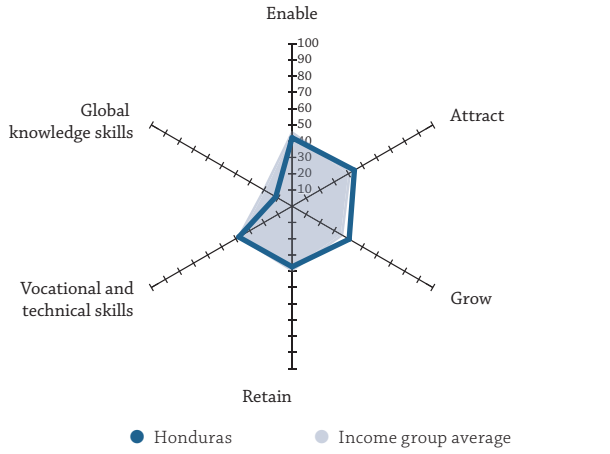
6	**GLOBAL KNOWLEDGE SKILLS**	**19.39**	**85**
6.1	High-Level Skills	12.73	106
6.1.1	Workforce with tertiary education	11.65	92
6.1.2	Population with tertiary education	13.02	77
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	0.25	95
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	38.01	92
6.1.7	Scientific journal articles	0.71	115
6.2	Talent Impact	26.05	62
6.2.1	Innovation output	18.31	92
6.2.2	High-value exports	8.37	89
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	74.67	5
6.2.4	New business density	2.84	82

HONDURAS

Key Indicators

Rank (out of 118)	**93**
Income group	**Lower-middle income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**8.08**
GDP per capita (PPP US$)	**5,084.47**
GDP (US$ billions)	**20.15**
GTCI score	**35.62**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



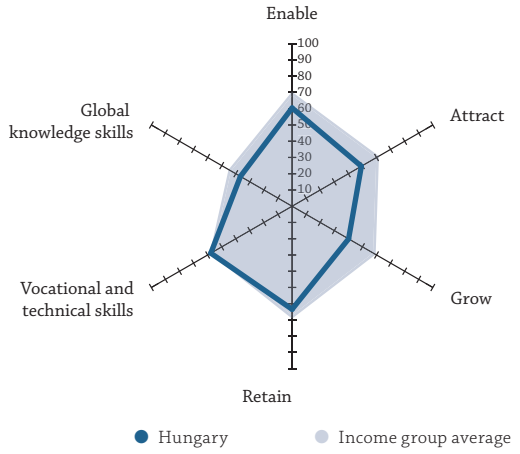
		Score	Rank
1	**ENABLE**	**42.16**	**100**
1.1	Regulatory Landscape	33.93	99
1.1.1	Government effectiveness	13.90	110
1.1.2	Business-government relations	51.21	72
1.1.3	Political stability	48.89	87
1.1.4	Regulatory quality	36.70	93
1.1.5	Corruption	18.92	95
1.2	Market Landscape	50.54	63
1.2.1	Competition intensity	66.47	70
1.2.2	Ease of doing business	43.51	90
1.2.3	Cluster development	49.51	46
1.2.4	R&D expenditure	n/a	n/a
1.2.5	ICT infrastructure	30.43	98
1.2.6	Technology utilisation	62.80	57
1.3	Business and Labour Landscape	42.00	112
	Labour Market Flexibility		
1.3.1	Ease of hiring	0.00	115
1.3.2	Ease of redundancy	40	104
	Management Practice		
1.3.3	Labour-employer cooperation	65.46	27
1.3.4	Professional management	52.35	66
1.3.5	Relationship of pay to productivity	52.18	57
2	**ATTRACT**	**44.28**	**72**
2.1	External Openness	34.19	72
	Attract Business		
2.1.1	FDI and technology transfer	63.90	36
2.1.2	Prevalence of foreign ownership	61.05	50
	Attract People		
2.1.3	Migrant stock	0.61	107
2.1.4	International students	3.41	75
2.1.5	Brain gain	41.96	53
2.2	Internal Openness	54.37	74
	Social Diversity		
2.2.1	Tolerance of minorities	43.33	61
2.2.2	Tolerance of immigrants	33.42	98
2.2.3	Social mobility	56.51	53
	Gender Equality		
2.2.4	Female graduates	89.68	8
2.2.5	Gender earnings gap	40.02	104
2.2.6	Business opportunities for women	63.25	39
3	**GROW**	**40.55**	**69**
3.1	Formal Education	26.47	64
	Enrolment		
3.1.1	Vocational enrolment	68.24	18
3.1.2	Tertiary enrolment	16.46	88
	Quality		
3.1.3	Tertiary education expenditure	21.16	57
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	50.41	62
3.2.1	Quality of management schools	49.96	74
3.2.2	Prevalence of training in firms	42.74	46
3.2.3	Employee development	58.53	27
3.3	Access to Growth Opportunities	44.78	75
	Networks		
3.3.1	Use of virtual social networks	77.19	63
3.3.2	Use of virtual professional networks	7.94	81
	Empowerment		
3.3.3	Delegation of authority	45.33	63
3.3.4	Personal rights	48.66	74
4	**RETAIN**	**37.26**	**94**
4.1	Sustainability	34.90	91
4.1.1	Pension system	16.16	82
4.1.2	Taxation	43.46	74
4.1.3	Brain retention	45.07	43
4.2	Lifestyle	39.63	95
4.2.1	Environmental performance	60.73	77
4.2.2	Personal safety	13.03	113
4.2.3	Physician density	4.54	95
4.2.4	Sanitation	80.23	76
5	**VOCATIONAL AND TECHNICAL SKILLS**	**37.86**	**85**
5.1	Mid-Level Skills	24.45	86
5.1.1	Workforce with secondary education	30.36	75
5.1.2	Population with secondary education	18.54	89
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	n/a	n/a
5.2	Employability	51.27	76
5.2.1	Ease of finding skilled employees	53.53	52
5.2.2	Relevance of education system to the economy	41.79	69
5.2.3	Availability of scientists and engineers	46.48	80
5.2.4	Skills gap as major constraint	63.27	61
6	**GLOBAL KNOWLEDGE SKILLS**	**11.59**	**110**
6.1	High-Level Skills	16.39	98
6.1.1	Workforce with tertiary education	9.71	94
6.1.2	Population with tertiary education	15.72	75
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	39.77	87
6.1.7	Scientific journal articles	0.34	117
6.2	Talent Impact	6.79	114
6.2.1	Innovation output	12.75	103
6.2.2	High-value exports	0.84	112
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	n/a	n/a

HUNGARY

Key Indicators

Rank (out of 118)	**41**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**9.84**
GDP per capita (PPP US$)	**25,581.50**
GDP (US$ billions)	**120.69**
GTCI score	**51.27**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



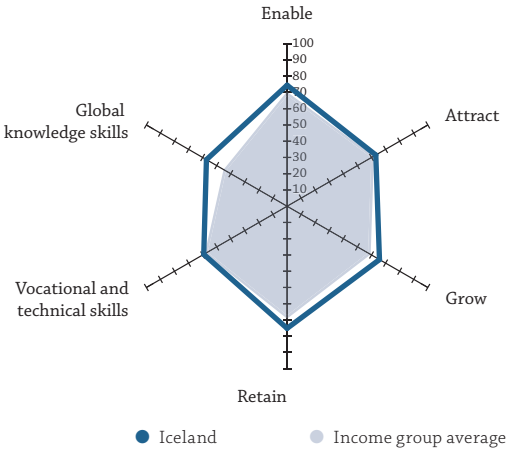
		Score	Rank
1	**ENABLE**	**60.45**	**38**
1.1	Regulatory Landscape	55.77	47
1.1.1	Government effectiveness	52.15	42
1.1.2	Business-government relations	36.49	102
1.1.3	Political stability	79.83	34
1.1.4	Regulatory quality	64.45	38
1.1.5	Corruption	45.95	46
1.2	Market Landscape	59.00	35
1.2.1	Competition intensity	68.73	60
1.2.2	Ease of doing business	71.50	40
1.2.3	Cluster development	43.79	71
1.2.4	R&D expenditure	33.33	25
1.2.5	ICT infrastructure	75.06	34
1.2.6	Technology utilisation	61.56	61
1.3	Business and Labour Landscape	66.57	39
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	53.83	74
1.3.4	Professional management	43.68	94
1.3.5	Relationship of pay to productivity	46.37	77
2	**ATTRACT**	**49.21**	**49**
2.1	External Openness	40.02	51
	Attract Business		
2.1.1	FDI and technology transfer	64.42	32
2.1.2	Prevalence of foreign ownership	70.99	25
	Attract People		
2.1.3	Migrant stock	9.91	56
2.1.4	International students	29.92	29
2.1.5	Brain gain	24.84	99
2.2	Internal Openness	58.40	55
	Social Diversity		
2.2.1	Tolerance of minorities	62.22	31
2.2.2	Tolerance of immigrants	55.34	63
2.2.3	Social mobility	41.07	110
	Gender Equality		
2.2.4	Female graduates	87.48	13
2.2.5	Gender earnings gap	60.27	67
2.2.6	Business opportunities for women	43.99	105
3	**GROW**	**40.15**	**72**
3.1	Formal Education	37.08	43
	Enrolment		
3.1.1	Vocational enrolment	32.19	52
3.1.2	Tertiary enrolment	50.10	43
	Quality		
3.1.3	Tertiary education expenditure	16.40	73
3.1.4	Reading, maths, science	61.73	29
3.1.5	University ranking	24.99	52
3.2	Lifelong Learning	35.87	109
3.2.1	Quality of management schools	51.14	67
3.2.2	Prevalence of training in firms	16.36	85
3.2.3	Employee development	40.12	98
3.3	Access to Growth Opportunities	47.48	68
	Networks		
3.3.1	Use of virtual social networks	72.87	85
3.3.2	Use of virtual professional networks	16.79	60
	Empowerment		
3.3.3	Delegation of authority	32.70	114
3.3.4	Personal rights	67.56	45
4	**RETAIN**	**63.40**	**34**
4.1	Sustainability	50.63	42
4.1.1	Pension system	91.92	12
4.1.2	Taxation	34.82	96
4.1.3	Brain retention	25.14	106
4.2	Lifestyle	76.17	29
4.2.1	Environmental performance	88.65	28
4.2.2	Personal safety	78.66	32
4.2.3	Physician density	39.63	32
4.2.4	Sanitation	97.73	32
5	**VOCATIONAL AND TECHNICAL SKILLS**	**57.75**	**30**
5.1	Mid-Level Skills	60.84	14
5.1.1	Workforce with secondary education	83.29	9
5.1.2	Population with secondary education	64.92	19
5.1.3	Technicians and associate professionals	66.50	25
5.1.4	Labour productivity per employee	28.67	40
5.2	Employability	54.66	63
5.2.1	Ease of finding skilled employees	42.88	98
5.2.2	Relevance of education system to the economy	35.98	87
5.2.3	Availability of scientists and engineers	52.92	48
5.2.4	Skills gap as major constraint	86.86	25
6	**GLOBAL KNOWLEDGE SKILLS**	**36.70**	**38**
6.1	High-Level Skills	40.25	37
6.1.1	Workforce with tertiary education	40.78	44
6.1.2	Population with tertiary education	20.27	66
6.1.3	Professionals	47.88	29
6.1.4	Researchers	30.41	32
6.1.5	Senior officials and managers	32.02	41
6.1.6	Quality of scientific institutions	63.84	27
6.1.7	Scientific journal articles	46.56	34
6.2	Talent Impact	33.15	39
6.2.1	Innovation output	44.52	36
6.2.2	High-value exports	34.30	21
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	32.69	62
6.2.4	New business density	21.07	31

ICELAND

Key Indicators

Rank (out of 118)	**15**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**0.33**
GDP per capita (PPP US$)	**46,546.98**
GDP (US$ billions)	**16.60**
GTCI score	**65.79**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**74.45**	**19**
1.1	Regulatory Landscape	77.63	18
1.1.1	Government effectiveness	79.90	17
1.1.2	Business-government relations	55.61	65
1.1.3	Political stability	93.59	7
1.1.4	Regulatory quality	75.25	19
1.1.5	Corruption	83.78	13
1.2	Market Landscape	73.47	14
1.2.1	Competition intensity	63.77	78
1.2.2	Ease of doing business	83.77	17
1.2.3	Cluster development	49.57	45
1.2.4	R&D expenditure	59.05	12
1.2.5	ICT infrastructure	98.47	2
1.2.6	Technology utilisation	86.21	1
1.3	Business and Labour Landscape	72.25	18
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	73.71	15
1.3.4	Professional management	74.16	21
1.3.5	Relationship of pay to productivity	57.71	28

		Score	Rank
2	**ATTRACT**	**63.02**	**22**
2.1	External Openness	38.16	58
	Attract Business		
2.1.1	FDI and technology transfer	49.55	97
2.1.2	Prevalence of foreign ownership	39.79	108
	Attract People		
2.1.3	Migrant stock	24.98	35
2.1.4	International students	32.26	26
2.1.5	Brain gain	44.23	46
2.2	Internal Openness	87.88	1
	Social Diversity		
2.2.1	Tolerance of minorities	100.00	1
2.2.2	Tolerance of immigrants	85.77	20
2.2.3	Social mobility	82.87	9
	Gender Equality		
2.2.4	Female graduates	88.73	10
2.2.5	Gender earnings gap	89.39	13
2.2.6	Business opportunities for women	80.50	3

		Score	Rank
3	**GROW**	**65.64**	**15**
3.1	Formal Education	42.54	37
	Enrolment		
3.1.1	Vocational enrolment	47.23	32
3.1.2	Tertiary enrolment	73.77	10
	Quality		
3.1.3	Tertiary education expenditure	31.14	26
3.1.4	Reading, maths, science	60.56	30
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	68.78	17
3.2.1	Quality of management schools	72.43	17
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	65.14	17
3.3	Access to Growth Opportunities	85.59	4
	Networks		
3.3.1	Use of virtual social networks	94.69	1
3.3.2	Use of virtual professional networks	92.67	2
	Empowerment		
3.3.3	Delegation of authority	66.60	15
3.3.4	Personal rights	88.40	12

		Score	Rank
4	**RETAIN**	**75.14**	**6**
4.1	Sustainability	64.51	14
4.1.1	Pension system	86.87	23
4.1.2	Taxation	47.34	51
4.1.3	Brain retention	59.32	21
4.2	Lifestyle	85.77	6
4.2.1	Environmental performance	99.68	2
4.2.2	Personal safety	100.00	1
4.2.3	Physician density	44.76	24
4.2.4	Sanitation	98.64	27

		Score	Rank
5	**VOCATIONAL AND TECHNICAL SKILLS**	**59.21**	**27**
5.1	Mid-Level Skills	51.68	30
5.1.1	Workforce with secondary education	48.33	53
5.1.2	Population with secondary education	39.98	51
5.1.3	Technicians and associate professionals	78.17	16
5.1.4	Labour productivity per employee	40.22	26
5.2	Employability	66.74	17
5.2.1	Ease of finding skilled employees	69.56	8
5.2.2	Relevance of education system to the economy	67.46	15
5.2.3	Availability of scientists and engineers	63.21	24
5.2.4	Skills gap as major constraint	n/a	n/a

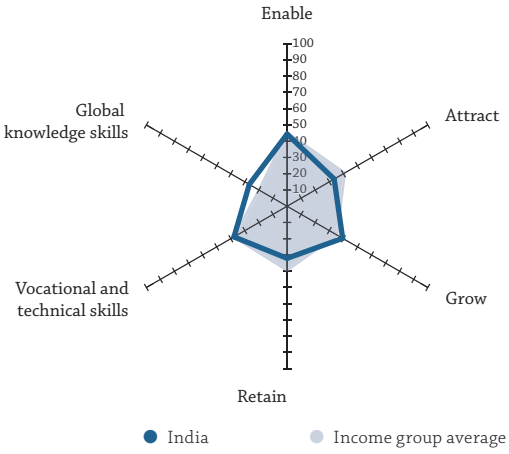
		Score	Rank
6	**GLOBAL KNOWLEDGE SKILLS**	**57.31**	**9**
6.1	High-Level Skills	61.50	10
6.1.1	Workforce with tertiary education	51.78	27
6.1.2	Population with tertiary education	46.23	14
6.1.3	Professionals	69.39	5
6.1.4	Researchers	84.93	4
6.1.5	Senior officials and managers	50.56	13
6.1.6	Quality of scientific institutions	68.25	23
6.1.7	Scientific journal articles	59.35	22
6.2	Talent Impact	53.12	11
6.2.1	Innovation output	78.46	6
6.2.2	High-value exports	28.92	28
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	50.27	29
6.2.4	New business density	54.85	11

INDIA

Key Indicators

Rank (out of 118)	**92**
Income group	**Lower-middle income**
Regional group	**Central and Southern Asia**
Population (millions)	**1,311.05**
GDP per capita (PPP US$)	**6,088.65**
GDP (US$ billions)	**2,073.54**
GTCI score	**35.65**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**44.36**	**94**
1.1	Regulatory Landscape	35.82	94
1.1.1	Government effectiveness	30.92	82
1.1.2	Business-government relations	47.33	84
1.1.3	Political stability	37.53	107
1.1.4	Regulatory quality	34.93	100
1.1.5	Corruption	28.38	69
1.2	Market Landscape	40.79	99
1.2.1	Competition intensity	60.57	93
1.2.2	Ease of doing business	36.99	103
1.2.3	Cluster development	55.97	27
1.2.4	R&D expenditure	19.29	39
1.2.5	ICT infrastructure	18.67	107
1.2.6	Technology utilisation	53.22	92
1.3	Business and Labour Landscape	56.49	75
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	60	81
	Management Practice		
1.3.3	Labour-employer cooperation	52.76	76
1.3.4	Professional management	48.85	76
1.3.5	Relationship of pay to productivity	54.16	43
2	**ATTRACT**	**33.44**	**114**
2.1	External Openness	30.40	90
	Attract Business		
2.1.1	FDI and technology transfer	51.00	87
2.1.2	Prevalence of foreign ownership	52.36	82
	Attract People		
2.1.3	Migrant stock	0.73	106
2.1.4	International students	0.43	91
2.1.5	Brain gain	47.47	35
2.2	Internal Openness	36.49	115
	Social Diversity		
2.2.1	Tolerance of minorities	24.44	94
2.2.2	Tolerance of immigrants	21.18	112
2.2.3	Social mobility	55.62	56
	Gender Equality		
2.2.4	Female graduates	50.66	81
2.2.5	Gender earnings gap	24.60	112
2.2.6	Business opportunities for women	42.40	115
3	**GROW**	**39.47**	**74**
3.1	Formal Education	26.71	63
	Enrolment		
3.1.1	Vocational enrolment	2.66	105
3.1.2	Tertiary enrolment	19.00	85
	Quality		
3.1.3	Tertiary education expenditure	27.58	36
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	57.58	19
3.2	Lifelong Learning	50.61	60
3.2.1	Quality of management schools	55.87	51
3.2.2	Prevalence of training in firms	42.88	45
3.2.3	Employee development	53.08	46
3.3	Access to Growth Opportunities	41.09	90
	Networks		
3.3.1	Use of virtual social networks	55.19	112
3.3.2	Use of virtual professional networks	7.68	84
	Empowerment		
3.3.3	Delegation of authority	47.94	51
3.3.4	Personal rights	53.54	70
4	**RETAIN**	**32.03**	**104**
4.1	Sustainability	36.96	79
4.1.1	Pension system	9.09	89
4.1.2	Taxation	53.55	30
4.1.3	Brain retention	48.23	39
4.2	Lifestyle	27.10	105
4.2.1	Environmental performance	30.76	108
4.2.2	Personal safety	37.47	91
4.2.3	Physician density	8.81	88
4.2.4	Sanitation	31.36	105
5	**VOCATIONAL AND TECHNICAL SKILLS**	**37.73**	**86**
5.1	Mid-Level Skills	12.85	102
5.1.1	Workforce with secondary education	22.70	87
5.1.2	Population with secondary education	n/a	n/a
5.1.3	Technicians and associate professionals	10.15	87
5.1.4	Labour productivity per employee	5.70	87
5.2	Employability	62.62	35
5.2.1	Ease of finding skilled employees	55.71	45
5.2.2	Relevance of education system to the economy	53.24	40
5.2.3	Availability of scientists and engineers	53.71	46
5.2.4	Skills gap as major constraint	87.80	22
6	**GLOBAL KNOWLEDGE SKILLS**	**26.85**	**66**
6.1	High-Level Skills	22.83	76
6.1.1	Workforce with tertiary education	15.70	88
6.1.2	Population with tertiary education	n/a	n/a
6.1.3	Professionals	11.52	88
6.1.4	Researchers	1.82	76
6.1.5	Senior officials and managers	31.46	42
6.1.6	Quality of scientific institutions	52.03	43
6.1.7	Scientific journal articles	24.49	52
6.2	Talent Impact	30.87	45
6.2.1	Innovation output	27.11	66
6.2.2	High-value exports	19.30	51
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	76.56	4
6.2.4	New business density	0.52	91

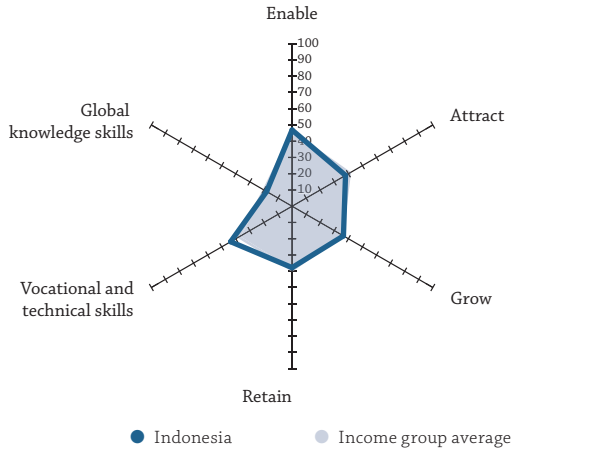
INDONESIA

Key Indicators

Rank (out of 118) **90**
Income group ..... **Lower-middle income**
Regional group .... **Eastern, Southeastern Asia and Oceania**
Population (millions) **257.56**

GDP per capita (PPP US$) **11,035.09**
GDP (US$ billions) **861.93**
GTCI score **36.81**
GTCI score (income group average) **36.50**

GTCI 2017 Country Profile by Pillar



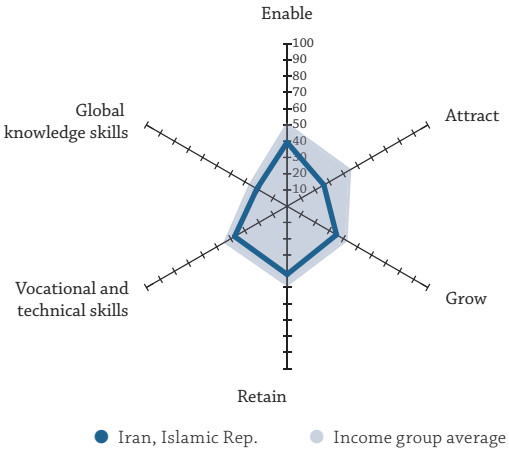
Rank			Score
1	**ENABLE**		**46.88**	**84**
1.1	Regulatory Landscape		45.28	71
1.1.1	Government effectiveness		36.49	69
1.1.2	Business-government relations		68.26	32
1.1.3	Political stability		52.61	83
1.1.4	Regulatory quality		43.38	78
1.1.5	Corruption		25.68	79
1.2	Market Landscape		45.84	80
1.2.1	Competition intensity		68.54	62
1.2.2	Ease of doing business		43.62	89
1.2.3	Cluster development		56.15	26
1.2.4	R&D expenditure		1.67	98
1.2.5	ICT infrastructure		37.47	83
1.2.6	Technology utilisation		67.62	39
1.3	Business and Labour Landscape		49.51	98
	Labour Market Flexibility			
1.3.1	Ease of hiring		27.67	103
1.3.2	Ease of redundancy		40	104
	Management Practice			
1.3.3	Labour-employer cooperation		59.74	45
1.3.4	Professional management		62.44	30
1.3.5	Relationship of pay to productivity		57.69	29
2	**ATTRACT**		**37.96**	**105**
2.1	External Openness		34.56	70
	Attract Business			
2.1.1	FDI and technology transfer		60.74	53
2.1.2	Prevalence of foreign ownership		59.05	59
	Attract People			
2.1.3	Migrant stock		0.12	116
2.1.4	International students		0.39	92
2.1.5	Brain gain		52.48	28
2.2	Internal Openness		41.37	110
	Social Diversity			
2.2.1	Tolerance of minorities		26.67	88
2.2.2	Tolerance of immigrants		8.92	115
2.2.3	Social mobility		57.94	49
	Gender Equality			
2.2.4	Female graduates		n/a	n/a
2.2.5	Gender earnings gap		48.84	94
2.2.6	Business opportunities for women		64.49	37
3	**GROW**		**36.48**	**87**
3.1	Formal Education		22.76	73
	Enrolment			
3.1.1	Vocational enrolment		40.24	39
3.1.2	Tertiary enrolment		25.95	74
	Quality			
3.1.3	Tertiary education expenditure		9.83	87
3.1.4	Reading, maths, science		5.13	58
3.1.5	University ranking		32.63	40
3.2	Lifelong Learning		38.83	103
3.2.1	Quality of management schools		57.33	45
3.2.2	Prevalence of training in firms		1.72	90
3.2.3	Employee development		57.46	31
3.3	Access to Growth Opportunities		47.85	67
	Networks			
3.3.1	Use of virtual social networks		82.50	34
3.3.2	Use of virtual professional networks		4.02	94
	Empowerment			
3.3.3	Delegation of authority		57.51	26
3.3.4	Personal rights		47.39	76
4	**RETAIN**		**37.76**	**93**
4.1	Sustainability		36.19	84
4.1.1	Pension system		6.06	95
4.1.2	Taxation		50.78	36
4.1.3	Brain retention		51.72	33
4.2	Lifestyle		39.34	96
4.2.1	Environmental performance		53.66	89
4.2.2	Personal safety		45.88	80
4.2.3	Physician density		2.36	99
4.2.4	Sanitation		55.45	96
5	**VOCATIONAL AND TECHNICAL SKILLS**		**43.64**	**65**
5.1	Mid-Level Skills		21.02	93
5.1.1	Workforce with secondary education		34.12	69
5.1.2	Population with secondary education		31.63	65
5.1.3	Technicians and associate professionals		7.11	89
5.1.4	Labour productivity per employee		11.22	76
5.2	Employability		66.26	22
5.2.1	Ease of finding skilled employees		56.50	42
5.2.2	Relevance of education system to the economy		54.78	38
5.2.3	Availability of scientists and engineers		59.38	33
5.2.4	Skills gap as major constraint		94.37	6
6	**GLOBAL KNOWLEDGE SKILLS**		**18.12**	**91**
6.1	High-Level Skills		15.39	102
6.1.1	Workforce with tertiary education		13.59	91
6.1.2	Population with tertiary education		12.89	78
6.1.3	Professionals		14.85	83
6.1.4	Researchers		1.01	82
6.1.5	Senior officials and managers		9.55	83
6.1.6	Quality of scientific institutions		54.25	39
6.1.7	Scientific journal articles		1.57	112
6.2	Talent Impact		20.85	77
6.2.1	Innovation output		23.16	80
6.2.2	High-value exports		15.38	62
	Entrepreneurship			
6.2.3	New product entrepreneurial activity		43.37	46
6.2.4	New business density		1.51	87

IRAN, ISLAMIC REP.

Key Indicators

Rank (out of 118)	**103**
Income group	**Upper-middle income**
Regional group	**Central and Southern Asia**
Population (millions)	**79.11**
GDP per capita (PPP US$)	**17,365.78**
GDP (US$ billions)	**425.33**
GTCI score	**33.54**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



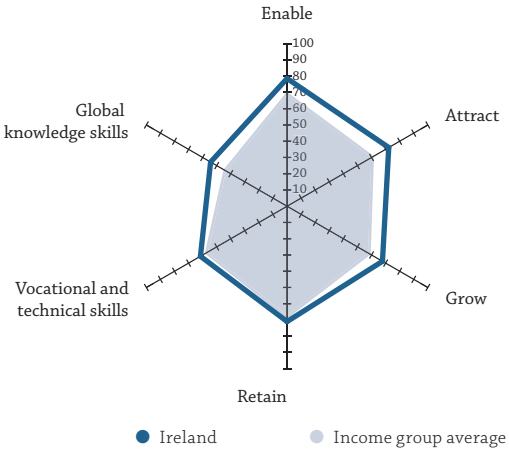
		Score	Rank
1	**ENABLE**	**39.32**	**107**
1.1	Regulatory Landscape	24.47	114
1.1.1	Government effectiveness	24.97	92
1.1.2	Business-government relations	34.63	108
1.1.3	Political stability	38.89	101
1.1.4	Regulatory quality	10.35	116
1.1.5	Corruption	13.51	107
1.2	Market Landscape	41.39	98
1.2.1	Competition intensity	55.71	109
1.2.2	Ease of doing business	42.31	96
1.2.3	Cluster development	42.69	77
1.2.4	R&D expenditure	7.14	73
1.2.5	ICT infrastructure	54.99	66
1.2.6	Technology utilisation	45.52	115
1.3	Business and Labour Landscape	52.10	90
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	50	97
	Management Practice		
1.3.3	Labour-employer cooperation	45.54	103
1.3.4	Professional management	37.03	113
1.3.5	Relationship of pay to productivity	38.91	102
2	**ATTRACT**	**26.13**	**118**
2.1	External Openness	18.63	117
	Attract Business		
2.1.1	FDI and technology transfer	50.05	93
2.1.2	Prevalence of foreign ownership	18.97	118
	Attract People		
2.1.3	Migrant stock	7.45	66
2.1.4	International students	1.05	89
2.1.5	Brain gain	15.66	113
2.2	Internal Openness	33.62	117
	Social Diversity		
2.2.1	Tolerance of minorities	13.33	110
2.2.2	Tolerance of immigrants	44.68	85
2.2.3	Social mobility	42.43	105
	Gender Equality		
2.2.4	Female graduates	40.64	89
2.2.5	Gender earnings gap	17.25	115
2.2.6	Business opportunities for women	43.36	110
3	**GROW**	**35.10**	**93**
3.1	Formal Education	34.64	51
	Enrolment		
3.1.1	Vocational enrolment	33.10	50
3.1.2	Tertiary enrolment	58.50	29
	Quality		
3.1.3	Tertiary education expenditure	18.06	70
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	28.91	47
3.2	Lifelong Learning	42.51	91
3.2.1	Quality of management schools	48.16	83
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	36.85	111
3.3	Access to Growth Opportunities	28.14	117
	Networks		
3.3.1	Use of virtual social networks	50.79	117
3.3.2	Use of virtual professional networks	n/a	n/a
	Empowerment		
3.3.3	Delegation of authority	32.44	115
3.3.4	Personal rights	1.18	116
4	**RETAIN**	**41.95**	**83**
4.1	Sustainability	35.17	88
4.1.1	Pension system	33.33	61
4.1.2	Taxation	45.61	61
4.1.3	Brain retention	26.56	104
4.2	Lifestyle	48.74	82
4.2.1	Environmental performance	54.54	87
4.2.2	Personal safety	40.53	88
4.2.3	Physician density	11.25	85
4.2.4	Sanitation	88.64	64
5	**VOCATIONAL AND TECHNICAL SKILLS**	**37.28**	**87**
5.1	Mid-Level Skills	28.31	80
5.1.1	Workforce with secondary education	32.31	71
5.1.2	Population with secondary education	35.26	57
5.1.3	Technicians and associate professionals	19.29	77
5.1.4	Labour productivity per employee	26.39	46
5.2	Employability	46.24	94
5.2.1	Ease of finding skilled employees	46.57	77
5.2.2	Relevance of education system to the economy	36.98	83
5.2.3	Availability of scientists and engineers	55.17	41
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**21.48**	**77**
6.1	High-Level Skills	28.86	65
6.1.1	Workforce with tertiary education	30.26	71
6.1.2	Population with tertiary education	30.05	42
6.1.3	Professionals	23.64	67
6.1.4	Researchers	8.84	50
6.1.5	Senior officials and managers	13.48	73
6.1.6	Quality of scientific institutions	49.44	54
6.1.7	Scientific journal articles	46.29	35
6.2	Talent Impact	14.10	94
6.2.1	Innovation output	16.34	96
6.2.2	High-value exports	2.16	108
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	23.81	73
6.2.4	New business density	n/a	n/a

IRELAND

Key Indicators

Rank (out of 118)	**12**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**4.64**
GDP per capita (PPP US$)	**54,654.40**
GDP (US$ billions)	**238.02**
GTCI score	**67.57**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**78.60**	**10**
1.1	Regulatory Landscape	85.67	11
1.1.1	Government effectiveness	82.89	14
1.1.2	Business-government relations	89.50	8
1.1.3	Political stability	89.15	14
1.1.4	Regulatory quality	88.45	10
1.1.5	Corruption	78.38	18
1.2	Market Landscape	69.08	21
1.2.1	Competition intensity	68.06	63
1.2.2	Ease of doing business	84.20	15
1.2.3	Cluster development	64.81	16
1.2.4	R&D expenditure	37.38	24
1.2.5	ICT infrastructure	84.02	16
1.2.6	Technology utilisation	76.04	23
1.3	Business and Labour Landscape	81.04	9
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	90	35
	Management Practice		
1.3.3	Labour-employer cooperation	74.32	14
1.3.4	Professional management	83.57	7
1.3.5	Relationship of pay to productivity	68.30	6
2	**ATTRACT**	**72.23**	**9**
2.1	External Openness	63.45	11
	Attract Business		
2.1.1	FDI and technology transfer	88.59	1
2.1.2	Prevalence of foreign ownership	87.71	1
	Attract People		
2.1.3	Migrant stock	34.96	20
2.1.4	International students	33.51	25
2.1.5	Brain gain	72.49	8
2.2	Internal Openness	81.02	7
	Social Diversity		
2.2.1	Tolerance of minorities	93.33	4
2.2.2	Tolerance of immigrants	96.76	7
2.2.3	Social mobility	74.35	21
	Gender Equality		
2.2.4	Female graduates	64.14	69
2.2.5	Gender earnings gap	89.20	14
2.2.6	Business opportunities for women	68.31	27

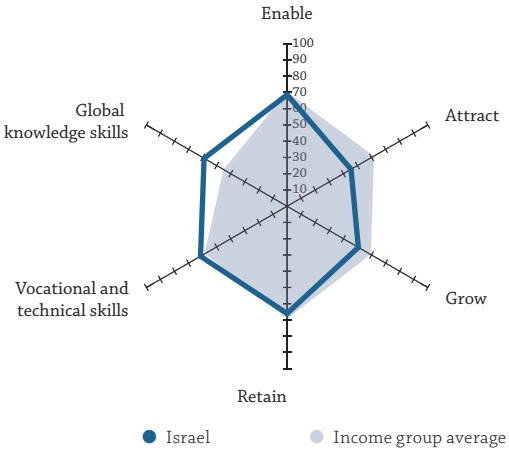
		Score	Rank
3	**GROW**	**67.76**	**14**
3.1	Formal Education	46.87	31
	Enrolment		
3.1.1	Vocational enrolment	1.37	107
3.1.2	Tertiary enrolment	65.27	20
	Quality		
3.1.3	Tertiary education expenditure	28.10	32
3.1.4	Reading, maths, science	77.76	11
3.1.5	University ranking	61.86	16
3.2	Lifelong Learning	76.40	5
3.2.1	Quality of management schools	73.51	13
3.2.2	Prevalence of training in firms	92.08	3
3.2.3	Employee development	63.60	20
3.3	Access to Growth Opportunities	80.01	11
	Networks		
3.3.1	Use of virtual social networks	87.21	17
3.3.2	Use of virtual professional networks	80.78	6
	Empowerment		
3.3.3	Delegation of authority	64.90	18
3.3.4	Personal rights	87.17	20
4	**RETAIN**	**70.95**	**20**
4.1	Sustainability	64.82	13
4.1.1	Pension system	88.89	21
4.1.2	Taxation	45.62	60
4.1.3	Brain retention	59.96	18
4.2	Lifestyle	77.08	26
4.2.1	Environmental performance	92.39	19
4.2.2	Personal safety	92.41	14
4.2.3	Physician density	34.31	44
4.2.4	Sanitation	89.20	63
5	**VOCATIONAL AND TECHNICAL SKILLS**	**61.56**	**18**
5.1	Mid-Level Skills	49.36	40
5.1.1	Workforce with secondary education	50.84	47
5.1.2	Population with secondary education	38.44	53
5.1.3	Technicians and associate professionals	48.22	44
5.1.4	Labour productivity per employee	59.93	8
5.2	Employability	73.75	4
5.2.1	Ease of finding skilled employees	72.97	3
5.2.2	Relevance of education system to the economy	72.71	9
5.2.3	Availability of scientists and engineers	69.85	9
5.2.4	Skills gap as major constraint	79.49	43
6	**GLOBAL KNOWLEDGE SKILLS**	**54.35**	**13**
6.1	High-Level Skills	54.83	21
6.1.1	Workforce with tertiary education	67.96	10
6.1.2	Population with tertiary education	35.93	28
6.1.3	Professionals	65.76	11
6.1.4	Researchers	40.65	24
6.1.5	Senior officials and managers	42.13	26
6.1.6	Quality of scientific institutions	75.70	15
6.1.7	Scientific journal articles	55.67	24
6.2	Talent Impact	53.87	9
6.2.1	Innovation output	76.30	7
6.2.2	High-value exports	48.46	9
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	57.36	17
6.2.4	New business density	33.37	19

ISRAEL

Key Indicators

Rank (out of 118)	**25**
Income group	**High income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**8.38**
GDP per capita (PPP US$)	**35,431.61**
GDP (US$ billions)	**296.08**
GTCI score	**58.53**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**68.59**	**25**
1.1	Regulatory Landscape	59.38	42
1.1.1	Government effectiveness	70.18	24
1.1.2	Business-government relations	55.37	66
1.1.3	Political stability	36.70	108
1.1.4	Regulatory quality	75.19	20
1.1.5	Corruption	59.46	30
1.2	Market Landscape	74.23	13
1.2.1	Competition intensity	57.19	105
1.2.2	Ease of doing business	67.62	50
1.2.3	Cluster development	55.72	28
1.2.4	R&D expenditure	100.00	1
1.2.5	ICT infrastructure	80.69	23
1.2.6	Technology utilisation	84.16	5
1.3	Business and Labour Landscape	72.15	19
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	58.91	47
1.3.4	Professional management	62.00	31
1.3.5	Relationship of pay to productivity	50.83	63
2	**ATTRACT**	**45.44**	**67**
2.1	External Openness	48.87	31
	Attract Business		
2.1.1	FDI and technology transfer	73.96	8
2.1.2	Prevalence of foreign ownership	66.75	38
	Attract People		
2.1.3	Migrant stock	54.89	13
2.1.4	International students	6.00	71
2.1.5	Brain gain	42.76	48
2.2	Internal Openness	42.02	108
	Social Diversity		
2.2.1	Tolerance of minorities	3.33	116
2.2.2	Tolerance of immigrants	41.76	92
2.2.3	Social mobility	51.32	74
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	60.24	68
2.2.6	Business opportunities for women	53.43	81

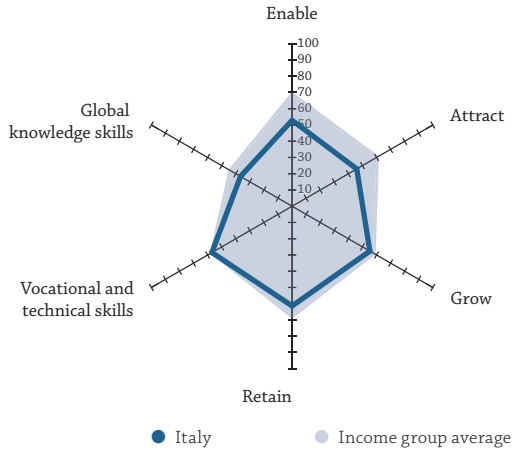
		Score	Rank
3	**GROW**	**50.62**	**35**
3.1	Formal Education	46.34	32
	Enrolment		
3.1.1	Vocational enrolment	41.65	37
3.1.2	Tertiary enrolment	58.80	27
	Quality		
3.1.3	Tertiary education expenditure	19.80	63
3.1.4	Reading, maths, science	54.81	35
3.1.5	University ranking	56.61	21
3.2	Lifelong Learning	46.68	78
3.2.1	Quality of management schools	65.90	29
3.2.2	Prevalence of training in firms	20.05	80
3.2.3	Employee development	54.10	42
3.3	Access to Growth Opportunities	58.85	34
	Networks		
3.3.1	Use of virtual social networks	89.17	11
3.3.2	Use of virtual professional networks	47.02	19
	Empowerment		
3.3.3	Delegation of authority	53.40	30
3.3.4	Personal rights	45.80	81
4	**RETAIN**	**66.01**	**27**
4.1	Sustainability	61.81	20
4.1.1	Pension system	88.99	20
4.1.2	Taxation	46.31	56
4.1.3	Brain retention	50.13	36
4.2	Lifestyle	70.21	41
4.2.1	Environmental performance	76.60	47
4.2.2	Personal safety	61.21	58
4.2.3	Physician density	43.05	26
4.2.4	Sanitation	100.00	1
5	**VOCATIONAL AND TECHNICAL SKILLS**	**61.53**	**19**
5.1	Mid-Level Skills	55.28	26
5.1.1	Workforce with secondary education	53.90	41
5.1.2	Population with secondary education	48.62	39
5.1.3	Technicians and associate professionals	84.26	10
5.1.4	Labour productivity per employee	34.36	31
5.2	Employability	67.77	13
5.2.1	Ease of finding skilled employees	66.04	18
5.2.2	Relevance of education system to the economy	50.79	47
5.2.3	Availability of scientists and engineers	70.20	8
5.2.4	Skills gap as major constraint	84.05	31
6	**GLOBAL KNOWLEDGE SKILLS**	**58.97**	**6**
6.1	High-Level Skills	69.17	3
6.1.1	Workforce with tertiary education	72.82	8
6.1.2	Population with tertiary education	57.60	7
6.1.3	Professionals	47.88	29
6.1.4	Researchers	100.00	1
6.1.5	Senior officials and managers	43.82	24
6.1.6	Quality of scientific institutions	87.24	3
6.1.7	Scientific journal articles	74.87	12
6.2	Talent Impact	48.77	14
6.2.1	Innovation output	64.09	16
6.2.2	High-value exports	56.44	7
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	56.66	19
6.2.4	New business density	17.88	34

ITALY

Key Indicators

Rank (out of 118)	**40**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**60.80**
GDP per capita (PPP US$)	**35,896.46**
GDP (US$ billions)	**1,814.76**
GTCI score	**51.51**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



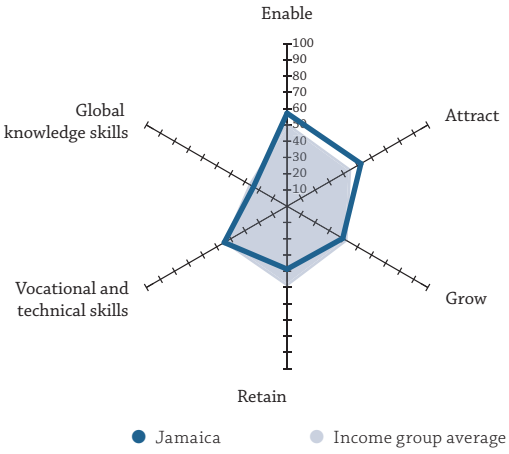
		Score	Rank
1	**ENABLE**	**52.85**	**62**
1.1	Regulatory Landscape	48.16	57
1.1.1	Government effectiveness	47.64	48
1.1.2	Business-government relations	20.07	116
1.1.3	Political stability	74.68	42
1.1.4	Regulatory quality	61.91	42
1.1.5	Corruption	36.49	56
1.2	Market Landscape	62.55	30
1.2.1	Competition intensity	70.98	51
1.2.2	Ease of doing business	70.54	42
1.2.3	Cluster development	74.27	4
1.2.4	R&D expenditure	29.76	27
1.2.5	ICT infrastructure	77.24	32
1.2.6	Technology utilisation	52.54	95
1.3	Business and Labour Landscape	47.83	102
	Labour Market Flexibility		
1.3.1	Ease of hiring	72.33	47
1.3.2	Ease of redundancy	50	97
	Management Practice		
1.3.3	Labour-employer cooperation	43.44	108
1.3.4	Professional management	41.15	103
1.3.5	Relationship of pay to productivity	32.22	114
2	**ATTRACT**	**45.93**	**64**
2.1	External Openness	31.93	82
	Attract Business		
2.1.1	FDI and technology transfer	45.01	107
2.1.2	Prevalence of foreign ownership	44.75	101
	Attract People		
2.1.3	Migrant stock	21.20	40
2.1.4	International students	22.81	32
2.1.5	Brain gain	25.89	94
2.2	Internal Openness	59.92	45
	Social Diversity		
2.2.1	Tolerance of minorities	60.00	34
2.2.2	Tolerance of immigrants	70.07	41
2.2.3	Social mobility	46.43	93
	Gender Equality		
2.2.4	Female graduates	83.29	21
2.2.5	Gender earnings gap	59.29	72
2.2.6	Business opportunities for women	40.47	117
3	**GROW**	**55.26**	**28**
3.1	Formal Education	53.28	22
	Enrolment		
3.1.1	Vocational enrolment	77.16	10
3.1.2	Tertiary enrolment	56.15	33
	Quality		
3.1.3	Tertiary education expenditure	16.35	74
3.1.4	Reading, maths, science	63.35	27
3.1.5	University ranking	53.38	23
3.2	Lifelong Learning	52.48	57
3.2.1	Quality of management schools	68.48	27
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	36.48	114
3.3	Access to Growth Opportunities	60.02	31
	Networks		
3.3.1	Use of virtual social networks	82.78	33
3.3.2	Use of virtual professional networks	43.09	23
	Empowerment		
3.3.3	Delegation of authority	34.44	111
3.3.4	Personal rights	79.78	31
4	**RETAIN**	**61.35**	**41**
4.1	Sustainability	47.05	48
4.1.1	Pension system	89.90	18
4.1.2	Taxation	22.55	115
4.1.3	Brain retention	28.71	98
4.2	Lifestyle	75.65	31
4.2.1	Environmental performance	88.43	29
4.2.2	Personal safety	66.24	47
4.2.3	Physician density	48.49	16
4.2.4	Sanitation	99.43	17
5	**VOCATIONAL AND TECHNICAL SKILLS**	**56.97**	**31**
5.1	Mid-Level Skills	59.05	19
5.1.1	Workforce with secondary education	62.81	24
5.1.2	Population with secondary education	47.66	41
5.1.3	Technicians and associate professionals	82.74	11
5.1.4	Labour productivity per employee	42.97	22
5.2	Employability	54.90	60
5.2.1	Ease of finding skilled employees	56.59	41
5.2.2	Relevance of education system to the economy	45.11	56
5.2.3	Availability of scientists and engineers	62.99	26
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**36.67**	**39**
6.1	High-Level Skills	36.27	45
6.1.1	Workforce with tertiary education	31.07	69
6.1.2	Population with tertiary education	20.87	64
6.1.3	Professionals	40.00	43
6.1.4	Researchers	23.78	34
6.1.5	Senior officials and managers	21.91	61
6.1.6	Quality of scientific institutions	60.85	33
6.1.7	Scientific journal articles	55.39	26
6.2	Talent Impact	37.08	32
6.2.1	Innovation output	47.58	31
6.2.2	High-value exports	16.28	58
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	71.18	8
6.2.4	New business density	13.29	42

JAMAICA

Key Indicators

Rank (out of 118)	**68**
Income group	**Upper-middle income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**2.73**
GDP per capita (PPP US$)	**9,062.52**
GDP (US$ billions)	**14.01**
GTCI score	**42.74**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



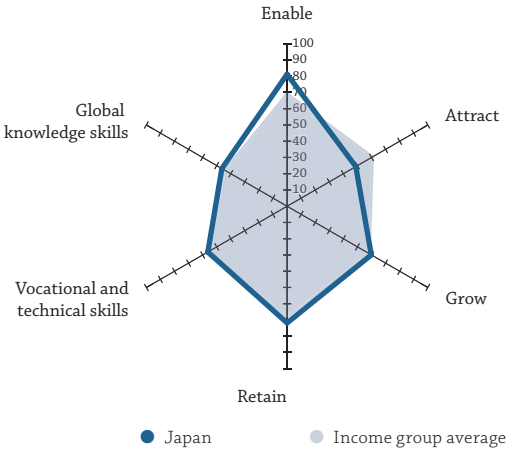
		Score	Rank
1	**ENABLE**	**57.25**	**49**
1.1	Regulatory Landscape	48.01	59
1.1.1	Government effectiveness	40.76	61
1.1.2	Business-government relations	52.82	70
1.1.3	Political stability	64.24	57
1.1.4	Regulatory quality	49.80	64
1.1.5	Corruption	32.43	63
1.2	Market Landscape	55.02	48
1.2.1	Competition intensity	73.29	38
1.2.2	Ease of doing business	61.28	60
1.2.3	Cluster development	40.95	84
1.2.4	R&D expenditure	n/a	n/a
1.2.5	ICT infrastructure	37.08	84
1.2.6	Technology utilisation	62.49	58
1.3	Business and Labour Landscape	68.72	31
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	54.90	67
1.3.4	Professional management	59.17	41
1.3.5	Relationship of pay to productivity	40.52	96
2	**ATTRACT**	**52.43**	**40**
2.1	External Openness	40.68	49
	Attract Business		
2.1.1	FDI and technology transfer	58.35	63
2.1.2	Prevalence of foreign ownership	66.33	41
	Attract People		
2.1.3	Migrant stock	1.67	94
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	36.37	69
2.2	Internal Openness	64.19	31
	Social Diversity		
2.2.1	Tolerance of minorities	66.67	21
2.2.2	Tolerance of immigrants	73.79	36
2.2.3	Social mobility	53.45	65
	Gender Equality		
2.2.4	Female graduates	68.68	60
2.2.5	Gender earnings gap	60.70	65
2.2.6	Business opportunities for women	61.85	49
3	**GROW**	**39.55**	**73**
3.1	Formal Education	15.04	94
	Enrolment		
3.1.1	Vocational enrolment	n/a	n/a
3.1.2	Tertiary enrolment	22.34	82
	Quality		
3.1.3	Tertiary education expenditure	22.77	52
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	46.10	79
3.2.1	Quality of management schools	58.86	42
3.2.2	Prevalence of training in firms	29.68	67
3.2.3	Employee development	49.76	59
3.3	Access to Growth Opportunities	57.50	38
	Networks		
3.3.1	Use of virtual social networks	75.47	73
3.3.2	Use of virtual professional networks	27.56	34
	Empowerment		
3.3.3	Delegation of authority	44.14	68
3.3.4	Personal rights	82.81	25
4	**RETAIN**	**38.71**	**92**
4.1	Sustainability	32.11	101
4.1.1	Pension system	16.16	82
4.1.2	Taxation	48.74	45
4.1.3	Brain retention	31.42	91
4.2	Lifestyle	45.32	90
4.2.1	Environmental performance	74.51	52
4.2.2	Personal safety	22.40	105
4.2.3	Physician density	5.04	92
4.2.4	Sanitation	79.32	77
5	**VOCATIONAL AND TECHNICAL SKILLS**	**44.63**	**64**
5.1	Mid-Level Skills	36.29	64
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	63.16	21
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	9.42	77
5.2	Employability	52.97	68
5.2.1	Ease of finding skilled employees	51.27	59
5.2.2	Relevance of education system to the economy	44.48	60
5.2.3	Availability of scientists and engineers	42.42	92
5.2.4	Skills gap as major constraint	73.73	52
6	**GLOBAL KNOWLEDGE SKILLS**	**23.88**	**73**
6.1	High-Level Skills	36.24	46
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	21.86	62
6.1.3	Professionals	60.91	14
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	50.98	49
6.1.7	Scientific journal articles	11.21	74
6.2	Talent Impact	11.53	100
6.2.1	Innovation output	14.54	99
6.2.2	High-value exports	15.59	61
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	10.35	85
6.2.4	New business density	5.63	69

JAPAN

Key Indicators

Rank (out of 118)	**22**
Income group	**High income**
Regional group	**Eastern, Southeastern Asia and Oceania**
Population (millions)	**126.96**
GDP per capita (PPP US$)	**37,321.60**
GDP (US$ billions)	**4,123.26**
GTCI score	**60.72**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



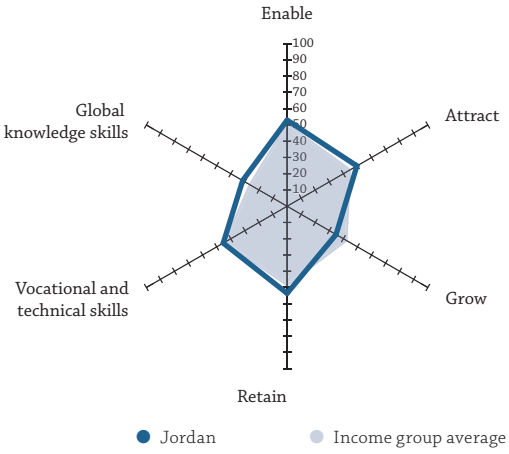
		Score	Rank
1	**ENABLE**	**81.19**	**5**
1.1	Regulatory Landscape	81.78	14
1.1.1	Government effectiveness	89.20	6
1.1.2	Business-government relations	79.91	14
1.1.3	Political stability	87.97	18
1.1.4	Regulatory quality	73.45	24
1.1.5	Corruption	78.38	18
1.2	Market Landscape	82.45	2
1.2.1	Competition intensity	88.86	1
1.2.2	Ease of doing business	75.65	32
1.2.3	Cluster development	71.26	9
1.2.4	R&D expenditure	82.38	3
1.2.5	ICT infrastructure	91.82	10
1.2.6	Technology utilisation	84.71	2
1.3	Business and Labour Landscape	79.33	12
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	90	35
	Management Practice		
1.3.3	Labour-employer cooperation	77.86	5
1.3.4	Professional management	77.10	18
1.3.5	Relationship of pay to productivity	62.71	12
2	**ATTRACT**	**48.81**	**51**
2.1	External Openness	38.73	55
	Attract Business		
2.1.1	FDI and technology transfer	63.21	40
2.1.2	Prevalence of foreign ownership	71.16	22
	Attract People		
2.1.3	Migrant stock	3.41	84
2.1.4	International students	18.17	46
2.1.5	Brain gain	37.72	66
2.2	Internal Openness	58.88	51
	Social Diversity		
2.2.1	Tolerance of minorities	65.56	26
2.2.2	Tolerance of immigrants	49.31	74
2.2.3	Social mobility	75.67	18
	Gender Equality		
2.2.4	Female graduates	49.85	82
2.2.5	Gender earnings gap	60.97	63
2.2.6	Business opportunities for women	51.94	90
3	**GROW**	**59.84**	**19**
3.1	Formal Education	54.15	19
	Enrolment		
3.1.1	Vocational enrolment	24.93	61
3.1.2	Tertiary enrolment	55.17	37
	Quality		
3.1.3	Tertiary education expenditure	15.36	77
3.1.4	Reading, maths, science	91.51	3
3.1.5	University ranking	83.79	8
3.2	Lifelong Learning	64.86	24
3.2.1	Quality of management schools	56.49	47
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	73.24	6
3.3	Access to Growth Opportunities	60.52	30
	Networks		
3.3.1	Use of virtual social networks	81.25	41
3.3.2	Use of virtual professional networks	2.41	101
	Empowerment		
3.3.3	Delegation of authority	62.09	20
3.3.4	Personal rights	96.31	6
4	**RETAIN**	**71.80**	**16**
4.1	Sustainability	67.14	9
4.1.1	Pension system	94.95	3
4.1.2	Taxation	52.39	32
4.1.3	Brain retention	54.10	28
4.2	Lifestyle	76.45	28
4.2.1	Environmental performance	81.17	38
4.2.2	Personal safety	95.15	10
4.2.3	Physician density	29.48	54
4.2.4	Sanitation	100.00	1
5	**VOCATIONAL AND TECHNICAL SKILLS**	**56.31**	**32**
5.1	Mid-Level Skills	46.00	46
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	56.40	27
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	35.61	30
5.2	Employability	66.62	18
5.2.1	Ease of finding skilled employees	64.59	23
5.2.2	Relevance of education system to the economy	59.12	27
5.2.3	Availability of scientists and engineers	76.13	3
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**46.36**	**23**
6.1	High-Level Skills	59.99	14
6.1.1	Workforce with tertiary education	66.83	13
6.1.2	Population with tertiary education	50.22	11
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	62.77	9
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	80.46	7
6.1.7	Scientific journal articles	39.68	41
6.2	Talent Impact	32.73	42
6.2.1	Innovation output	56.01	25
6.2.2	High-value exports	27.07	38
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	47.14	37
6.2.4	New business density	0.70	89

JORDAN

Key Indicators

Rank (out of 118)	**58**
Income group	**Upper-middle income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**7.59**
GDP per capita (PPP US$)	**10,880.32**
GDP (US$ billions)	**37.52**
GTCI score	**44.64**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



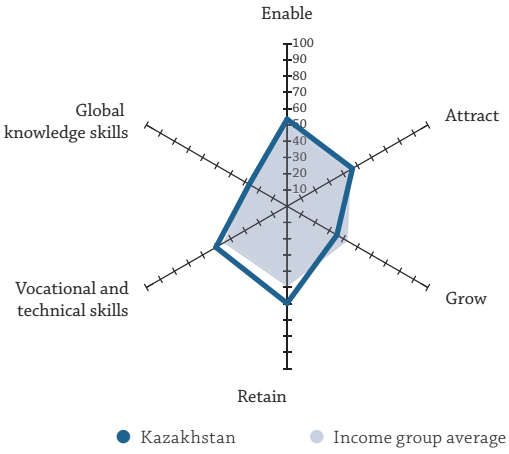
		Score	Rank
1	**ENABLE**	**52.97**	**61**
1.1	Regulatory Landscape	49.33	55
1.1.1	Government effectiveness	40.68	62
1.1.2	Business-government relations	61.76	51
1.1.3	Political stability	47.76	91
1.1.4	Regulatory quality	47.79	67
1.1.5	Corruption	48.65	41
1.2	Market Landscape	50.20	65
1.2.1	Competition intensity	70.22	55
1.2.2	Ease of doing business	43.08	91
1.2.3	Cluster development	54.55	29
1.2.4	R&D expenditure	10.00	62
1.2.5	ICT infrastructure	51.41	69
1.2.6	Technology utilisation	71.92	33
1.3	Business and Labour Landscape	59.38	65
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	40	104
	Management Practice		
1.3.3	Labour-employer cooperation	58.68	48
1.3.4	Professional management	53.31	63
1.3.5	Relationship of pay to productivity	55.89	36
2	**ATTRACT**	**49.59**	**46**
2.1	External Openness	60.61	12
	Attract Business		
2.1.1	FDI and technology transfer	61.49	48
2.1.2	Prevalence of foreign ownership	58.32	61
	Attract People		
2.1.3	Migrant stock	90.26	8
2.1.4	International students	47.42	19
2.1.5	Brain gain	45.58	43
2.2	Internal Openness	38.56	114
	Social Diversity		
2.2.1	Tolerance of minorities	28.89	84
2.2.2	Tolerance of immigrants	22.83	110
2.2.3	Social mobility	57.51	51
	Gender Equality		
2.2.4	Female graduates	44.90	88
2.2.5	Gender earnings gap	17.88	114
2.2.6	Business opportunities for women	59.37	58
3	**GROW**	**34.79**	**95**
3.1	Formal Education	21.34	77
	Enrolment		
3.1.1	Vocational enrolment	7.44	91
3.1.2	Tertiary enrolment	41.25	53
	Quality		
3.1.3	Tertiary education expenditure	n/a	n/a
3.1.4	Reading, maths, science	12.67	53
3.1.5	University ranking	24.02	53
3.2	Lifelong Learning	37.35	108
3.2.1	Quality of management schools	56.77	46
3.2.2	Prevalence of training in firms	0.00	91
3.2.3	Employee development	55.28	37
3.3	Access to Growth Opportunities	45.67	74
	Networks		
3.3.1	Use of virtual social networks	78.74	55
3.3.2	Use of virtual professional networks	23.67	44
	Empowerment		
3.3.3	Delegation of authority	55.90	29
3.3.4	Personal rights	24.36	106
4	**RETAIN**	**53.58**	**58**
4.1	Sustainability	43.08	57
4.1.1	Pension system	37.37	56
4.1.2	Taxation	45.73	59
4.1.3	Brain retention	46.14	41
4.2	Lifestyle	64.07	53
4.2.1	Environmental performance	65.58	66
4.2.2	Personal safety	59.43	62
4.2.3	Physician density	32.86	46
4.2.4	Sanitation	98.41	30
5	**VOCATIONAL AND TECHNICAL SKILLS**	**45.36**	**63**
5.1	Mid-Level Skills	24.23	87
5.1.1	Workforce with secondary education	28.27	78
5.1.2	Population with secondary education	20.01	85
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	24.40	49
5.2	Employability	66.48	20
5.2.1	Ease of finding skilled employees	57.88	36
5.2.2	Relevance of education system to the economy	57.32	32
5.2.3	Availability of scientists and engineers	63.07	25
5.2.4	Skills gap as major constraint	87.67	23
6	**GLOBAL KNOWLEDGE SKILLS**	**31.59**	**52**
6.1	High-Level Skills	38.87	39
6.1.1	Workforce with tertiary education	45.63	38
6.1.2	Population with tertiary education	26.75	52
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	49.33	55
6.1.7	Scientific journal articles	33.77	45
6.2	Talent Impact	24.30	68
6.2.1	Innovation output	27.65	64
6.2.2	High-value exports	20.46	48
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	43.53	45
6.2.4	New business density	5.57	70

KAZAKHSTAN

Key Indicators

Rank (out of 118)	**53**
Income group	**Upper-middle income**
Regional group	**Central and Southern Asia**
Population (millions)	**17.54**
GDP per capita (PPP US$)	**25,876.51**
GDP (US$ billions)	**184.36**
GTCI score	**45.43**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



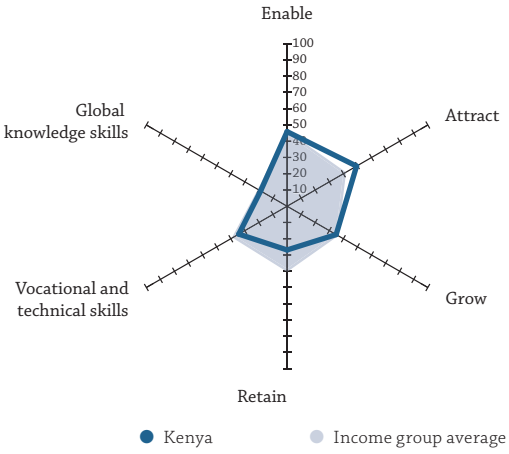
		Score	Rank
1	**ENABLE**	**53.56**	**58**
1.1	Regulatory Landscape	43.45	78
1.1.1	Government effectiveness	36.37	70
1.1.2	Business-government relations	63.33	41
1.1.3	Political stability	63.36	61
1.1.4	Regulatory quality	39.35	85
1.1.5	Corruption	14.86	102
1.2	Market Landscape	49.33	68
1.2.1	Competition intensity	62.06	86
1.2.2	Ease of doing business	71.72	39
1.2.3	Cluster development	35.22	102
1.2.4	R&D expenditure	3.81	87
1.2.5	ICT infrastructure	67.14	48
1.2.6	Technology utilisation	56.04	82
1.3	Business and Labour Landscape	67.90	36
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	58.56	49
1.3.4	Professional management	51.08	71
1.3.5	Relationship of pay to productivity	59.85	19
2	**ATTRACT**	**46.45**	**61**
2.1	External Openness	40.00	52
	Attract Business		
2.1.1	FDI and technology transfer	49.81	94
2.1.2	Prevalence of foreign ownership	51.54	83
	Attract People		
2.1.3	Migrant stock	44.25	16
2.1.4	International students	7.71	68
2.1.5	Brain gain	46.68	38
2.2	Internal Openness	52.91	82
	Social Diversity		
2.2.1	Tolerance of minorities	38.89	72
2.2.2	Tolerance of immigrants	32.86	99
2.2.3	Social mobility	54.34	62
	Gender Equality		
2.2.4	Female graduates	64.12	70
2.2.5	Gender earnings gap	58.06	76
2.2.6	Business opportunities for women	69.18	26
3	**GROW**	**35.41**	**90**
3.1	Formal Education	25.86	66
	Enrolment		
3.1.1	Vocational enrolment	24.27	63
3.1.2	Tertiary enrolment	39.80	57
	Quality		
3.1.3	Tertiary education expenditure	5.99	93
3.1.4	Reading, maths, science	22.86	48
3.1.5	University ranking	36.39	36
3.2	Lifelong Learning	42.39	93
3.2.1	Quality of management schools	45.76	93
3.2.2	Prevalence of training in firms	32.85	62
3.2.3	Employee development	48.56	66
3.3	Access to Growth Opportunities	37.99	101
	Networks		
3.3.1	Use of virtual social networks	71.63	88
3.3.2	Use of virtual professional networks	6.02	90
	Empowerment		
3.3.3	Delegation of authority	48.18	49
3.3.4	Personal rights	26.13	103
4	**RETAIN**	**59.72**	**45**
4.1	Sustainability	53.93	38
4.1.1	Pension system	62.63	40
4.1.2	Taxation	55.55	23
4.1.3	Brain retention	43.62	50
4.2	Lifestyle	65.52	52
4.2.1	Environmental performance	67.54	63
4.2.2	Personal safety	50.78	72
4.2.3	Physician density	46.59	19
4.2.4	Sanitation	97.16	38
5	**VOCATIONAL AND TECHNICAL SKILLS**	**50.56**	**45**
5.1	Mid-Level Skills	44.60	51
5.1.1	Workforce with secondary education	57.80	30
5.1.2	Population with secondary education	56.15	29
5.1.3	Technicians and associate professionals	41.12	50
5.1.4	Labour productivity per employee	23.35	51
5.2	Employability	56.53	52
5.2.1	Ease of finding skilled employees	48.66	65
5.2.2	Relevance of education system to the economy	44.86	58
5.2.3	Availability of scientists and engineers	49.74	67
5.2.4	Skills gap as major constraint	82.84	34
6	**GLOBAL KNOWLEDGE SKILLS**	**26.89**	**65**
6.1	High-Level Skills	31.54	55
6.1.1	Workforce with tertiary education	48.38	35
6.1.2	Population with tertiary education	42.69	18
6.1.3	Professionals	38.79	45
6.1.4	Researchers	8.80	51
6.1.5	Senior officials and managers	35.96	33
6.1.6	Quality of scientific institutions	42.72	75
6.1.7	Scientific journal articles	3.46	101
6.2	Talent Impact	22.24	74
6.2.1	Innovation output	15.44	97
6.2.2	High-value exports	40.63	12
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	23.15	75
6.2.4	New business density	9.75	49

KENYA

Key Indicators

Rank (out of 118)	**97**
Income group	**Lower-middle income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**46.05**
GDP per capita (PPP US$)	**3,082.52**
GDP (US$ billions)	**63.40**
GTCI score	**35.02**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**45.91**	**87**
1.1	Regulatory Landscape	33.49	101
1.1.1	Government effectiveness	28.05	85
1.1.2	Business-government relations	61.21	54
1.1.3	Political stability	29.71	113
1.1.4	Regulatory quality	37.69	89
1.1.5	Corruption	10.81	112
1.2	Market Landscape	45.75	81
1.2.1	Competition intensity	75.96	22
1.2.2	Ease of doing business	43.85	88
1.2.3	Cluster development	51.29	35
1.2.4	R&D expenditure	18.57	42
1.2.5	ICT infrastructure	20.84	104
1.2.6	Technology utilisation	64.00	53
1.3	Business and Labour Landscape	58.48	70
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	50.76	90
1.3.4	Professional management	57.22	49
1.3.5	Relationship of pay to productivity	47.74	70

2	**ATTRACT**	**49.36**	**48**
2.1	External Openness	41.86	44
	Attract Business		
2.1.1	FDI and technology transfer	60.18	55
2.1.2	Prevalence of foreign ownership	56.95	65
	Attract People		
2.1.3	Migrant stock	5.04	75
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	45.25	44
2.2	Internal Openness	56.87	61
	Social Diversity		
2.2.1	Tolerance of minorities	7.78	114
2.2.2	Tolerance of immigrants	76.34	33
2.2.3	Social mobility	51.68	71
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	92.70	10
2.2.6	Business opportunities for women	55.86	72

		Score	Rank
3	**GROW**	**34.86**	**94**
3.1	Formal Education	9.78	108
	Enrolment		
3.1.1	Vocational enrolment	1.01	108
3.1.2	Tertiary enrolment	0.38	111
	Quality		
3.1.3	Tertiary education expenditure	23.82	48
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	13.93	71
3.2	Lifelong Learning	52.91	53
3.2.1	Quality of management schools	55.84	52
3.2.2	Prevalence of training in firms	49.08	40
3.2.3	Employee development	53.82	45
3.3	Access to Growth Opportunities	41.87	88
	Networks		
3.3.1	Use of virtual social networks	78.40	58
3.3.2	Use of virtual professional networks	7.52	85
	Empowerment		
3.3.3	Delegation of authority	52.37	34
3.3.4	Personal rights	29.21	100

4	**RETAIN**	**26.90**	**111**
4.1	Sustainability	31.51	103
4.1.1	Pension system	7.07	93
4.1.2	Taxation	45.76	58
4.1.3	Brain retention	41.69	57
4.2	Lifestyle	22.30	110
4.2.1	Environmental performance	47.39	99
4.2.2	Personal safety	18.96	108
4.2.3	Physician density	2.28	100
4.2.4	Sanitation	20.57	109

5	**VOCATIONAL AND TECHNICAL SKILLS**	**34.30**	**97**
5.1	Mid-Level Skills	10.70	104
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	19.47	86
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	1.92	95
5.2	Employability	57.90	46
5.2.1	Ease of finding skilled employees	63.02	29
5.2.2	Relevance of education system to the economy	55.48	35
5.2.3	Availability of scientists and engineers	52.53	52
5.2.4	Skills gap as major constraint	60.59	65

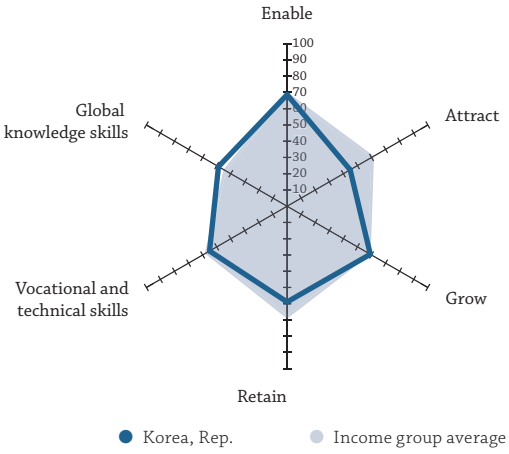
6	**GLOBAL KNOWLEDGE SKILLS**	**18.81**	**88**
6.1	High-Level Skills	22.58	78
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	n/a	n/a
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	2.72	66
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	53.14	42
6.1.7	Scientific journal articles	11.88	72
6.2	Talent Impact	15.04	90
6.2.1	Innovation output	24.60	75
6.2.2	High-value exports	10.26	79
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	10.27	48

KOREA, REP.

Key Indicators

Rank (out of 118)	**29**
Income group	**High income**
Regional group	**Eastern, Southeastern Asia and Oceania**
Population (millions)	**50.62**
GDP per capita (PPP US$)	**34,549.16**
GDP (US$ billions)	**1,377.87**
GTCI score	**55.88**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**68.63**	**24**
1.1	Regulatory Landscape	65.02	33
1.1.1	Government effectiveness	70.70	23
1.1.2	Business-government relations	62.18	47
1.1.3	Political stability	66.74	53
1.1.4	Regulatory quality	72.77	25
1.1.5	Corruption	52.70	35
1.2	Market Landscape	83.15	1
1.2.1	Competition intensity	80.40	11
1.2.2	Ease of doing business	93.32	4
1.2.3	Cluster development	58.77	21
1.2.4	R&D expenditure	98.57	2
1.2.5	ICT infrastructure	93.73	8
1.2.6	Technology utilisation	74.09	25
1.3	Business and Labour Landscape	57.73	73
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	42.09	113
1.3.4	Professional management	61.15	34
1.3.5	Relationship of pay to productivity	59.73	21

2	**ATTRACT**	**44.81**	**70**
2.1	External Openness	34.91	68
	Attract Business		
2.1.1	FDI and technology transfer	58.26	65
2.1.2	Prevalence of foreign ownership	53.11	78
	Attract People		
2.1.3	Migrant stock	5.67	70
2.1.4	International students	8.48	66
2.1.5	Brain gain	49.04	32
2.2	Internal Openness	54.72	71
	Social Diversity		
2.2.1	Tolerance of minorities	76.67	10
2.2.2	Tolerance of immigrants	51.14	72
2.2.3	Social mobility	47.20	90
	Gender Equality		
2.2.4	Female graduates	54.20	78
2.2.5	Gender earnings gap	55.66	86
2.2.6	Business opportunities for women	43.43	109

		Score	Rank
3	**GROW**	**59.12**	**21**
3.1	Formal Education	59.37	12
	Enrolment		
3.1.1	Vocational enrolment	19.41	70
3.1.2	Tertiary enrolment	86.09	2
	Quality		
3.1.3	Tertiary education expenditure	17.99	72
3.1.4	Reading, maths, science	92.65	2
3.1.5	University ranking	80.69	9
3.2	Lifelong Learning	52.88	54
3.2.1	Quality of management schools	55.41	55
3.2.2	Prevalence of training in firms	47.63	42
3.2.3	Employee development	55.61	35
3.3	Access to Growth Opportunities	65.11	22
	Networks		
3.3.1	Use of virtual social networks	81.69	38
3.3.2	Use of virtual professional networks	n/a	n/a
	Empowerment		
3.3.3	Delegation of authority	46.60	57
3.3.4	Personal rights	67.04	47

4	**RETAIN**	**58.91**	**48**
4.1	Sustainability	49.26	44
4.1.1	Pension system	48.48	50
4.1.2	Taxation	41.70	81
4.1.3	Brain retention	57.59	24
4.2	Lifestyle	68.56	43
4.2.1	Environmental performance	62.54	71
4.2.2	Personal safety	84.22	25
4.2.3	Physician density	27.48	56
4.2.4	Sanitation	100.00	1

5	**VOCATIONAL AND TECHNICAL SKILLS**	**55.09**	**35**
5.1	Mid-Level Skills	48.09	42
5.1.1	Workforce with secondary education	55.57	36
5.1.2	Population with secondary education	52.85	34
5.1.3	Technicians and associate professionals	49.75	43
5.1.4	Labour productivity per employee	34.20	32
5.2	Employability	62.08	36
5.2.1	Ease of finding skilled employees	55.27	46
5.2.2	Relevance of education system to the economy	45.05	57
5.2.3	Availability of scientists and engineers	56.72	39
5.2.4	Skills gap as major constraint	91.29	11

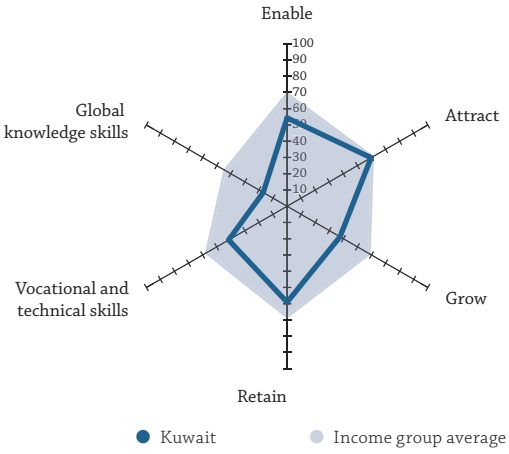
6	**GLOBAL KNOWLEDGE SKILLS**	**48.75**	**19**
6.1	High-Level Skills	51.11	23
6.1.1	Workforce with tertiary education	56.47	23
6.1.2	Population with tertiary education	53.47	9
6.1.3	Professionals	28.48	62
6.1.4	Researchers	77.95	6
6.1.5	Senior officials and managers	12.92	75
6.1.6	Quality of scientific institutions	63.85	26
6.1.7	Scientific journal articles	64.60	18
6.2	Talent Impact	46.39	20
6.2.1	Innovation output	66.79	11
6.2.2	High-value exports	40.91	11
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	64.70	10
6.2.4	New business density	13.17	43

KUWAIT

Key Indicators

Rank (out of 118)	**57**
Income group	**High income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**3.89**
GDP per capita (PPP US$)	**71,311.99**
GDP (US$ billions)	**112.81**
GTCI score	**44.86**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**54.35**	**54**
1.1	Regulatory Landscape	44.01	75
1.1.1	Government effectiveness	32.55	78
1.1.2	Business-government relations	36.12	104
1.1.3	Political stability	65.46	55
1.1.4	Regulatory quality	42.68	79
1.1.5	Corruption	43.24	51
1.2	Market Landscape	50.45	64
1.2.1	Competition intensity	67.49	65
1.2.2	Ease of doing business	47.58	84
1.2.3	Cluster development	46.26	56
1.2.4	R&D expenditure	6.90	74
1.2.5	ICT infrastructure	72.12	38
1.2.6	Technology utilisation	62.34	59
1.3	Business and Labour Landscape	68.58	32
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	59.95	44
1.3.4	Professional management	40.06	107
1.3.5	Relationship of pay to productivity	42.89	88

2	**ATTRACT**	**59.70**	**24**
2.1	External Openness	52.21	24
	Attract Business		
2.1.1	FDI and technology transfer	40.40	114
2.1.2	Prevalence of foreign ownership	29.46	116
	Attract People		
2.1.3	Migrant stock	100.00	1
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	38.97	62
2.2	Internal Openness	67.19	25
	Social Diversity		
2.2.1	Tolerance of minorities	56.67	38
2.2.2	Tolerance of immigrants	72.36	37
2.2.3	Social mobility	47.52	89
	Gender Equality		
2.2.4	Female graduates	73.41	48
2.2.5	Gender earnings gap	97.47	8
2.2.6	Business opportunities for women	55.70	73

3	**GROW**	**37.59**	**80**
3.1	Formal Education	17.50	89
	Enrolment		
3.1.1	Vocational enrolment	4.74	96
3.1.2	Tertiary enrolment	21.95	83
	Quality		
3.1.3	Tertiary education expenditure	27.45	37
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	15.84	70
3.2	Lifelong Learning	47.94	70
3.2.1	Quality of management schools	48.75	78
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	47.14	72
3.3	Access to Growth Opportunities	47.34	69
	Networks		
3.3.1	Use of virtual social networks	81.44	40
3.3.2	Use of virtual professional networks	22.76	45
	Empowerment		
3.3.3	Delegation of authority	52.26	35
3.3.4	Personal rights	32.90	96

4	**RETAIN**	**59.05**	**47**
4.1	Sustainability	51.84	41
4.1.1	Pension system	n/a	n/a
4.1.2	Taxation	63.92	14
4.1.3	Brain retention	39.76	70
4.2	Lifestyle	66.25	50
4.2.1	Environmental performance	50.97	94
4.2.2	Personal safety	79.35	29
4.2.3	Physician density	34.70	42
4.2.4	Sanitation	100.00	1

5	**VOCATIONAL AND TECHNICAL SKILLS**	**41.53**	**72**
5.1	Mid-Level Skills	38.83	60
5.1.1	Workforce with secondary education	25.91	81
5.1.2	Population with secondary education	20.47	84
5.1.3	Technicians and associate professionals	36.04	56
5.1.4	Labour productivity per employee	72.89	4
5.2	Employability	44.24	101
5.2.1	Ease of finding skilled employees	47.14	72
5.2.2	Relevance of education system to the economy	39.19	76
5.2.3	Availability of scientists and engineers	46.37	81
5.2.4	Skills gap as major constraint	n/a	n/a

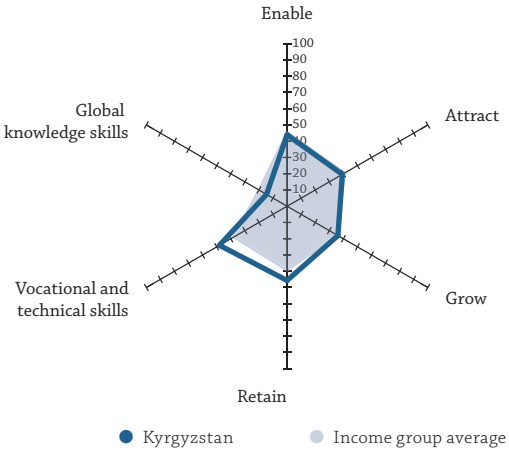
6	**GLOBAL KNOWLEDGE SKILLS**	**16.95**	**93**
6.1	High-Level Skills	19.18	84
6.1.1	Workforce with tertiary education	30.74	70
6.1.2	Population with tertiary education	21.95	61
6.1.3	Professionals	25.76	65
6.1.4	Researchers	1.47	78
6.1.5	Senior officials and managers	11.24	79
6.1.6	Quality of scientific institutions	38.15	89
6.1.7	Scientific journal articles	4.96	95
6.2	Talent Impact	14.72	91
6.2.1	Innovation output	27.11	66
6.2.2	High-value exports	2.32	107
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	n/a	n/a

KYRGYZSTAN

Key Indicators

Rank (out of 118)	**87**
Income group	**Lower-middle income**
Regional group	**Central and Southern Asia**
Population (millions)	**5.96**
GDP per capita (PPP US$)	**3,426.65**
GDP (US$ billions)	**6.57**
GTCI score	**37.94**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



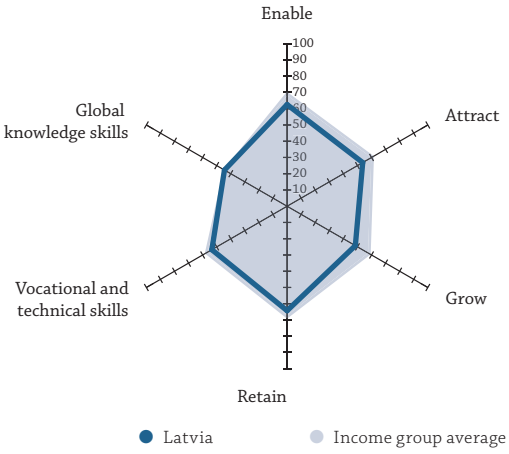
		Score	Rank
1	**ENABLE**	**43.97**	**95**
1.1	Regulatory Landscape	30.24	104
1.1.1	Government effectiveness	12.72	113
1.1.2	Business-government relations	46.05	88
1.1.3	Political stability	42.02	96
1.1.4	Regulatory quality	35.56	98
1.1.5	Corruption	14.86	102
1.2	Market Landscape	38.66	102
1.2.1	Competition intensity	57.34	104
1.2.2	Ease of doing business	58.85	62
1.2.3	Cluster development	31.24	112
1.2.4	R&D expenditure	3.57	89
1.2.5	ICT infrastructure	31.84	94
1.2.6	Technology utilisation	49.11	105
1.3	Business and Labour Landscape	63.01	53
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	54.05	73
1.3.4	Professional management	37.05	112
1.3.5	Relationship of pay to productivity	57.28	31
2	**ATTRACT**	**39.26**	**102**
2.1	External Openness	27.92	105
	Attract Business		
2.1.1	FDI and technology transfer	43.74	109
2.1.2	Prevalence of foreign ownership	46.78	95
	Attract People		
2.1.3	Migrant stock	7.44	67
2.1.4	International students	20.48	36
2.1.5	Brain gain	21.19	109
2.2	Internal Openness	50.60	93
	Social Diversity		
2.2.1	Tolerance of minorities	20.00	102
2.2.2	Tolerance of immigrants	43.23	88
2.2.3	Social mobility	47.57	88
	Gender Equality		
2.2.4	Female graduates	78.01	32
2.2.5	Gender earnings gap	53.14	88
2.2.6	Business opportunities for women	61.66	50
3	**GROW**	**36.10**	**89**
3.1	Formal Education	20.23	81
	Enrolment		
3.1.1	Vocational enrolment	21.86	65
3.1.2	Tertiary enrolment	41.01	55
	Quality		
3.1.3	Tertiary education expenditure	18.05	71
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	51.98	59
3.2.1	Quality of management schools	34.25	114
3.2.2	Prevalence of training in firms	78.23	9
3.2.3	Employee development	43.46	87
3.3	Access to Growth Opportunities	36.09	105
	Networks		
3.3.1	Use of virtual social networks	65.85	98
3.3.2	Use of virtual professional networks	1.87	103
	Empowerment		
3.3.3	Delegation of authority	39.53	95
3.3.4	Personal rights	37.12	90
4	**RETAIN**	**45.69**	**74**
4.1	Sustainability	36.29	83
4.1.1	Pension system	39.39	55
4.1.2	Taxation	45.22	64
4.1.3	Brain retention	24.27	108
4.2	Lifestyle	55.09	71
4.2.1	Environmental performance	67.25	64
4.2.2	Personal safety	35.48	94
4.2.3	Physician density	25.23	61
4.2.4	Sanitation	92.39	56
5	**VOCATIONAL AND TECHNICAL SKILLS**	**48.05**	**54**
5.1	Mid-Level Skills	54.60	27
5.1.1	Workforce with secondary education	100.00	1
5.1.2	Population with secondary education	87.04	3
5.1.3	Technicians and associate professionals	28.43	69
5.1.4	Labour productivity per employee	2.94	92
5.2	Employability	41.50	111
5.2.1	Ease of finding skilled employees	39.86	102
5.2.2	Relevance of education system to the economy	33.73	99
5.2.3	Availability of scientists and engineers	36.91	110
5.2.4	Skills gap as major constraint	55.50	74
6	**GLOBAL KNOWLEDGE SKILLS**	**14.59**	**97**
6.1	High-Level Skills	17.66	92
6.1.1	Workforce with tertiary education	29.29	74
6.1.2	Population with tertiary education	2.75	96
6.1.3	Professionals	28.48	62
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	12.92	75
6.1.6	Quality of scientific institutions	28.07	114
6.1.7	Scientific journal articles	4.43	98
6.2	Talent Impact	11.52	101
6.2.1	Innovation output	11.67	106
6.2.2	High-value exports	16.80	57
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	6.09	67

LATVIA

Key Indicators

Rank (out of 118)	**32**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**1.98**
GDP per capita (PPP US$)	**24,286.15**
GDP (US$ billions)	**27.04**
GTCI score	**54.50**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



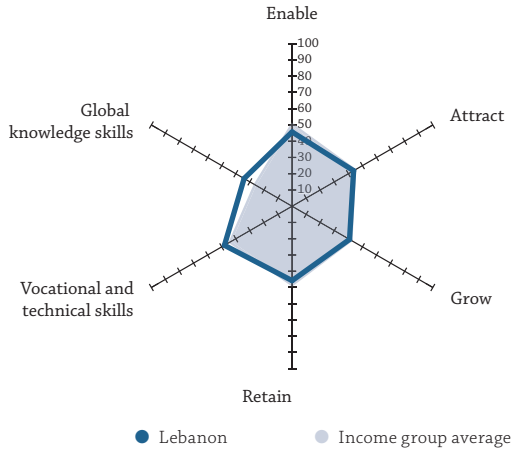
		Score	Rank
1	**ENABLE**	**62.54**	**32**
1.1	Regulatory Landscape	62.82	38
1.1.1	Government effectiveness	64.87	37
1.1.2	Business-government relations	47.49	83
1.1.3	Political stability	76.12	41
1.1.4	Regulatory quality	74.25	23
1.1.5	Corruption	51.35	38
1.2	Market Landscape	58.41	37
1.2.1	Competition intensity	73.41	37
1.2.2	Ease of doing business	82.10	20
1.2.3	Cluster development	43.25	74
1.2.4	R&D expenditure	14.05	52
1.2.5	ICT infrastructure	71.10	42
1.2.6	Technology utilisation	66.52	45
1.3	Business and Labour Landscape	66.39	40
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	80	46
	Management Practice		
1.3.3	Labour-employer cooperation	64.42	28
1.3.4	Professional management	61.13	35
1.3.5	Relationship of pay to productivity	59.74	20
2	**ATTRACT**	**53.73**	**34**
2.1	External Openness	41.98	42
	Attract Business		
2.1.1	FDI and technology transfer	63.26	39
2.1.2	Prevalence of foreign ownership	70.82	27
	Attract People		
2.1.3	Migrant stock	29.31	26
2.1.4	International students	19.19	42
2.1.5	Brain gain	27.32	90
2.2	Internal Openness	65.49	30
	Social Diversity		
2.2.1	Tolerance of minorities	46.67	55
2.2.2	Tolerance of immigrants	31.85	104
2.2.3	Social mobility	70.35	27
	Gender Equality		
2.2.4	Female graduates	100.00	1
2.2.5	Gender earnings gap	70.03	39
2.2.6	Business opportunities for women	74.03	11
3	**GROW**	**48.49**	**45**
3.1	Formal Education	41.05	40
	Enrolment		
3.1.1	Vocational enrolment	48.04	29
3.1.2	Tertiary enrolment	59.44	26
	Quality		
3.1.3	Tertiary education expenditure	12.76	84
3.1.4	Reading, maths, science	65.72	23
3.1.5	University ranking	19.27	64
3.2	Lifelong Learning	47.56	74
3.2.1	Quality of management schools	59.14	41
3.2.2	Prevalence of training in firms	28.76	71
3.2.3	Employee development	54.77	41
3.3	Access to Growth Opportunities	56.88	41
	Networks		
3.3.1	Use of virtual social networks	84.84	27
3.3.2	Use of virtual professional networks	26.18	39
	Empowerment		
3.3.3	Delegation of authority	50.15	41
3.3.4	Personal rights	66.33	48
4	**RETAIN**	**64.25**	**32**
4.1	Sustainability	54.57	32
4.1.1	Pension system	92.93	8
4.1.2	Taxation	39.10	86
4.1.3	Brain retention	31.69	90
4.2	Lifestyle	73.93	34
4.2.1	Environmental performance	90.72	22
4.2.2	Personal safety	72.79	40
4.2.3	Physician density	46.09	20
4.2.4	Sanitation	86.14	68
5	**VOCATIONAL AND TECHNICAL SKILLS**	**53.46**	**38**
5.1	Mid-Level Skills	58.02	22
5.1.1	Workforce with secondary education	78.41	12
5.1.2	Population with secondary education	70.75	10
5.1.3	Technicians and associate professionals	55.84	36
5.1.4	Labour productivity per employee	27.06	44
5.2	Employability	48.91	83
5.2.1	Ease of finding skilled employees	44.41	90
5.2.2	Relevance of education system to the economy	45.27	55
5.2.3	Availability of scientists and engineers	41.34	95
5.2.4	Skills gap as major constraint	64.61	59
6	**GLOBAL KNOWLEDGE SKILLS**	**44.50**	**25**
6.1	High-Level Skills	43.56	32
6.1.1	Workforce with tertiary education	51.78	27
6.1.2	Population with tertiary education	29.75	45
6.1.3	Professionals	50.30	27
6.1.4	Researchers	21.70	36
6.1.5	Senior officials and managers	56.18	11
6.1.6	Quality of scientific institutions	51.01	48
6.1.7	Scientific journal articles	44.21	38
6.2	Talent Impact	45.44	22
6.2.1	Innovation output	49.73	29
6.2.2	High-value exports	32.17	24
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	38.44	56
6.2.4	New business density	61.40	9

LEBANON

Key Indicators

Rank (out of 118)	**62**
Income group	**Upper-middle income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**5.85**
GDP per capita (PPP US$)	**13,937.95**
GDP (US$ billions)	**47.10**
GTCI score	**43.02**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



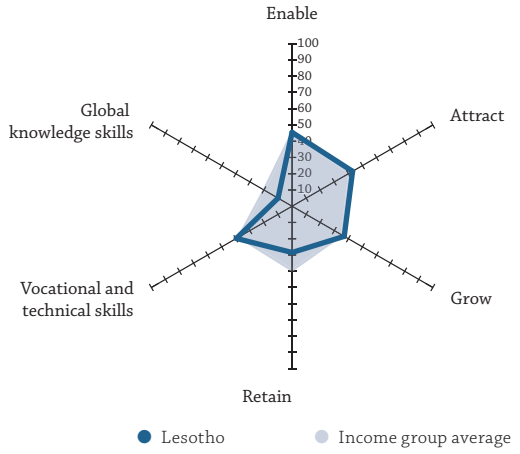
		Score	Rank
1	**ENABLE**	**45.69**	**91**
1.1	Regulatory Landscape	26.25	110
1.1.1	Government effectiveness	26.00	87
1.1.2	Business-government relations	31.69	112
1.1.3	Political stability	18.19	115
1.1.4	Regulatory quality	40.50	81
1.1.5	Corruption	14.86	102
1.2	Market Landscape	55.37	46
1.2.1	Competition intensity	74.08	33
1.2.2	Ease of doing business	40.29	100
1.2.3	Cluster development	44.66	65
1.2.4	R&D expenditure	n/a	n/a
1.2.5	ICT infrastructure	62.66	56
1.2.6	Technology utilisation	55.15	85
1.3	Business and Labour Landscape	55.46	78
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	54.40	70
1.3.4	Professional management	47.28	80
1.3.5	Relationship of pay to productivity	49.93	64
2	**ATTRACT**	**43.71**	**75**
2.1	External Openness	45.50	36
	Attract Business		
2.1.1	FDI and technology transfer	42.11	111
2.1.2	Prevalence of foreign ownership	46.65	96
	Attract People		
2.1.3	Migrant stock	75.19	9
2.1.4	International students	39.74	20
2.1.5	Brain gain	23.80	106
2.2	Internal Openness	41.92	109
	Social Diversity		
2.2.1	Tolerance of minorities	12.22	111
2.2.2	Tolerance of immigrants	48.40	75
2.2.3	Social mobility	48.54	84
	Gender Equality		
2.2.4	Female graduates	68.24	62
2.2.5	Gender earnings gap	25.09	111
2.2.6	Business opportunities for women	49.02	97
3	**GROW**	**40.82**	**68**
3.1	Formal Education	28.58	61
	Enrolment		
3.1.1	Vocational enrolment	31.76	53
3.1.2	Tertiary enrolment	36.73	59
	Quality		
3.1.3	Tertiary education expenditure	14.73	80
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	31.08	43
3.2	Lifelong Learning	49.39	66
3.2.1	Quality of management schools	74.56	11
3.2.2	Prevalence of training in firms	30.61	64
3.2.3	Employee development	43.00	94
3.3	Access to Growth Opportunities	44.49	78
	Networks		
3.3.1	Use of virtual social networks	78.05	61
3.3.2	Use of virtual professional networks	26.39	38
	Empowerment		
3.3.3	Delegation of authority	36.39	107
3.3.4	Personal rights	37.12	90
4	**RETAIN**	**45.78**	**72**
4.1	Sustainability	38.32	72
4.1.1	Pension system	34.34	59
4.1.2	Taxation	54.64	26
4.1.3	Brain retention	25.98	105
4.2	Lifestyle	53.25	74
4.2.1	Environmental performance	59.80	81
4.2.2	Personal safety	33.94	97
4.2.3	Physician density	41.18	30
4.2.4	Sanitation	78.07	79
5	**VOCATIONAL AND TECHNICAL SKILLS**	**48.06**	**53**
5.1	Mid-Level Skills	30.42	75
5.1.1	Workforce with secondary education	22.42	88
5.1.2	Population with secondary education	24.66	75
5.1.3	Technicians and associate professionals	44.16	47
5.1.4	Labour productivity per employee	n/a	n/a
5.2	Employability	65.70	26
5.2.1	Ease of finding skilled employees	55.92	43
5.2.2	Relevance of education system to the economy	64.18	20
5.2.3	Availability of scientists and engineers	62.82	27
5.2.4	Skills gap as major constraint	79.89	40
6	**GLOBAL KNOWLEDGE SKILLS**	**34.09**	**46**
6.1	High-Level Skills	37.29	42
6.1.1	Workforce with tertiary education	39.00	49
6.1.2	Population with tertiary education	25.28	54
6.1.3	Professionals	31.21	56
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	66.85	8
6.1.6	Quality of scientific institutions	38.14	90
6.1.7	Scientific journal articles	23.23	56
6.2	Talent Impact	30.90	44
6.2.1	Innovation output	25.49	73
6.2.2	High-value exports	17.59	56
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	49.60	30
6.2.4	New business density	n/a	n/a

LESOTHO

Key Indicators

Rank (out of 118)	**101**
Income group	**Lower-middle income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**2.14**
GDP per capita (PPP US$)	**2,647.95**
GDP (US$ billions)	**2.18**
GTCI score	**33.92**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**45.43**	**92**
1.1	Regulatory Landscape	41.02	86
1.1.1	Government effectiveness	22.04	100
1.1.2	Business-government relations	56.22	64
1.1.3	Political stability	55.00	80
1.1.4	Regulatory quality	35.37	99
1.1.5	Corruption	36.49	56
1.2	Market Landscape	34.20	111
1.2.1	Competition intensity	56.20	107
1.2.2	Ease of doing business	42.79	92
1.2.3	Cluster development	44.60	66
1.2.4	R&D expenditure	0.00	104
1.2.5	ICT infrastructure	19.31	105
1.2.6	Technology utilisation	42.27	117
1.3	Business and Labour Landscape	61.08	58
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	47.34	101
1.3.4	Professional management	42.02	100
1.3.5	Relationship of pay to productivity	49.35	67

2	**ATTRACT**	**42.98**	**81**
2.1	External Openness	27.42	109
	Attract Business		
2.1.1	FDI and technology transfer	41.95	112
2.1.2	Prevalence of foreign ownership	46.17	98
	Attract People		
2.1.3	Migrant stock	0.52	109
2.1.4	International students	1.85	82
2.1.5	Brain gain	46.63	39
2.2	Internal Openness	58.54	53
	Social Diversity		
2.2.1	Tolerance of minorities	58.89	36
2.2.2	Tolerance of immigrants	36.37	97
2.2.3	Social mobility	59.87	42
	Gender Equality		
2.2.4	Female graduates	85.09	19
2.2.5	Gender earnings gap	61.25	60
2.2.6	Business opportunities for women	49.78	95

3	**GROW**	**37.04**	**83**
3.1	Formal Education	27.41	62
	Enrolment		
3.1.1	Vocational enrolment	3.84	99
3.1.2	Tertiary enrolment	5.82	100
	Quality		
3.1.3	Tertiary education expenditure	100.00	1
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	48.01	69
3.2.1	Quality of management schools	43.90	98
3.2.2	Prevalence of training in firms	51.58	35
3.2.3	Employee development	48.56	65
3.3	Access to Growth Opportunities	35.70	107
	Networks		
3.3.1	Use of virtual social networks	44.42	118
3.3.2	Use of virtual professional networks	3.51	97
	Empowerment		
3.3.3	Delegation of authority	34.02	112
3.3.4	Personal rights	60.84	59

4	**RETAIN**	**28.47**	**109**
4.1	Sustainability	31.42	104
4.1.1	Pension system	3.03	102
4.1.2	Taxation	47.57	49
4.1.3	Brain retention	43.65	49
4.2	Lifestyle	25.51	107
4.2.1	Environmental performance	18.79	112
4.2.2	Personal safety	36.95	92
4.2.3	Physician density	n/a	n/a
4.2.4	Sanitation	20.80	108

5	**VOCATIONAL AND TECHNICAL SKILLS**	**39.63**	**78**
5.1	Mid-Level Skills	21.39	92
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	11.82	93
5.1.3	Technicians and associate professionals	30.96	62
5.1.4	Labour productivity per employee	n/a	n/a
5.2	Employability	57.86	47
5.2.1	Ease of finding skilled employees	54.21	50
5.2.2	Relevance of education system to the economy	52.85	41
5.2.3	Availability of scientists and engineers	46.11	84
5.2.4	Skills gap as major constraint	78.28	46

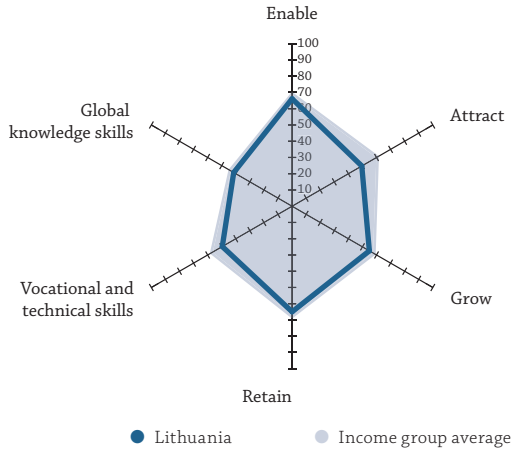
6	**GLOBAL KNOWLEDGE SKILLS**	**9.99**	**114**
6.1	High-Level Skills	11.83	110
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	2.26	100
6.1.3	Professionals	6.06	93
6.1.4	Researchers	0.00	97
6.1.5	Senior officials and managers	12.92	75
6.1.6	Quality of scientific institutions	47.78	62
6.1.7	Scientific journal articles	1.97	110
6.2	Talent Impact	8.15	111
6.2.1	Innovation output	9.16	113
6.2.2	High-value exports	6.47	97
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	8.82	53

LITHUANIA

Key Indicators

Rank (out of 118)	**33**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**2.91**
GDP per capita (PPP US$)	**27,729.75**
GDP (US$ billions)	**41.24**
GTCI score	**54.42**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**66.11**	**28**
1.1	Regulatory Landscape	66.60	30
1.1.1	Government effectiveness	65.45	35
1.1.2	Business-government relations	51.15	73
1.1.3	Political stability	81.98	30
1.1.4	Regulatory quality	74.97	21
1.1.5	Corruption	59.46	30
1.2	Market Landscape	61.11	34
1.2.1	Competition intensity	77.41	16
1.2.2	Ease of doing business	83.68	18
1.2.3	Cluster development	41.93	80
1.2.4	R&D expenditure	22.38	34
1.2.5	ICT infrastructure	68.67	45
1.2.6	Technology utilisation	72.60	30
1.3	Business and Labour Landscape	70.62	23
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	80	46
	Management Practice		
1.3.3	Labour-employer cooperation	55.33	64
1.3.4	Professional management	58.70	43
1.3.5	Relationship of pay to productivity	59.07	24

2	**ATTRACT**	**49.52**	**47**
2.1	External Openness	35.41	64
	Attract Business		
2.1.1	FDI and technology transfer	72.09	9
2.1.2	Prevalence of foreign ownership	56.23	66
	Attract People		
2.1.3	Migrant stock	10.27	54
2.1.4	International students	12.61	55
2.1.5	Brain gain	25.87	95
2.2	Internal Openness	63.62	33
	Social Diversity		
2.2.1	Tolerance of minorities	66.67	21
2.2.2	Tolerance of immigrants	28.12	107
2.2.3	Social mobility	61.25	40
	Gender Equality		
2.2.4	Female graduates	85.95	15
2.2.5	Gender earnings gap	74.47	30
2.2.6	Business opportunities for women	65.27	35

3	**GROW**	**54.90**	**29**
3.1	Formal Education	53.53	21
	Enrolment		
3.1.1	Vocational enrolment	20.98	66
3.1.2	Tertiary enrolment	64.14	23
	Quality		
3.1.3	Tertiary education expenditure	100.00	1
3.1.4	Reading, maths, science	60.25	31
3.1.5	University ranking	22.27	59
3.2	Lifelong Learning	54.28	45
3.2.1	Quality of management schools	55.99	49
3.2.2	Prevalence of training in firms	50.92	37
3.2.3	Employee development	55.92	34
3.3	Access to Growth Opportunities	56.89	40
	Networks		
3.3.1	Use of virtual social networks	89.47	9
3.3.2	Use of virtual professional networks	19.61	50
	Empowerment		
3.3.3	Delegation of authority	46.07	60
3.3.4	Personal rights	72.43	38

4	**RETAIN**	**64.95**	**31**
4.1	Sustainability	54.24	35
4.1.1	Pension system	98.99	2
4.1.2	Taxation	33.40	102
4.1.3	Brain retention	30.32	93
4.2	Lifestyle	75.66	30
4.2.1	Environmental performance	90.31	23
4.2.2	Personal safety	67.90	45
4.2.3	Physician density	53.05	9
4.2.4	Sanitation	91.36	60

5	**VOCATIONAL AND TECHNICAL SKILLS**	**49.59**	**49**
5.1	Mid-Level Skills	50.76	37
5.1.1	Workforce with secondary education	73.68	18
5.1.2	Population with secondary education	45.82	42
5.1.3	Technicians and associate professionals	53.81	37
5.1.4	Labour productivity per employee	29.73	39
5.2	Employability	48.43	86
5.2.1	Ease of finding skilled employees	44.64	87
5.2.2	Relevance of education system to the economy	50.70	48
5.2.3	Availability of scientists and engineers	51.45	59
5.2.4	Skills gap as major constraint	46.92	84

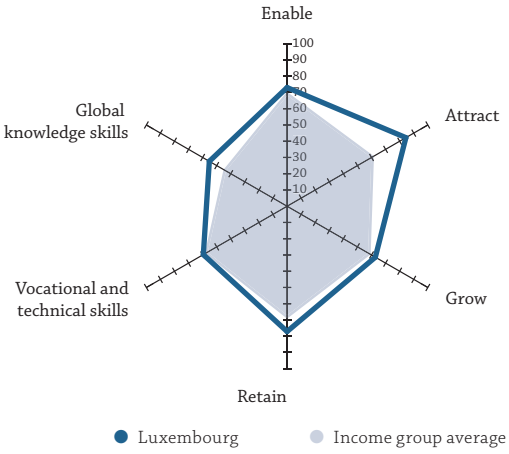
6	**GLOBAL KNOWLEDGE SKILLS**	**41.47**	**29**
6.1	High-Level Skills	50.99	24
6.1.1	Workforce with tertiary education	63.75	17
6.1.2	Population with tertiary education	30.38	39
6.1.3	Professionals	66.97	9
6.1.4	Researchers	34.81	28
6.1.5	Senior officials and managers	51.12	12
6.1.6	Quality of scientific institutions	62.00	30
6.1.7	Scientific journal articles	47.91	33
6.2	Talent Impact	31.94	43
6.2.1	Innovation output	39.14	41
6.2.2	High-value exports	15.12	63
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	49.35	31
6.2.4	New business density	24.14	28

LUXEMBOURG

Key Indicators

Rank (out of 118)	**7**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**0.57**
GDP per capita (PPP US$)	**101,926.42**
GDP (US$ billions)	**57.79**
GTCI score	**68.66**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**73.02**	**21**
1.1	Regulatory Landscape	89.68	6
1.1.1	Government effectiveness	84.49	12
1.1.2	Business-government relations	94.21	4
1.1.3	Political stability	97.38	2
1.1.4	Regulatory quality	85.85	14
1.1.5	Corruption	86.49	10
1.2	Market Landscape	68.42	22
1.2.1	Competition intensity	69.13	58
1.2.2	Ease of doing business	63.28	57
1.2.3	Cluster development	67.76	13
1.2.4	R&D expenditure	27.38	30
1.2.5	ICT infrastructure	100.00	1
1.2.6	Technology utilisation	82.97	8
1.3	Business and Labour Landscape	60.96	60
	Labour Market Flexibility		
1.3.1	Ease of hiring	22.33	104
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	76.03	10
1.3.4	Professional management	77.32	17
1.3.5	Relationship of pay to productivity	59.14	23

2	**ATTRACT**	**84.40**	**2**
2.1	External Openness	86.71	3
	Attract Business		
2.1.1	FDI and technology transfer	74.49	7
2.1.2	Prevalence of foreign ownership	87.63	2
	Attract People		
2.1.3	Migrant stock	96.85	6
2.1.4	International students	100.00	1
2.1.5	Brain gain	74.58	7
2.2	Internal Openness	82.08	5
	Social Diversity		
2.2.1	Tolerance of minorities	80.00	8
2.2.2	Tolerance of immigrants	94.33	9
2.2.3	Social mobility	82.70	10
	Gender Equality		
2.2.4	Female graduates	61.79	72
2.2.5	Gender earnings gap	100.00	1
2.2.6	Business opportunities for women	73.66	13

		Score	Rank
3	**GROW**	**62.70**	**17**
3.1	Formal Education	36.49	46
	Enrolment		
3.1.1	Vocational enrolment	67.76	19
3.1.2	Tertiary enrolment	14.80	91
	Quality		
3.1.3	Tertiary education expenditure	n/a	n/a
3.1.4	Reading, maths, science	63.40	25
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	69.35	15
3.2.1	Quality of management schools	64.30	32
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	74.40	2
3.3	Access to Growth Opportunities	82.27	8
	Networks		
3.3.1	Use of virtual social networks	87.09	19
3.3.2	Use of virtual professional networks	76.61	8
	Empowerment		
3.3.3	Delegation of authority	66.60	14
3.3.4	Personal rights	98.77	2

4	**RETAIN**	**77.08**	**3**
4.1	Sustainability	78.52	3
4.1.1	Pension system	100.00	1
4.1.2	Taxation	68.29	9
4.1.3	Brain retention	67.28	11
4.2	Lifestyle	75.64	32
4.2.1	Environmental performance	92.35	20
4.2.2	Personal safety	n/a	n/a
4.2.3	Physician density	37.29	36
4.2.4	Sanitation	97.27	35

5	**VOCATIONAL AND TECHNICAL SKILLS**	**59.51**	**24**
5.1	Mid-Level Skills	63.20	8
5.1.1	Workforce with secondary education	45.40	56
5.1.2	Population with secondary education	51.45	36
5.1.3	Technicians and associate professionals	87.82	8
5.1.4	Labour productivity per employee	68.12	5
5.2	Employability	55.81	56
5.2.1	Ease of finding skilled employees	53.42	53
5.2.2	Relevance of education system to the economy	61.12	23
5.2.3	Availability of scientists and engineers	52.90	49
5.2.4	Skills gap as major constraint	n/a	n/a

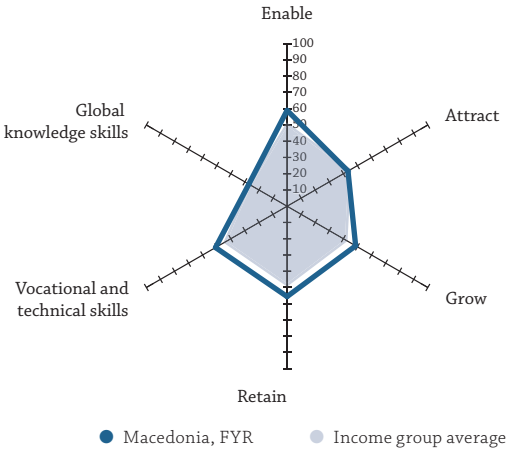
6	**GLOBAL KNOWLEDGE SKILLS**	**55.26**	**12**
6.1	High-Level Skills	60.44	13
6.1.1	Workforce with tertiary education	77.18	6
6.1.2	Population with tertiary education	72.81	4
6.1.3	Professionals	100.00	1
6.1.4	Researchers	57.93	10
6.1.5	Senior officials and managers	23.60	57
6.1.6	Quality of scientific institutions	68.20	24
6.1.7	Scientific journal articles	23.34	54
6.2	Talent Impact	50.08	13
6.2.1	Innovation output	82.76	2
6.2.2	High-value exports	12.52	68
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	69.82	9
6.2.4	New business density	35.23	18

MACEDONIA, FYR

Key Indicators

Rank (out of 118)	**50**
Income group	**Upper-middle income**
Regional group	**Europe**
Population (millions)	**2.08**
GDP per capita (PPP US$)	**13,907.94**
GDP (US$ billions)	**10.09**
GTCI score	**47.42**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**58.98**	**44**
1.1	Regulatory Landscape	54.14	50
1.1.1	Government effectiveness	41.14	60
1.1.2	Business-government relations	70.14	28
1.1.3	Political stability	68.34	49
1.1.4	Regulatory quality	57.29	51
1.1.5	Corruption	33.78	61
1.2	Market Landscape	55.51	45
1.2.1	Competition intensity	74.53	30
1.2.2	Ease of doing business	86.19	10
1.2.3	Cluster development	44.27	69
1.2.4	R&D expenditure	10.24	61
1.2.5	ICT infrastructure	64.96	50
1.2.6	Technology utilisation	52.87	94
1.3	Business and Labour Landscape	67.28	37
	Labour Market Flexibility		
1.3.1	Ease of hiring	77.67	44
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	57.15	52
1.3.4	Professional management	44.25	90
1.3.5	Relationship of pay to productivity	57.36	30

2	**ATTRACT**	**43.27**	**79**
2.1	External Openness	30.03	92
	Attract Business		
2.1.1	FDI and technology transfer	56.04	72
2.1.2	Prevalence of foreign ownership	50.95	87
	Attract People		
2.1.3	Migrant stock	13.72	49
2.1.4	International students	11.08	58
2.1.5	Brain gain	18.35	112
2.2	Internal Openness	56.52	63
	Social Diversity		
2.2.1	Tolerance of minorities	30.00	80
2.2.2	Tolerance of immigrants	61.57	52
2.2.3	Social mobility	52.76	70
	Gender Equality		
2.2.4	Female graduates	68.44	61
2.2.5	Gender earnings gap	60.73	64
2.2.6	Business opportunities for women	65.61	34

3	**GROW**	**48.71**	**42**
3.1	Formal Education	32.66	56
	Enrolment		
3.1.1	Vocational enrolment	64.46	21
3.1.2	Tertiary enrolment	33.52	63
	Quality		
3.1.3	Tertiary education expenditure	n/a	n/a
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	50.57	61
3.2.1	Quality of management schools	50.13	73
3.2.2	Prevalence of training in firms	57.39	30
3.2.3	Employee development	44.19	84
3.3	Access to Growth Opportunities	62.92	24
	Networks		
3.3.1	Use of virtual social networks	86.13	23
3.3.2	Use of virtual professional networks	n/a	n/a
	Empowerment		
3.3.3	Delegation of authority	38.70	99
3.3.4	Personal rights	63.92	51

4	**RETAIN**	**55.57**	**53**
4.1	Sustainability	43.68	56
4.1.1	Pension system	52.53	48
4.1.2	Taxation	55.58	22
4.1.3	Brain retention	22.95	111
4.2	Lifestyle	67.46	45
4.2.1	Environmental performance	76.37	48
4.2.2	Personal safety	70.06	41
4.2.3	Physician density	33.76	45
4.2.4	Sanitation	89.66	62

5	**VOCATIONAL AND TECHNICAL SKILLS**	**50.84**	**44**
5.1	Mid-Level Skills	46.06	45
5.1.1	Workforce with secondary education	73.26	19
5.1.2	Population with secondary education	n/a	n/a
5.1.3	Technicians and associate professionals	46.70	46
5.1.4	Labour productivity per employee	18.23	59
5.2	Employability	55.61	57
5.2.1	Ease of finding skilled employees	47.38	71
5.2.2	Relevance of education system to the economy	47.06	53
5.2.3	Availability of scientists and engineers	46.37	82
5.2.4	Skills gap as major constraint	81.64	38

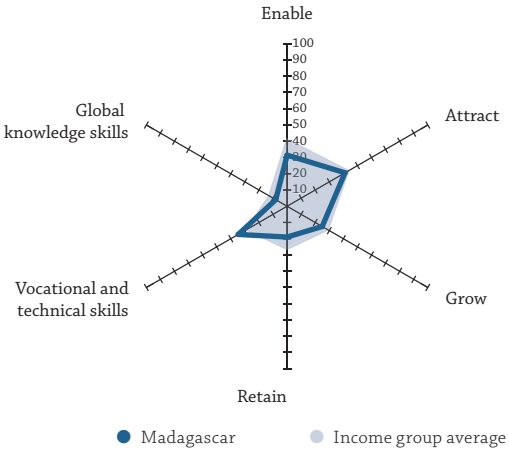
6	**GLOBAL KNOWLEDGE SKILLS**	**27.17**	**64**
6.1	High-Level Skills	31.38	56
6.1.1	Workforce with tertiary education	33.33	63
6.1.2	Population with tertiary education	n/a	n/a
6.1.3	Professionals	39.09	44
6.1.4	Researchers	8.10	53
6.1.5	Senior officials and managers	32.58	39
6.1.6	Quality of scientific institutions	49.11	57
6.1.7	Scientific journal articles	26.05	50
6.2	Talent Impact	22.96	71
6.2.1	Innovation output	34.47	54
6.2.2	High-value exports	4.25	100
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	31.80	63
6.2.4	New business density	21.30	30

MADAGASCAR

Key Indicators

Rank (out of 118)	**118**
Income group	**Low income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**24.24**
GDP per capita (PPP US$)	**1,459.27**
GDP (US$ billions)	**9.98**
GTCI score	**26.55**
GTCI score (income group average)	**30.03**

GTCI 2017 Country Profile by Pillar



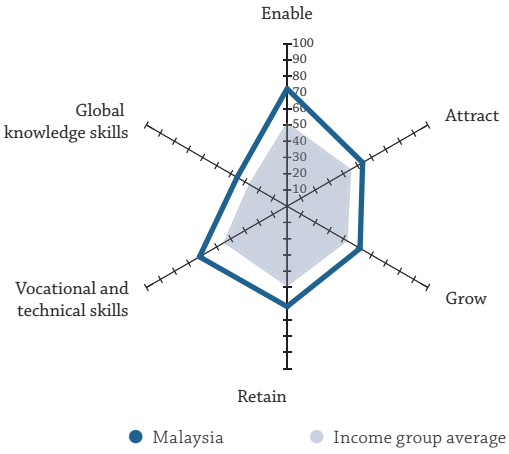
		Score	Rank
1	**ENABLE**	**31.43**	**116**
1.1	Regulatory Landscape	25.19	113
1.1.1	Government effectiveness	0.00	118
1.1.2	Business-government relations	34.69	107
1.1.3	Political stability	48.14	90
1.1.4	Regulatory quality	28.27	106
1.1.5	Corruption	14.86	102
1.2	Market Landscape	28.34	118
1.2.1	Competition intensity	59.38	100
1.2.2	Ease of doing business	19.62	115
1.2.3	Cluster development	32.57	107
1.2.4	R&D expenditure	2.38	95
1.2.5	ICT infrastructure	0.00	118
1.2.6	Technology utilisation	56.10	79
1.3	Business and Labour Landscape	40.77	115
	Labour Market Flexibility		
1.3.1	Ease of hiring	0.00	115
1.3.2	Ease of redundancy	60	81
	Management Practice		
1.3.3	Labour-employer cooperation	52.61	78
1.3.4	Professional management	46.50	83
1.3.5	Relationship of pay to productivity	44.74	82
2	**ATTRACT**	**41.16**	**93**
2.1	External Openness	28.74	103
	Attract Business		
2.1.1	FDI and technology transfer	46.68	101
2.1.2	Prevalence of foreign ownership	51.46	84
	Attract People		
2.1.3	Migrant stock	0.14	115
2.1.4	International students	8.91	65
2.1.5	Brain gain	36.49	68
2.2	Internal Openness	53.59	76
	Social Diversity		
2.2.1	Tolerance of minorities	56.67	38
2.2.2	Tolerance of immigrants	47.47	80
2.2.3	Social mobility	44.89	97
	Gender Equality		
2.2.4	Female graduates	47.66	84
2.2.5	Gender earnings gap	71.86	33
2.2.6	Business opportunities for women	53.00	84
3	**GROW**	**24.93**	**117**
3.1	Formal Education	2.66	118
	Enrolment		
3.1.1	Vocational enrolment	3.83	100
3.1.2	Tertiary enrolment	0.56	110
	Quality		
3.1.3	Tertiary education expenditure	6.25	92
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	34.19	113
3.2.1	Quality of management schools	47.14	87
3.2.2	Prevalence of training in firms	12.27	86
3.2.3	Employee development	43.15	91
3.3	Access to Growth Opportunities	37.96	102
	Networks		
3.3.1	Use of virtual social networks	64.30	100
3.3.2	Use of virtual professional networks	0.33	112
	Empowerment		
3.3.3	Delegation of authority	43.42	74
3.3.4	Personal rights	43.78	82
4	**RETAIN**	**18.95**	**118**
4.1	Sustainability	26.50	114
4.1.1	Pension system	4.34	98
4.1.2	Taxation	41.62	82
4.1.3	Brain retention	33.54	82
4.2	Lifestyle	11.40	118
4.2.1	Environmental performance	0.00	118
4.2.2	Personal safety	43.81	83
4.2.3	Physician density	1.80	103
4.2.4	Sanitation	0.00	117
5	**VOCATIONAL AND TECHNICAL SKILLS**	**34.73**	**94**
5.1	Mid-Level Skills	14.58	98
5.1.1	Workforce with secondary education	43.45	60
5.1.2	Population with secondary education	n/a	n/a
5.1.3	Technicians and associate professionals	0.00	96
5.1.4	Labour productivity per employee	0.29	102
5.2	Employability	54.88	61
5.2.1	Ease of finding skilled employees	49.21	62
5.2.2	Relevance of education system to the economy	31.85	102
5.2.3	Availability of scientists and engineers	52.12	56
5.2.4	Skills gap as major constraint	86.33	27
6	**GLOBAL KNOWLEDGE SKILLS**	**8.06**	**117**
6.1	High-Level Skills	10.13	114
6.1.1	Workforce with tertiary education	8.25	95
6.1.2	Population with tertiary education	n/a	n/a
6.1.3	Professionals	6.06	93
6.1.4	Researchers	0.54	85
6.1.5	Senior officials and managers	2.81	92
6.1.6	Quality of scientific institutions	37.93	93
6.1.7	Scientific journal articles	5.17	91
6.2	Talent Impact	6.00	115
6.2.1	Innovation output	9.52	110
6.2.2	High-value exports	4.59	99
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	3.89	78

MALAYSIA

Key Indicators

Rank (out of 118)	**28**
Income group	**Upper-middle income**
Regional group	**Eastern, Southeastern Asia and Oceania**
Population (millions)	**30.33**
GDP per capita (PPP US$)	**26,891.44**
GDP (US$ billions)	**296.22**
GTCI score	**56.22**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**72.27**	**22**
1.1	Regulatory Landscape	67.38	29
1.1.1	Government effectiveness	69.63	27
1.1.2	Business-government relations	85.90	12
1.1.3	Political stability	70.64	47
1.1.4	Regulatory quality	66.16	35
1.1.5	Corruption	44.59	50
1.2	Market Landscape	65.96	25
1.2.1	Competition intensity	73.44	36
1.2.2	Ease of doing business	84.16	16
1.2.3	Cluster development	72.02	5
1.2.4	R&D expenditure	26.67	32
1.2.5	ICT infrastructure	63.17	54
1.2.6	Technology utilisation	76.31	22
1.3	Business and Labour Landscape	83.45	6
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	90	35
	Management Practice		
1.3.3	Labour-employer cooperation	75.80	11
1.3.4	Professional management	78.15	16
1.3.5	Relationship of pay to productivity	73.31	4

2	**ATTRACT**	**53.67**	**35**
2.1	External Openness	50.78	27
	Attract Business		
2.1.1	FDI and technology transfer	75.36	5
2.1.2	Prevalence of foreign ownership	69.92	29
	Attract People		
2.1.3	Migrant stock	18.13	43
2.1.4	International students	18.74	44
2.1.5	Brain gain	71.73	10
2.2	Internal Openness	56.56	62
	Social Diversity		
2.2.1	Tolerance of minorities	42.22	65
2.2.2	Tolerance of immigrants	12.46	114
2.2.3	Social mobility	74.26	22
	Gender Equality		
2.2.4	Female graduates	75.86	41
2.2.5	Gender earnings gap	57.66	78
2.2.6	Business opportunities for women	76.90	7

3	**GROW**	**51.86**	**31**
3.1	Formal Education	34.84	50
	Enrolment		
3.1.1	Vocational enrolment	19.65	69
3.1.2	Tertiary enrolment	32.75	67
	Quality		
3.1.3	Tertiary education expenditure	51.37	6
3.1.4	Reading, maths, science	20.83	50
3.1.5	University ranking	49.58	27
3.2	Lifelong Learning	68.88	16
3.2.1	Quality of management schools	70.82	21
3.2.2	Prevalence of training in firms	61.61	26
3.2.3	Employee development	74.21	3
3.3	Access to Growth Opportunities	51.86	53
	Networks		
3.3.1	Use of virtual social networks	86.17	22
3.3.2	Use of virtual professional networks	21.03	47
	Empowerment		
3.3.3	Delegation of authority	69.81	10
3.3.4	Personal rights	30.44	99

4	**RETAIN**	**61.73**	**39**
4.1	Sustainability	63.26	16
4.1.1	Pension system	48.48	50
4.1.2	Taxation	69.41	7
4.1.3	Brain retention	71.89	8
4.2	Lifestyle	60.20	61
4.2.1	Environmental performance	69.30	58
4.2.2	Personal safety	60.81	59
4.2.3	Physician density	15.24	76
4.2.4	Sanitation	95.45	47

5	**VOCATIONAL AND TECHNICAL SKILLS**	**62.23**	**16**
5.1	Mid-Level Skills	50.91	35
5.1.1	Workforce with secondary education	57.80	30
5.1.2	Population with secondary education	48.78	38
5.1.3	Technicians and associate professionals	70.05	22
5.1.4	Labour productivity per employee	27.03	45
5.2	Employability	73.55	5
5.2.1	Ease of finding skilled employees	73.60	2
5.2.2	Relevance of education system to the economy	74.05	6
5.2.3	Availability of scientists and engineers	73.24	5
5.2.4	Skills gap as major constraint	73.32	53

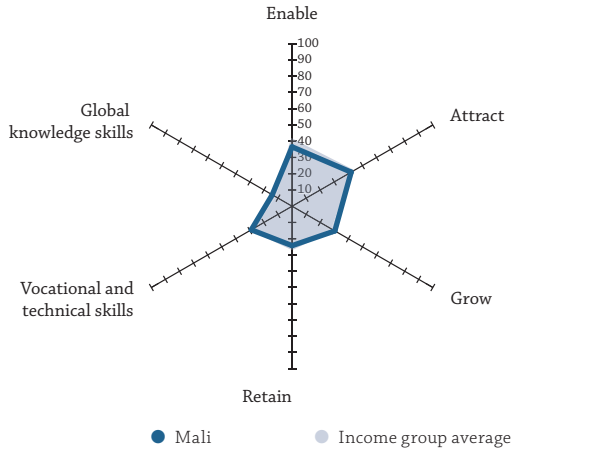
6	**GLOBAL KNOWLEDGE SKILLS**	**35.53**	**41**
6.1	High-Level Skills	37.51	41
6.1.1	Workforce with tertiary education	35.92	56
6.1.2	Population with tertiary education	27.07	51
6.1.3	Professionals	19.09	78
6.1.4	Researchers	21.60	37
6.1.5	Senior officials and managers	42.13	26
6.1.6	Quality of scientific institutions	72.30	20
6.1.7	Scientific journal articles	44.46	36
6.2	Talent Impact	33.56	37
6.2.1	Innovation output	47.22	33
6.2.2	High-value exports	65.17	5
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	8.26	86
6.2.4	New business density	13.58	41

MALI

Key Indicators

Rank (out of 118)	**112**
Income group	**Low income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**17.60**
GDP per capita (PPP US$)	**2,428.29**
GDP (US$ billions)	**13.10**
GTCI score	**29.36**
GTCI score (income group average)	**30.03**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**36.53**	**112**
1.1	Regulatory Landscape	26.06	111
1.1.1	Government effectiveness	4.65	115
1.1.2	Business-government relations	51.23	71
1.1.3	Political stability	17.76	116
1.1.4	Regulatory quality	32.33	102
1.1.5	Corruption	24.32	85
1.2	Market Landscape	37.04	106
1.2.1	Competition intensity	57.74	103
1.2.2	Ease of doing business	29.52	108
1.2.3	Cluster development	44.75	63
1.2.4	R&D expenditure	15.48	49
1.2.5	ICT infrastructure	22.51	103
1.2.6	Technology utilisation	52.23	96
1.3	Business and Labour Landscape	46.49	104
	Labour Market Flexibility		
1.3.1	Ease of hiring	44.33	95
1.3.2	Ease of redundancy	60	81
	Management Practice		
1.3.3	Labour-employer cooperation	54.87	69
1.3.4	Professional management	37.15	111
1.3.5	Relationship of pay to productivity	36.08	110
2	**ATTRACT**	**41.96**	**85**
2.1	External Openness	27.92	106
	Attract Business		
2.1.1	FDI and technology transfer	50.06	92
2.1.2	Prevalence of foreign ownership	44.98	100
	Attract People		
2.1.3	Migrant stock	4.40	78
2.1.4	International students	2.54	80
2.1.5	Brain gain	37.60	67
2.2	Internal Openness	56.00	65
	Social Diversity		
2.2.1	Tolerance of minorities	27.78	86
2.2.2	Tolerance of immigrants	97.34	5
2.2.3	Social mobility	54.85	59
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	48.03	97
2.2.6	Business opportunities for women	51.98	89

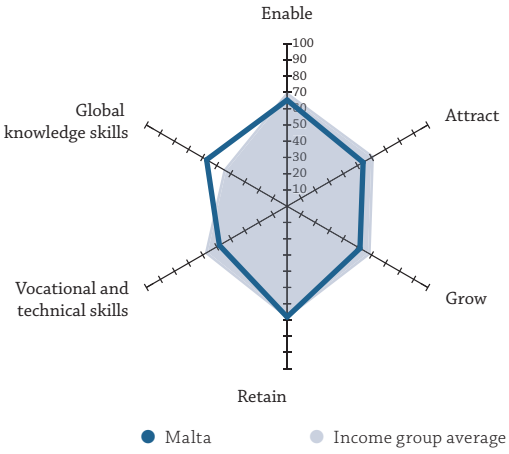
		Score	Rank
3	**GROW**	**30.38**	**106**
3.1	Formal Education	12.92	100
	Enrolment		
3.1.1	Vocational enrolment	28.79	58
3.1.2	Tertiary enrolment	3.03	104
	Quality		
3.1.3	Tertiary education expenditure	19.87	62
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	39.29	102
3.2.1	Quality of management schools	43.39	99
3.2.2	Prevalence of training in firms	37.86	53
3.2.3	Employee development	36.61	113
3.3	Access to Growth Opportunities	38.94	97
	Networks		
3.3.1	Use of virtual social networks	56.99	110
3.3.2	Use of virtual professional networks	1.27	107
	Empowerment		
3.3.3	Delegation of authority	37.89	100
3.3.4	Personal rights	59.60	61
4	**RETAIN**	**24.24**	**114**
4.1	Sustainability	30.62	105
4.1.1	Pension system	6.06	95
4.1.2	Taxation	46.32	55
4.1.3	Brain retention	39.49	71
4.2	Lifestyle	17.85	115
4.2.1	Environmental performance	8.17	117
4.2.2	Personal safety	48.00	74
4.2.3	Physician density	0.79	106
4.2.4	Sanitation	14.43	111
5	**VOCATIONAL AND TECHNICAL SKILLS**	**28.98**	**110**
5.1	Mid-Level Skills	3.44	113
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	5.44	98
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	1.44	98
5.2	Employability	54.51	64
5.2.1	Ease of finding skilled employees	52.25	56
5.2.2	Relevance of education system to the economy	34.34	96
5.2.3	Availability of scientists and engineers	47.42	75
5.2.4	Skills gap as major constraint	84.05	31
6	**GLOBAL KNOWLEDGE SKILLS**	**14.10**	**101**
6.1	High-Level Skills	12.70	107
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	2.58	97
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	0.28	94
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	44.45	71
6.1.7	Scientific journal articles	3.51	100
6.2	Talent Impact	15.50	88
6.2.1	Innovation output	24.24	77
6.2.2	High-value exports	6.75	95
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	n/a	n/a

MALTA

Key Indicators

Rank (out of 118)	**26**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**0.43**
GDP per capita (PPP US$)	**29,525.71**
GDP (US$ billions)	**9.64**
GTCI score	**57.43**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**65.34**	**29**
1.1	Regulatory Landscape	70.33	25
1.1.1	Government effectiveness	66.37	31
1.1.2	Business-government relations	69.53	29
1.1.3	Political stability	90.38	11
1.1.4	Regulatory quality	72.66	26
1.1.5	Corruption	52.70	35
1.2	Market Landscape	61.62	33
1.2.1	Competition intensity	80.74	10
1.2.2	Ease of doing business	54.39	72
1.2.3	Cluster development	49.33	47
1.2.4	R&D expenditure	20.95	36
1.2.5	ICT infrastructure	94.25	6
1.2.6	Technology utilisation	70.06	35
1.3	Business and Labour Landscape	64.08	51
	Labour Market Flexibility		
1.3.1	Ease of hiring	72.33	47
1.3.2	Ease of redundancy	80	46
	Management Practice		
1.3.3	Labour-employer cooperation	62.74	36
1.3.4	Professional management	52.28	67
1.3.5	Relationship of pay to productivity	53.04	51

2	**ATTRACT**	**54.01**	**33**
2.1	External Openness	47.53	33
	Attract Business		
2.1.1	FDI and technology transfer	68.30	19
2.1.2	Prevalence of foreign ownership	62.87	47
	Attract People		
2.1.3	Migrant stock	21.68	39
2.1.4	International students	30.43	27
2.1.5	Brain gain	54.36	21
2.2	Internal Openness	60.49	42
	Social Diversity		
2.2.1	Tolerance of minorities	66.67	21
2.2.2	Tolerance of immigrants	53.77	68
2.2.3	Social mobility	67.32	30
	Gender Equality		
2.2.4	Female graduates	71.31	54
2.2.5	Gender earnings gap	44.47	99
2.2.6	Business opportunities for women	59.38	57

		Score	Rank
3	**GROW**	**51.80**	**32**
3.1	Formal Education	22.72	74
	Enrolment		
3.1.1	Vocational enrolment	17.37	73
3.1.2	Tertiary enrolment	38.90	58
	Quality		
3.1.3	Tertiary education expenditure	34.60	21
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	57.85	36
3.2.1	Quality of management schools	61.67	37
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	54.04	43
3.3	Access to Growth Opportunities	74.84	14
	Networks		
3.3.1	Use of virtual social networks	84.70	28
3.3.2	Use of virtual professional networks	81.93	5
	Empowerment		
3.3.3	Delegation of authority	48.02	50
3.3.4	Personal rights	84.70	22

4	**RETAIN**	**68.14**	**24**
4.1	Sustainability	56.01	30
4.1.1	Pension system	n/a	n/a
4.1.2	Taxation	59.98	16
4.1.3	Brain retention	52.04	32
4.2	Lifestyle	80.26	17
4.2.1	Environmental performance	95.89	9
4.2.2	Personal safety	n/a	n/a
4.2.3	Physician density	44.89	22
4.2.4	Sanitation	100.00	1

5	**VOCATIONAL AND TECHNICAL SKILLS**	**48.09**	**52**
5.1	Mid-Level Skills	40.10	59
5.1.1	Workforce with secondary education	39.83	62
5.1.2	Population with secondary education	16.92	91
5.1.3	Technicians and associate professionals	66.50	25
5.1.4	Labour productivity per employee	37.14	28
5.2	Employability	56.08	54
5.2.1	Ease of finding skilled employees	56.61	40
5.2.2	Relevance of education system to the economy	61.53	22
5.2.3	Availability of scientists and engineers	50.10	66
5.2.4	Skills gap as major constraint	n/a	n/a

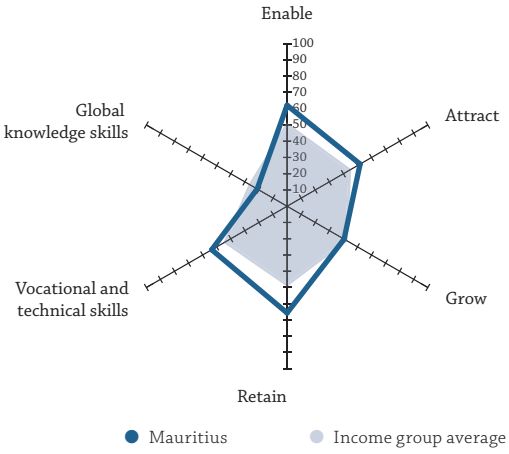
6	**GLOBAL KNOWLEDGE SKILLS**	**57.18**	**10**
6.1	High-Level Skills	36.61	43
6.1.1	Workforce with tertiary education	38.83	51
6.1.2	Population with tertiary education	20.01	68
6.1.3	Professionals	46.06	32
6.1.4	Researchers	25.39	33
6.1.5	Senior officials and managers	48.31	16
6.1.6	Quality of scientific institutions	49.07	58
6.1.7	Scientific journal articles	28.63	47
6.2	Talent Impact	77.75	1
6.2.1	Innovation output	65.17	13
6.2.2	High-value exports	68.09	4
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	100.00	1

MAURITIUS

Key Indicators

Rank (out of 118)	**46**
Income group	**Upper-middle income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**1.26**
GDP per capita (PPP US$)	**19,480.47**
GDP (US$ billions)	**11.51**
GTCI score	**49.15**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**62.10**	**35**
1.1	Regulatory Landscape	69.12	26
1.1.1	Government effectiveness	69.38	29
1.1.2	Business-government relations	76.67	18
1.1.3	Political stability	80.77	32
1.1.4	Regulatory quality	70.14	31
1.1.5	Corruption	48.65	41
1.2	Market Landscape	55.57	44
1.2.1	Competition intensity	74.34	31
1.2.2	Ease of doing business	76.29	30
1.2.3	Cluster development	50.10	42
1.2.4	R&D expenditure	4.05	85
1.2.5	ICT infrastructure	61.51	58
1.2.6	Technology utilisation	67.15	41
1.3	Business and Labour Landscape	61.60	57
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	80	46
	Management Practice		
1.3.3	Labour-employer cooperation	63.51	31
1.3.4	Professional management	54.87	58
1.3.5	Relationship of pay to productivity	53.94	46
2	**ATTRACT**	**51.87**	**42**
2.1	External Openness	38.20	57
	Attract Business		
2.1.1	FDI and technology transfer	57.50	66
2.1.2	Prevalence of foreign ownership	59.68	56
	Attract People		
2.1.3	Migrant stock	4.80	76
2.1.4	International students	19.77	41
2.1.5	Brain gain	49.27	31
2.2	Internal Openness	65.54	29
	Social Diversity		
2.2.1	Tolerance of minorities	72.22	13
2.2.2	Tolerance of immigrants	86.19	19
2.2.3	Social mobility	63.65	35
	Gender Equality		
2.2.4	Female graduates	74.73	43
2.2.5	Gender earnings gap	42.23	102
2.2.6	Business opportunities for women	54.20	77
3	**GROW**	**40.50**	**70**
3.1	Formal Education	16.93	91
	Enrolment		
3.1.1	Vocational enrolment	30.23	54
3.1.2	Tertiary enrolment	32.88	66
	Quality		
3.1.3	Tertiary education expenditure	4.60	96
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	47.40	75
3.2.1	Quality of management schools	54.48	60
3.2.2	Prevalence of training in firms	29.29	68
3.2.3	Employee development	58.45	28
3.3	Access to Growth Opportunities	57.16	39
	Networks		
3.3.1	Use of virtual social networks	76.34	68
3.3.2	Use of virtual professional networks	29.61	32
	Empowerment		
3.3.3	Delegation of authority	50.84	39
3.3.4	Personal rights	71.87	39
4	**RETAIN**	**65.65**	**29**
4.1	Sustainability	54.21	37
4.1.1	Pension system	52.53	48
4.1.2	Taxation	69.38	8
4.1.3	Brain retention	40.73	64
4.2	Lifestyle	77.09	25
4.2.1	Environmental performance	62.99	68
4.2.2	Personal safety	76.11	35
4.2.3	Physician density	n/a	n/a
4.2.4	Sanitation	92.16	58
5	**VOCATIONAL AND TECHNICAL SKILLS**	**53.54**	**37**
5.1	Mid-Level Skills	61.83	11
5.1.1	Workforce with secondary education	52.51	43
5.1.2	Population with secondary education	43.12	48
5.1.3	Technicians and associate professionals	89.85	6
5.1.4	Labour productivity per employee	n/a	n/a
5.2	Employability	45.26	97
5.2.1	Ease of finding skilled employees	45.68	80
5.2.2	Relevance of education system to the economy	51.56	44
5.2.3	Availability of scientists and engineers	44.67	87
5.2.4	Skills gap as major constraint	39.14	88
6	**GLOBAL KNOWLEDGE SKILLS**	**21.26**	**78**
6.1	High-Level Skills	12.50	109
6.1.1	Workforce with tertiary education	17.96	87
6.1.2	Population with tertiary education	7.95	84
6.1.3	Professionals	0.00	101
6.1.4	Researchers	2.11	68
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	39.87	85
6.1.7	Scientific journal articles	7.13	85
6.2	Talent Impact	30.02	48
6.2.1	Innovation output	32.50	58
6.2.2	High-value exports	27.92	34
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	29.66	22

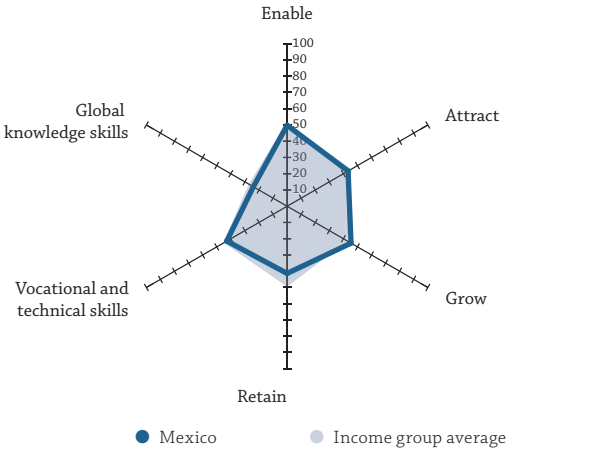
MEXICO

Key Indicators

Rank (out of 118) **74**
Income group ..... **Upper-middle income**
Regional group ... **Latin, Central America and the Caribbean**
Population (millions) **127.02**

GDP per capita (PPP US$) **17,276.64**
GDP (US$ billions) **1,144.33**
GTCI score **41.11**
GTCI score (income group average) **42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**49.78**	**73**
1.1	Regulatory Landscape	46.38	65
1.1.1	Government effectiveness	42.25	59
1.1.2	Business-government relations	66.36	36
1.1.3	Political stability	42.70	95
1.1.4	Regulatory quality	56.27	52
1.1.5	Corruption	24.32	85
1.2	Market Landscape	51.43	58
1.2.1	Competition intensity	69.36	57
1.2.2	Ease of doing business	73.72	36
1.2.3	Cluster development	53.24	32
1.2.4	R&D expenditure	11.67	55
1.2.5	ICT infrastructure	40.54	81
1.2.6	Technology utilisation	60.05	65
1.3	Business and Labour Landscape	51.54	93
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	30	113
	Management Practice		
1.3.3	Labour-employer cooperation	60.22	43
1.3.4	Professional management	54.15	61
1.3.5	Relationship of pay to productivity	46.64	75

2	**ATTRACT**	**43.31**	**78**
2.1	External Openness	36.29	61
	Attract Business		
2.1.1	FDI and technology transfer	67.95	20
2.1.2	Prevalence of foreign ownership	70.96	26
	Attract People		
2.1.3	Migrant stock	1.92	91
2.1.4	International students	1.06	88
2.1.5	Brain gain	39.57	58
2.2	Internal Openness	50.32	94
	Social Diversity		
2.2.1	Tolerance of minorities	43.33	61
2.2.2	Tolerance of immigrants	56.10	62
2.2.3	Social mobility	48.49	86
	Gender Equality		
2.2.4	Female graduates	61.47	73
2.2.5	Gender earnings gap	48.64	95
2.2.6	Business opportunities for women	43.90	106

3	**GROW**	**45.44**	**50**
3.1	Formal Education	29.52	60
	Enrolment		
3.1.1	Vocational enrolment	35.66	46
3.1.2	Tertiary enrolment	24.00	78
	Quality		
3.1.3	Tertiary education expenditure	19.79	64
3.1.4	Reading, maths, science	23.33	47
3.1.5	University ranking	44.84	32
3.2	Lifelong Learning	54.81	43
3.2.1	Quality of management schools	53.68	62
3.2.2	Prevalence of training in firms	62.53	25
3.2.3	Employee development	48.21	68
3.3	Access to Growth Opportunities	51.99	52
	Networks		
3.3.1	Use of virtual social networks	72.61	86
3.3.2	Use of virtual professional networks	18.05	55
	Empowerment		
3.3.3	Delegation of authority	46.04	61
3.3.4	Personal rights	71.25	40

4	**RETAIN**	**41.34**	**86**
4.1	Sustainability	34.67	93
4.1.1	Pension system	26.26	67
4.1.2	Taxation	36.30	93
4.1.3	Brain retention	41.45	60
4.2	Lifestyle	48.01	84
4.2.1	Environmental performance	68.10	62
4.2.2	Personal safety	13.89	111
4.2.3	Physician density	26.86	59
4.2.4	Sanitation	83.18	72

5	**VOCATIONAL AND TECHNICAL SKILLS**	**42.85**	**68**
5.1	Mid-Level Skills	37.24	62
5.1.1	Workforce with secondary education	59.75	28
5.1.2	Population with secondary education	24.43	76
5.1.3	Technicians and associate professionals	44.16	47
5.1.4	Labour productivity per employee	20.61	56
5.2	Employability	48.46	85
5.2.1	Ease of finding skilled employees	52.89	54
5.2.2	Relevance of education system to the economy	30.82	105
5.2.3	Availability of scientists and engineers	51.16	61
5.2.4	Skills gap as major constraint	58.98	68

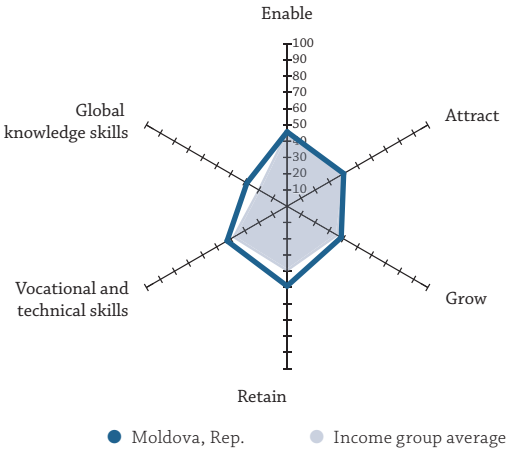
6	**GLOBAL KNOWLEDGE SKILLS**	**23.97**	**72**
6.1	High-Level Skills	22.66	77
6.1.1	Workforce with tertiary education	37.54	53
6.1.2	Population with tertiary education	21.61	63
6.1.3	Professionals	20.61	74
6.1.4	Researchers	4.56	63
6.1.5	Senior officials and managers	11.24	79
6.1.6	Quality of scientific institutions	51.75	45
6.1.7	Scientific journal articles	11.33	73
6.2	Talent Impact	25.27	65
6.2.1	Innovation output	34.65	52
6.2.2	High-value exports	35.19	18
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	25.96	70
6.2.4	New business density	5.28	72

MOLDOVA, REP.

Key Indicators

Rank (out of 118)	**75**
Income group	**Lower-middle income**
Regional group	**Europe**
Population (millions)	**3.55**
GDP per capita (PPP US$)	**5,038.50**
GDP (US$ billions)	**6.55**
GTCI score	**40.79**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



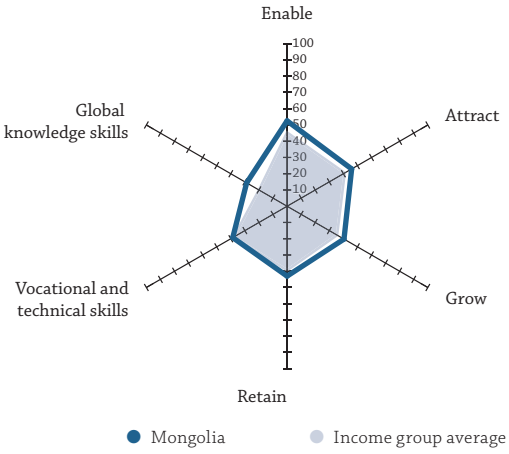
		Score	Rank
1	**ENABLE**	**45.78**	**88**
1.1	Regulatory Landscape	38.67	87
1.1.1	Government effectiveness	25.81	89
1.1.2	Business-government relations	40.04	97
1.1.3	Political stability	59.42	71
1.1.4	Regulatory quality	46.45	69
1.1.5	Corruption	21.62	90
1.2	Market Landscape	45.85	79
1.2.1	Competition intensity	60.38	95
1.2.2	Ease of doing business	68.42	49
1.2.3	Cluster development	22.05	118
1.2.4	R&D expenditure	8.10	70
1.2.5	ICT infrastructure	64.32	52
1.2.6	Technology utilisation	51.84	98
1.3	Business and Labour Landscape	52.81	86
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	60	81
	Management Practice		
1.3.3	Labour-employer cooperation	52.13	83
1.3.4	Professional management	43.40	97
1.3.5	Relationship of pay to productivity	52.86	53
2	**ATTRACT**	**40.21**	**98**
2.1	External Openness	24.67	113
	Attract Business		
2.1.1	FDI and technology transfer	50.31	91
2.1.2	Prevalence of foreign ownership	43.35	103
	Attract People		
2.1.3	Migrant stock	7.59	65
2.1.4	International students	9.63	61
2.1.5	Brain gain	12.44	116
2.2	Internal Openness	55.76	66
	Social Diversity		
2.2.1	Tolerance of minorities	42.22	65
2.2.2	Tolerance of immigrants	40.01	95
2.2.3	Social mobility	38.79	113
	Gender Equality		
2.2.4	Female graduates	76.72	37
2.2.5	Gender earnings gap	76.15	29
2.2.6	Business opportunities for women	60.65	53
3	**GROW**	**38.46**	**77**
3.1	Formal Education	22.91	71
	Enrolment		
3.1.1	Vocational enrolment	27.20	59
3.1.2	Tertiary enrolment	35.33	60
	Quality		
3.1.3	Tertiary education expenditure	29.13	30
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	38.81	104
3.2.1	Quality of management schools	39.12	107
3.2.2	Prevalence of training in firms	38.26	52
3.2.3	Employee development	39.04	105
3.3	Access to Growth Opportunities	53.67	47
	Networks		
3.3.1	Use of virtual social networks	74.59	77
3.3.2	Use of virtual professional networks	n/a	n/a
	Empowerment		
3.3.3	Delegation of authority	40.22	88
3.3.4	Personal rights	46.20	79
4	**RETAIN**	**49.11**	**68**
4.1	Sustainability	36.95	80
4.1.1	Pension system	58.59	43
4.1.2	Taxation	37.11	90
4.1.3	Brain retention	15.16	116
4.2	Lifestyle	61.26	58
4.2.1	Environmental performance	73.89	53
4.2.2	Personal safety	59.58	61
4.2.3	Physician density	38.38	34
4.2.4	Sanitation	73.18	84
5	**VOCATIONAL AND TECHNICAL SKILLS**	**42.63**	**71**
5.1	Mid-Level Skills	44.69	50
5.1.1	Workforce with secondary education	75.35	17
5.1.2	Population with secondary education	58.24	26
5.1.3	Technicians and associate professionals	39.09	53
5.1.4	Labour productivity per employee	6.08	85
5.2	Employability	40.57	113
5.2.1	Ease of finding skilled employees	34.89	115
5.2.2	Relevance of education system to the economy	36.74	85
5.2.3	Availability of scientists and engineers	32.05	116
5.2.4	Skills gap as major constraint	58.58	69
6	**GLOBAL KNOWLEDGE SKILLS**	**28.55**	**61**
6.1	High-Level Skills	34.46	49
6.1.1	Workforce with tertiary education	40.78	44
6.1.2	Population with tertiary education	55.27	8
6.1.3	Professionals	44.55	36
6.1.4	Researchers	7.71	55
6.1.5	Senior officials and managers	44.38	23
6.1.6	Quality of scientific institutions	28.83	112
6.1.7	Scientific journal articles	19.70	57
6.2	Talent Impact	22.65	72
6.2.1	Innovation output	48.83	30
6.2.2	High-value exports	9.83	84
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	9.29	51

MONGOLIA

Key Indicators

Rank (out of 118)	**72**
Income group	**Lower-middle income**
Regional group	**Eastern, Southeastern Asia and Oceania**
Population (millions)	**2.96**
GDP per capita (PPP US$)	**12,188.59**
GDP (US$ billions)	**11.76**
GTCI score	**41.53**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**52.53**	**63**
1.1	Regulatory Landscape	41.11	84
1.1.1	Government effectiveness	24.85	93
1.1.2	Business-government relations	27.23	114
1.1.3	Political stability	84.03	25
1.1.4	Regulatory quality	39.72	83
1.1.5	Corruption	29.73	66
1.2	Market Landscape	45.02	85
1.2.1	Competition intensity	65.99	74
1.2.2	Ease of doing business	64.29	53
1.2.3	Cluster development	30.98	113
1.2.4	R&D expenditure	5.24	79
1.2.5	ICT infrastructure	42.20	80
1.2.6	Technology utilisation	61.39	62
1.3	Business and Labour Landscape	71.47	20
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	55.82	60
1.3.4	Professional management	45.11	88
1.3.5	Relationship of pay to productivity	56.40	35
2	**ATTRACT**	**45.87**	**65**
2.1	External Openness	28.96	101
	Attract Business		
2.1.1	FDI and technology transfer	55.29	74
2.1.2	Prevalence of foreign ownership	56.00	67
	Attract People		
2.1.3	Migrant stock	1.16	100
2.1.4	International students	3.16	76
2.1.5	Brain gain	29.20	87
2.2	Internal Openness	62.77	37
	Social Diversity		
2.2.1	Tolerance of minorities	66.67	21
2.2.2	Tolerance of immigrants	17.43	113
2.2.3	Social mobility	62.63	36
	Gender Equality		
2.2.4	Female graduates	87.59	12
2.2.5	Gender earnings gap	70.56	37
2.2.6	Business opportunities for women	71.76	21

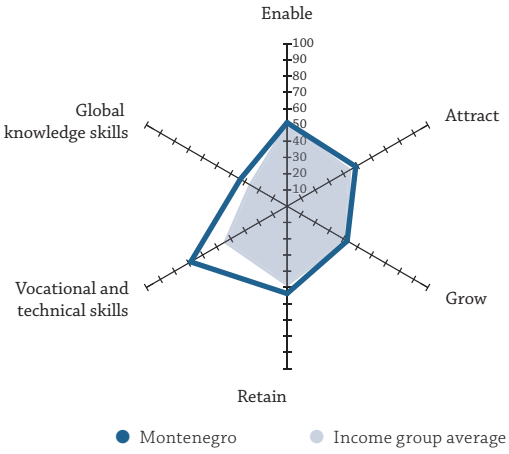
		Score	Rank
3	**GROW**	**40.43**	**71**
3.1	Formal Education	19.45	83
	Enrolment		
3.1.1	Vocational enrolment	20.90	67
3.1.2	Tertiary enrolment	56.92	32
	Quality		
3.1.3	Tertiary education expenditure	0.00	106
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	52.55	56
3.2.1	Quality of management schools	33.87	115
3.2.2	Prevalence of training in firms	75.86	11
3.2.3	Employee development	47.91	69
3.3	Access to Growth Opportunities	49.30	62
	Networks		
3.3.1	Use of virtual social networks	78.93	54
3.3.2	Use of virtual professional networks	6.90	87
	Empowerment		
3.3.3	Delegation of authority	37.75	102
3.3.4	Personal rights	73.62	37
4	**RETAIN**	**42.99**	**80**
4.1	Sustainability	34.48	94
4.1.1	Pension system	32.32	63
4.1.2	Taxation	41.91	79
4.1.3	Brain retention	29.21	97
4.2	Lifestyle	51.51	77
4.2.1	Environmental performance	50.93	95
4.2.2	Personal safety	64.42	49
4.2.3	Physician density	36.48	38
4.2.4	Sanitation	54.20	98
5	**VOCATIONAL AND TECHNICAL SKILLS**	**38.60**	**83**
5.1	Mid-Level Skills	31.48	72
5.1.1	Workforce with secondary education	30.92	74
5.1.2	Population with secondary education	45.26	46
5.1.3	Technicians and associate professionals	18.27	78
5.1.4	Labour productivity per employee	n/a	n/a
5.2	Employability	45.71	96
5.2.1	Ease of finding skilled employees	27.39	118
5.2.2	Relevance of education system to the economy	33.97	98
5.2.3	Availability of scientists and engineers	51.65	58
5.2.4	Skills gap as major constraint	69.84	54
6	**GLOBAL KNOWLEDGE SKILLS**	**28.74**	**59**
6.1	High-Level Skills	30.22	60
6.1.1	Workforce with tertiary education	45.63	38
6.1.2	Population with tertiary education	35.40	29
6.1.3	Professionals	34.85	52
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	23.60	57
6.1.6	Quality of scientific institutions	33.98	99
6.1.7	Scientific journal articles	7.87	81
6.2	Talent Impact	27.26	58
6.2.1	Innovation output	26.39	70
6.2.2	High-value exports	18.95	53
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	36.45	17

MONTENEGRO

Key Indicators

Rank (out of 118)	**44**
Income group	**Upper-middle income**
Regional group	**Europe**
Population (millions)	**0.62**
GDP per capita (PPP US$)	**15,485.81**
GDP (US$ billions)	**3.99**
GTCI score	**49.72**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**51.42**	**68**
1.1	Regulatory Landscape	51.92	53
1.1.1	Government effectiveness	44.74	54
1.1.2	Business-government relations	61.62	52
1.1.3	Political stability	67.98	50
1.1.4	Regulatory quality	48.78	66
1.1.5	Corruption	36.49	56
1.2	Market Landscape	47.53	73
1.2.1	Competition intensity	52.99	115
1.2.2	Ease of doing business	70.11	43
1.2.3	Cluster development	32.36	110
1.2.4	R&D expenditure	8.81	66
1.2.5	ICT infrastructure	64.83	51
1.2.6	Technology utilisation	56.08	80
1.3	Business and Labour Landscape	54.82	81
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	80	46
	Management Practice		
1.3.3	Labour-employer cooperation	47.89	99
1.3.4	Professional management	43.37	98
1.3.5	Relationship of pay to productivity	47.15	71

2	**ATTRACT**	**48.78**	**52**
2.1	External Openness	42.41	41
	Attract Business		
2.1.1	FDI and technology transfer	56.79	69
2.1.2	Prevalence of foreign ownership	54.24	73
	Attract People		
2.1.3	Migrant stock	28.95	28
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	29.66	86
2.2	Internal Openness	55.14	68
	Social Diversity		
2.2.1	Tolerance of minorities	33.33	79
2.2.2	Tolerance of immigrants	75.46	34
2.2.3	Social mobility	49.43	81
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	57.58	80
2.2.6	Business opportunities for women	59.90	56

3	**GROW**	**42.68**	**62**
3.1	Formal Education	34.99	49
	Enrolment		
3.1.1	Vocational enrolment	69.93	13
3.1.2	Tertiary enrolment	48.54	46
	Quality		
3.1.3	Tertiary education expenditure	n/a	n/a
3.1.4	Reading, maths, science	21.50	49
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	42.19	94
3.2.1	Quality of management schools	55.87	50
3.2.2	Prevalence of training in firms	26.78	74
3.2.3	Employee development	43.90	86
3.3	Access to Growth Opportunities	50.86	57
	Networks		
3.3.1	Use of virtual social networks	79.57	49
3.3.2	Use of virtual professional networks	18.97	52
	Empowerment		
3.3.3	Delegation of authority	44.70	66
3.3.4	Personal rights	60.21	60

4	**RETAIN**	**53.72**	**57**
4.1	Sustainability	41.44	62
4.1.1	Pension system	n/a	n/a
4.1.2	Taxation	47.02	53
4.1.3	Brain retention	35.85	79
4.2	Lifestyle	66.00	51
4.2.1	Environmental performance	78.00	45
4.2.2	Personal safety	63.56	53
4.2.3	Physician density	27.10	57
4.2.4	Sanitation	95.34	48

5	**VOCATIONAL AND TECHNICAL SKILLS**	**68.46**	**4**
5.1	Mid-Level Skills	76.00	3
5.1.1	Workforce with secondary education	72.01	20
5.1.2	Population with secondary education	74.77	7
5.1.3	Technicians and associate professionals	81.22	12
5.1.4	Labour productivity per employee	n/a	n/a
5.2	Employability	60.93	40
5.2.1	Ease of finding skilled employees	44.55	88
5.2.2	Relevance of education system to the economy	48.62	51
5.2.3	Availability of scientists and engineers	50.55	63
5.2.4	Skills gap as major constraint	100.00	1

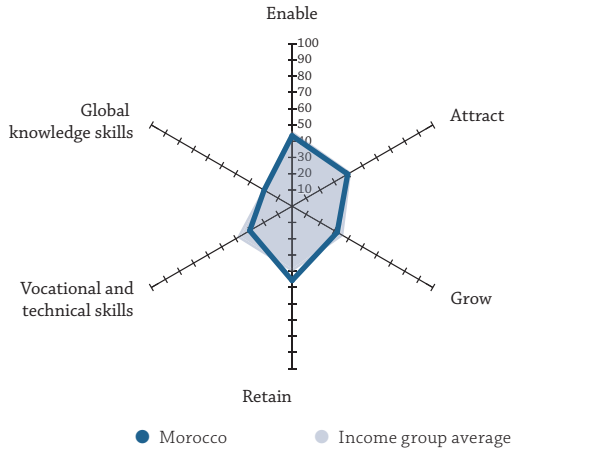
6	**GLOBAL KNOWLEDGE SKILLS**	**33.24**	**48**
6.1	High-Level Skills	33.05	53
6.1.1	Workforce with tertiary education	41.10	43
6.1.2	Population with tertiary education	32.48	35
6.1.3	Professionals	46.06	32
6.1.4	Researchers	7.75	54
6.1.5	Senior officials and managers	30.34	44
6.1.6	Quality of scientific institutions	46.77	63
6.1.7	Scientific journal articles	26.89	48
6.2	Talent Impact	33.42	38
6.2.1	Innovation output	42.37	39
6.2.2	High-value exports	20.91	45
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	30.81	64
6.2.4	New business density	39.58	16

MOROCCO

Key Indicators

Rank (out of 118)	**96**
Income group	**Lower-middle income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**34.38**
GDP per capita (PPP US$)	**7,821.40**
GDP (US$ billions)	**100.36**
GTCI score	**35.09**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**43.35**	**97**
1.1	Regulatory Landscape	43.57	76
1.1.1	Government effectiveness	32.83	77
1.1.2	Business-government relations	61.83	50
1.1.3	Political stability	51.95	84
1.1.4	Regulatory quality	45.58	71
1.1.5	Corruption	25.68	79
1.2	Market Landscape	48.39	70
1.2.1	Competition intensity	67.10	69
1.2.2	Ease of doing business	55.95	70
1.2.3	Cluster development	40.45	86
1.2.4	R&D expenditure	17.14	44
1.2.5	ICT infrastructure	50.90	70
1.2.6	Technology utilisation	58.81	68
1.3	Business and Labour Landscape	38.09	116
	Labour Market Flexibility		
1.3.1	Ease of hiring	0.00	115
1.3.2	Ease of redundancy	50	97
	Management Practice		
1.3.3	Labour-employer cooperation	47.60	100
1.3.4	Professional management	51.17	70
1.3.5	Relationship of pay to productivity	41.67	91
2	**ATTRACT**	**39.50**	**101**
2.1	External Openness	35.21	65
	Attract Business		
2.1.1	FDI and technology transfer	60.42	54
2.1.2	Prevalence of foreign ownership	62.87	48
	Attract People		
2.1.3	Migrant stock	0.41	112
2.1.4	International students	9.85	60
2.1.5	Brain gain	42.52	50
2.2	Internal Openness	43.79	107
	Social Diversity		
2.2.1	Tolerance of minorities	35.56	76
2.2.2	Tolerance of immigrants	47.56	79
2.2.3	Social mobility	55.54	57
	Gender Equality		
2.2.4	Female graduates	46.19	86
2.2.5	Gender earnings gap	27.27	109
2.2.6	Business opportunities for women	50.63	93

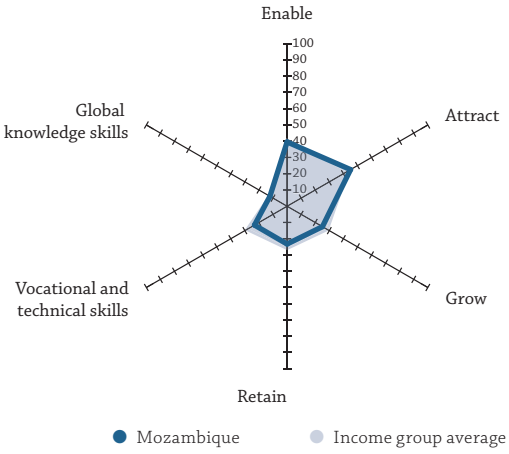
		Score	Rank
3	**GROW**	**32.05**	**99**
3.1	Formal Education	14.11	97
	Enrolment		
3.1.1	Vocational enrolment	13.02	79
3.1.2	Tertiary enrolment	19.64	84
	Quality		
3.1.3	Tertiary education expenditure	23.77	49
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	40.19	100
3.2.1	Quality of management schools	51.17	66
3.2.2	Prevalence of training in firms	30.21	65
3.2.3	Employee development	39.20	104
3.3	Access to Growth Opportunities	41.85	89
	Networks		
3.3.1	Use of virtual social networks	75.06	74
3.3.2	Use of virtual professional networks	10.05	71
	Empowerment		
3.3.3	Delegation of authority	43.37	75
3.3.4	Personal rights	38.91	88
4	**RETAIN**	**45.71**	**73**
4.1	Sustainability	37.76	77
4.1.1	Pension system	23.23	72
4.1.2	Taxation	49.73	40
4.1.3	Brain retention	40.34	66
4.2	Lifestyle	53.65	73
4.2.1	Environmental performance	69.20	59
4.2.2	Personal safety	64.11	52
4.2.3	Physician density	7.75	90
4.2.4	Sanitation	73.52	82
5	**VOCATIONAL AND TECHNICAL SKILLS**	**30.08**	**107**
5.1	Mid-Level Skills	13.27	100
5.1.1	Workforce with secondary education	13.23	93
5.1.2	Population with secondary education	n/a	n/a
5.1.3	Technicians and associate professionals	17.26	80
5.1.4	Labour productivity per employee	9.31	78
5.2	Employability	46.90	91
5.2.1	Ease of finding skilled employees	47.90	67
5.2.2	Relevance of education system to the economy	29.57	108
5.2.3	Availability of scientists and engineers	52.34	53
5.2.4	Skills gap as major constraint	57.77	70
6	**GLOBAL KNOWLEDGE SKILLS**	**19.85**	**83**
6.1	High-Level Skills	14.88	103
6.1.1	Workforce with tertiary education	14.72	90
6.1.2	Population with tertiary education	n/a	n/a
6.1.3	Professionals	5.45	96
6.1.4	Researchers	10.22	48
6.1.5	Senior officials and managers	3.93	90
6.1.6	Quality of scientific institutions	37.20	94
6.1.7	Scientific journal articles	17.75	61
6.2	Talent Impact	24.81	67
6.2.1	Innovation output	23.16	80
6.2.2	High-value exports	10.41	76
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	56.92	18
6.2.4	New business density	8.76	54

MOZAMBIQUE

Key Indicators

Rank (out of 118)	**115**
Income group	**Low income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**27.98**
GDP per capita (PPP US$)	**1,185.82**
GDP (US$ billions)	**14.69**
GTCI score	**28.06**
GTCI score (income group average)	**30.03**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**39.55**	**106**
1.1	Regulatory Landscape	36.84	91
1.1.1	Government effectiveness	15.77	106
1.1.2	Business-government relations	60.12	57
1.1.3	Political stability	53.06	81
1.1.4	Regulatory quality	36.30	95
1.1.5	Corruption	18.92	95
1.2	Market Landscape	35.57	110
1.2.1	Competition intensity	59.39	99
1.2.2	Ease of doing business	35.64	105
1.2.3	Cluster development	40.97	83
1.2.4	R&D expenditure	9.76	63
1.2.5	ICT infrastructure	13.68	111
1.2.6	Technology utilisation	53.98	89
1.3	Business and Labour Landscape	46.24	105
	Labour Market Flexibility		
1.3.1	Ease of hiring	33.33	102
1.3.2	Ease of redundancy	80	46
	Management Practice		
1.3.3	Labour-employer cooperation	44.26	104
1.3.4	Professional management	40.04	108
1.3.5	Relationship of pay to productivity	33.57	112
2	**ATTRACT**	**45.09**	**69**
2.1	External Openness	32.33	80
	Attract Business		
2.1.1	FDI and technology transfer	53.91	78
2.1.2	Prevalence of foreign ownership	59.85	55
	Attract People		
2.1.3	Migrant stock	1.60	95
2.1.4	International students	1.72	84
2.1.5	Brain gain	44.59	45
2.2	Internal Openness	57.85	56
	Social Diversity		
2.2.1	Tolerance of minorities	51.11	49
2.2.2	Tolerance of immigrants	84.07	21
2.2.3	Social mobility	42.16	109
	Gender Equality		
2.2.4	Female graduates	35.52	90
2.2.5	Gender earnings gap	79.97	23
2.2.6	Business opportunities for women	54.26	76

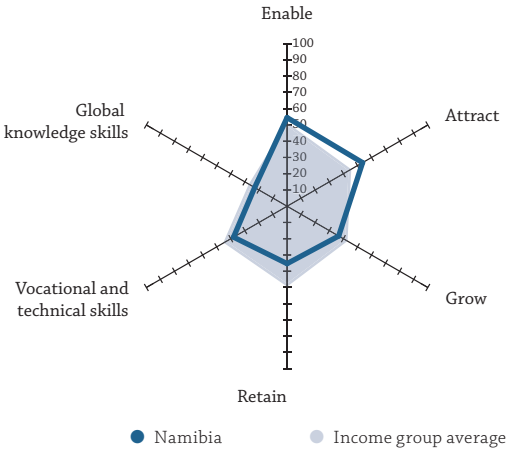
		Score	Rank
3	**GROW**	**25.11**	**116**
3.1	Formal Education	8.09	111
	Enrolment		
3.1.1	Vocational enrolment	10.73	83
3.1.2	Tertiary enrolment	2.19	106
	Quality		
3.1.3	Tertiary education expenditure	19.44	66
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	31.13	117
3.2.1	Quality of management schools	30.61	117
3.2.2	Prevalence of training in firms	24.67	76
3.2.3	Employee development	38.12	109
3.3	Access to Growth Opportunities	36.12	104
	Networks		
3.3.1	Use of virtual social networks	63.38	102
3.3.2	Use of virtual professional networks	1.11	108
	Empowerment		
3.3.3	Delegation of authority	36.76	105
3.3.4	Personal rights	43.23	84
4	**RETAIN**	**23.26**	**115**
4.1	Sustainability	30.04	108
4.1.1	Pension system	1.01	106
4.1.2	Taxation	47.85	47
4.1.3	Brain retention	41.26	62
4.2	Lifestyle	16.48	117
4.2.1	Environmental performance	8.81	115
4.2.2	Personal safety	47.23	77
4.2.3	Physician density	0.23	112
4.2.4	Sanitation	9.66	112
5	**VOCATIONAL AND TECHNICAL SKILLS**	**23.17**	**116**
5.1	Mid-Level Skills	1.74	117
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	3.28	102
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	0.20	103
5.2	Employability	44.61	100
5.2.1	Ease of finding skilled employees	37.67	107
5.2.2	Relevance of education system to the economy	30.15	106
5.2.3	Availability of scientists and engineers	35.42	112
5.2.4	Skills gap as major constraint	75.20	48
6	**GLOBAL KNOWLEDGE SKILLS**	**12.20**	**106**
6.1	High-Level Skills	9.84	116
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	1.91	101
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	0.39	91
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	33.72	100
6.1.7	Scientific journal articles	3.32	103
6.2	Talent Impact	14.56	92
6.2.1	Innovation output	18.67	88
6.2.2	High-value exports	10.46	75
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	n/a	n/a

NAMIBIA

Key Indicators

Rank (out of 118)	**76**
Income group	**Upper-middle income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**2.46**
GDP per capita (PPP US$)	**10,413.98**
GDP (US$ billions)	**11.55**
GTCI score	**40.20**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



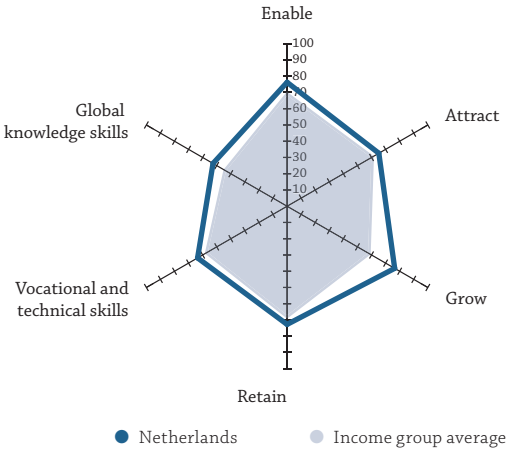
		Score	Rank
1	**ENABLE**	**54.53**	**53**
1.1	Regulatory Landscape	55.04	49
1.1.1	Government effectiveness	39.76	63
1.1.2	Business-government relations	62.46	44
1.1.3	Political stability	77.70	39
1.1.4	Regulatory quality	46.64	68
1.1.5	Corruption	48.65	41
1.2	Market Landscape	42.54	93
1.2.1	Competition intensity	60.61	92
1.2.2	Ease of doing business	47.58	84
1.2.3	Cluster development	47.90	53
1.2.4	R&D expenditure	3.10	94
1.2.5	ICT infrastructure	31.59	96
1.2.6	Technology utilisation	64.48	51
1.3	Business and Labour Landscape	66.01	42
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	80	46
	Management Practice		
1.3.3	Labour-employer cooperation	51.89	84
1.3.4	Professional management	54.84	59
1.3.5	Relationship of pay to productivity	43.32	86
2	**ATTRACT**	**53.62**	**36**
2.1	External Openness	46.38	34
	Attract Business		
2.1.1	FDI and technology transfer	58.81	60
2.1.2	Prevalence of foreign ownership	67.82	33
	Attract People		
2.1.3	Migrant stock	8.27	62
2.1.4	International students	52.96	15
2.1.5	Brain gain	44.02	47
2.2	Internal Openness	60.86	41
	Social Diversity		
2.2.1	Tolerance of minorities	48.89	50
2.2.2	Tolerance of immigrants	52.88	70
2.2.3	Social mobility	57.53	50
	Gender Equality		
2.2.4	Female graduates	73.59	46
2.2.5	Gender earnings gap	74.30	31
2.2.6	Business opportunities for women	57.94	65
3	**GROW**	**36.65**	**86**
3.1	Formal Education	17.05	90
	Enrolment		
3.1.1	Vocational enrolment	n/a	n/a
3.1.2	Tertiary enrolment	5.34	101
	Quality		
3.1.3	Tertiary education expenditure	45.82	12
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	41.72	95
3.2.1	Quality of management schools	40.91	103
3.2.2	Prevalence of training in firms	29.02	70
3.2.3	Employee development	55.24	39
3.3	Access to Growth Opportunities	51.19	55
	Networks		
3.3.1	Use of virtual social networks	74.25	78
3.3.2	Use of virtual professional networks	16.40	61
	Empowerment		
3.3.3	Delegation of authority	44.12	69
3.3.4	Personal rights	69.98	43
4	**RETAIN**	**35.32**	**99**
4.1	Sustainability	36.39	82
4.1.1	Pension system	9.09	89
4.1.2	Taxation	55.61	21
4.1.3	Brain retention	44.48	45
4.2	Lifestyle	34.25	100
4.2.1	Environmental performance	62.97	69
4.2.2	Personal safety	44.01	82
4.2.3	Physician density	4.56	94
4.2.4	Sanitation	25.45	107
5	**VOCATIONAL AND TECHNICAL SKILLS**	**38.04**	**84**
5.1	Mid-Level Skills	23.97	88
5.1.1	Workforce with secondary education	29.67	76
5.1.2	Population with secondary education	n/a	n/a
5.1.3	Technicians and associate professionals	18.27	78
5.1.4	Labour productivity per employee	n/a	n/a
5.2	Employability	52.11	71
5.2.1	Ease of finding skilled employees	35.65	114
5.2.2	Relevance of education system to the economy	36.80	84
5.2.3	Availability of scientists and engineers	39.76	99
5.2.4	Skills gap as major constraint	96.25	4
6	**GLOBAL KNOWLEDGE SKILLS**	**23.03**	**75**
6.1	High-Level Skills	18.89	86
6.1.1	Workforce with tertiary education	10.68	93
6.1.2	Population with tertiary education	n/a	n/a
6.1.3	Professionals	21.52	72
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	16.29	66
6.1.6	Quality of scientific institutions	40.92	81
6.1.7	Scientific journal articles	5.04	94
6.2	Talent Impact	27.17	59
6.2.1	Innovation output	11.13	107
6.2.2	High-value exports	18.55	54
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	74.24	6
6.2.4	New business density	4.76	75

NETHERLANDS

Key Indicators

Rank (out of 118)	**11**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**16.94**
GDP per capita (PPP US$)	**48,458.94**
GDP (US$ billions)	**752.55**
GTCI score	**67.80**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



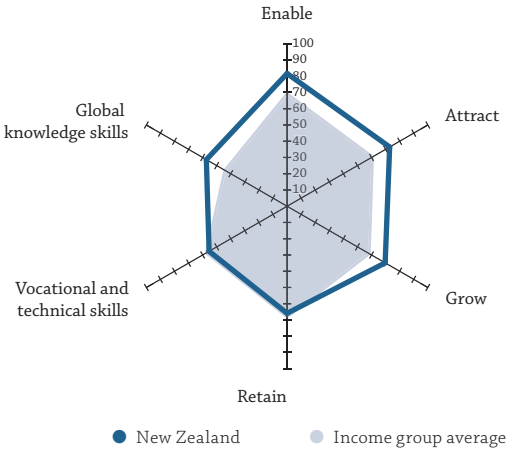
		Score	Rank
1	**ENABLE**	**76.25**	**15**
1.1	Regulatory Landscape	88.14	8
1.1.1	Government effectiveness	89.50	5
1.1.2	Business-government relations	79.01	16
1.1.3	Political stability	88.60	15
1.1.4	Regulatory quality	89.00	9
1.1.5	Corruption	94.59	5
1.2	Market Landscape	74.60	12
1.2.1	Competition intensity	80.99	9
1.2.2	Ease of doing business	78.01	26
1.2.3	Cluster development	70.28	10
1.2.4	R&D expenditure	46.90	18
1.2.5	ICT infrastructure	94.25	6
1.2.6	Technology utilisation	77.18	19
1.3	Business and Labour Landscape	66.00	43
	Labour Market Flexibility		
1.3.1	Ease of hiring	83.33	43
1.3.2	Ease of redundancy	30	113
	Management Practice		
1.3.3	Labour-employer cooperation	76.99	8
1.3.4	Professional management	85.44	4
1.3.5	Relationship of pay to productivity	54.27	42
2	**ATTRACT**	**65.19**	**17**
2.1	External Openness	54.80	18
	Attract Business		
2.1.1	FDI and technology transfer	69.56	15
2.1.2	Prevalence of foreign ownership	74.96	14
	Attract People		
2.1.3	Migrant stock	25.65	33
2.1.4	International students	37.67	22
2.1.5	Brain gain	66.17	12
2.2	Internal Openness	75.57	16
	Social Diversity		
2.2.1	Tolerance of minorities	65.56	26
2.2.2	Tolerance of immigrants	88.24	14
2.2.3	Social mobility	83.33	7
	Gender Equality		
2.2.4	Female graduates	69.07	59
2.2.5	Gender earnings gap	77.11	28
2.2.6	Business opportunities for women	70.10	24
3	**GROW**	**76.44**	**1**
3.1	Formal Education	68.24	3
	Enrolment		
3.1.1	Vocational enrolment	78.00	8
3.1.2	Tertiary enrolment	70.28	16
	Quality		
3.1.3	Tertiary education expenditure	36.92	19
3.1.4	Reading, maths, science	79.53	8
3.1.5	University ranking	76.49	12
3.2	Lifelong Learning	74.36	7
3.2.1	Quality of management schools	78.37	8
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	70.36	9
3.3	Access to Growth Opportunities	86.72	1
	Networks		
3.3.1	Use of virtual social networks	92.81	4
3.3.2	Use of virtual professional networks	87.99	3
	Empowerment		
3.3.3	Delegation of authority	77.70	3
3.3.4	Personal rights	88.40	12
4	**RETAIN**	**72.71**	**13**
4.1	Sustainability	67.67	8
4.1.1	Pension system	90.91	15
4.1.2	Taxation	44.40	69
4.1.3	Brain retention	67.71	10
4.2	Lifestyle	77.74	23
4.2.1	Environmental performance	83.86	35
4.2.2	Personal safety	92.97	13
4.2.3	Physician density	36.76	37
4.2.4	Sanitation	97.39	34
5	**VOCATIONAL AND TECHNICAL SKILLS**	**63.59**	**11**
5.1	Mid-Level Skills	58.34	20
5.1.1	Workforce with secondary education	56.13	34
5.1.2	Population with secondary education	54.19	32
5.1.3	Technicians and associate professionals	77.16	19
5.1.4	Labour productivity per employee	45.88	17
5.2	Employability	68.84	10
5.2.1	Ease of finding skilled employees	68.59	11
5.2.2	Relevance of education system to the economy	73.79	8
5.2.3	Availability of scientists and engineers	64.12	22
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**52.63**	**15**
6.1	High-Level Skills	56.92	18
6.1.1	Workforce with tertiary education	54.21	25
6.1.2	Population with tertiary education	32.35	36
6.1.3	Professionals	68.18	7
6.1.4	Researchers	51.92	16
6.1.5	Senior officials and managers	41.01	30
6.1.6	Quality of scientific institutions	82.90	6
6.1.7	Scientific journal articles	67.83	15
6.2	Talent Impact	48.35	16
6.2.1	Innovation output	82.59	3
6.2.2	High-value exports	40.10	14
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	39.91	53
6.2.4	New business density	30.82	21

NEW ZEALAND

Key Indicators

Rank (out of 118)	**14**
Income group	**High income**
Regional group	**Eastern, Southeastern Asia and Oceania**
Population (millions)	**4.60**
GDP per capita (PPP US$)	**36,982.30**
GDP (US$ billions)	**173.75**
GTCI score	**67.15**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**81.65**	**4**
1.1	Regulatory Landscape	93.92	3
1.1.1	Government effectiveness	92.35	4
1.1.2	Business-government relations	88.23	9
1.1.3	Political stability	100.00	1
1.1.4	Regulatory quality	93.07	2
1.1.5	Corruption	95.95	4
1.2	Market Landscape	69.66	20
1.2.1	Competition intensity	77.94	14
1.2.2	Ease of doing business	98.94	2
1.2.3	Cluster development	49.59	44
1.2.4	R&D expenditure	29.52	28
1.2.5	ICT infrastructure	81.97	21
1.2.6	Technology utilisation	80.01	11
1.3	Business and Labour Landscape	81.38	8
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	90	35
	Management Practice		
1.3.3	Labour-employer cooperation	74.84	12
1.3.4	Professional management	89.81	1
1.3.5	Relationship of pay to productivity	63.25	10
2	**ATTRACT**	**72.87**	**8**
2.1	External Openness	67.68	9
	Attract Business		
2.1.1	FDI and technology transfer	65.38	26
2.1.2	Prevalence of foreign ownership	76.14	12
	Attract People		
2.1.3	Migrant stock	50.50	14
2.1.4	International students	84.05	8
2.1.5	Brain gain	62.31	16
2.2	Internal Openness	78.07	13
	Social Diversity		
2.2.1	Tolerance of minorities	68.89	17
2.2.2	Tolerance of immigrants	97.71	4
2.2.3	Social mobility	86.08	4
	Gender Equality		
2.2.4	Female graduates	76.13	38
2.2.5	Gender earnings gap	65.84	46
2.2.6	Business opportunities for women	73.75	12

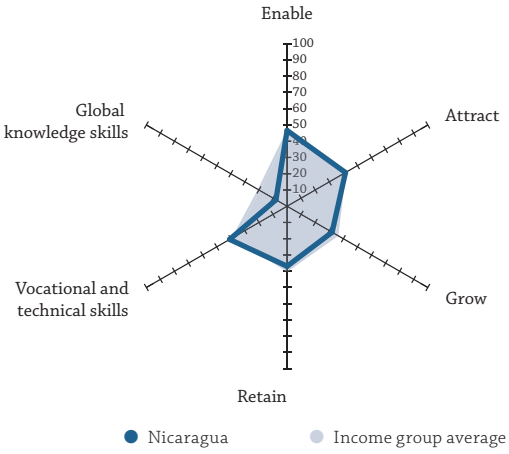
		Score	Rank
3	**GROW**	**69.68**	**11**
3.1	Formal Education	57.24	16
	Enrolment		
3.1.1	Vocational enrolment	36.35	45
3.1.2	Tertiary enrolment	71.41	14
	Quality		
3.1.3	Tertiary education expenditure	43.45	15
3.1.4	Reading, maths, science	74.23	15
3.1.5	University ranking	60.75	18
3.2	Lifelong Learning	67.64	19
3.2.1	Quality of management schools	70.56	22
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	64.72	18
3.3	Access to Growth Opportunities	84.17	5
	Networks		
3.3.1	Use of virtual social networks	86.34	20
3.3.2	Use of virtual professional networks	75.04	11
	Empowerment		
3.3.3	Delegation of authority	75.32	6
3.3.4	Personal rights	100.00	1
4	**RETAIN**	**65.89**	**28**
4.1	Sustainability	58.62	28
4.1.1	Pension system	n/a	n/a
4.1.2	Taxation	65.19	11
4.1.3	Brain retention	52.06	31
4.2	Lifestyle	73.15	36
4.2.1	Environmental performance	95.00	11
4.2.2	Personal safety	89.31	19
4.2.3	Physician density	35.16	41
4.2.4	Sanitation	n/a	n/a
5	**VOCATIONAL AND TECHNICAL SKILLS**	**55.41**	**34**
5.1	Mid-Level Skills	44.82	48
5.1.1	Workforce with secondary education	54.46	39
5.1.2	Population with secondary education	33.00	60
5.1.3	Technicians and associate professionals	57.87	34
5.1.4	Labour productivity per employee	33.96	34
5.2	Employability	66.01	23
5.2.1	Ease of finding skilled employees	64.46	24
5.2.2	Relevance of education system to the economy	73.80	7
5.2.3	Availability of scientists and engineers	59.76	32
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**57.37**	**8**
6.1	High-Level Skills	61.00	11
6.1.1	Workforce with tertiary education	58.41	22
6.1.2	Population with tertiary education	44.27	15
6.1.3	Professionals	50.91	25
6.1.4	Researchers	44.65	23
6.1.5	Senior officials and managers	76.97	5
6.1.6	Quality of scientific institutions	72.94	19
6.1.7	Scientific journal articles	78.84	10
6.2	Talent Impact	53.74	10
6.2.1	Innovation output	64.27	15
6.2.2	High-value exports	19.41	50
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	34.94	60
6.2.4	New business density	96.34	2

NICARAGUA

Key Indicators

Rank (out of 118)	**99**
Income group	**Lower-middle income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**6.08**
GDP per capita (PPP US$)	**5,189.73**
GDP (US$ billions)	**12.69**
GTCI score	**34.29**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**46.61**	**86**
1.1	Regulatory Landscape	37.06	90
1.1.1	Government effectiveness	12.76	112
1.1.2	Business-government relations	61.58	53
1.1.3	Political stability	60.80	67
1.1.4	Regulatory quality	36.67	94
1.1.5	Corruption	13.51	107
1.2	Market Landscape	42.67	92
1.2.1	Competition intensity	61.59	88
1.2.2	Ease of doing business	39.11	101
1.2.3	Cluster development	35.24	101
1.2.4	R&D expenditure	n/a	n/a
1.2.5	ICT infrastructure	29.92	99
1.2.6	Technology utilisation	47.49	109
1.3	Business and Labour Landscape	60.09	63
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	56.01	59
1.3.4	Professional management	37.35	110
1.3.5	Relationship of pay to productivity	40.41	98

2	**ATTRACT**	**41.47**	**89**
2.1	External Openness	34.99	67
	Attract Business		
2.1.1	FDI and technology transfer	51.44	84
2.1.2	Prevalence of foreign ownership	57.24	64
	Attract People		
2.1.3	Migrant stock	1.30	98
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	29.98	83
2.2	Internal Openness	47.95	100
	Social Diversity		
2.2.1	Tolerance of minorities	42.22	65
2.2.2	Tolerance of immigrants	59.41	58
2.2.3	Social mobility	43.73	102
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	46.18	98
2.2.6	Business opportunities for women	48.20	99

		Score	Rank
3	**GROW**	**31.97**	**100**
3.1	Formal Education	9.71	109
	Enrolment		
3.1.1	Vocational enrolment	3.13	102
3.1.2	Tertiary enrolment	n/a	n/a
	Quality		
3.1.3	Tertiary education expenditure	26.01	39
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	48.18	68
3.2.1	Quality of management schools	44.94	95
3.2.2	Prevalence of training in firms	57.78	29
3.2.3	Employee development	41.83	95
3.3	Access to Growth Opportunities	38.01	100
	Networks		
3.3.1	Use of virtual social networks	58.88	109
3.3.2	Use of virtual professional networks	9.35	73
	Empowerment		
3.3.3	Delegation of authority	40.05	89
3.3.4	Personal rights	43.75	83

4	**RETAIN**	**36.93**	**96**
4.1	Sustainability	29.65	110
4.1.1	Pension system	21.21	76
4.1.2	Taxation	35.31	95
4.1.3	Brain retention	32.42	87
4.2	Lifestyle	44.22	92
4.2.1	Environmental performance	50.56	96
4.2.2	Personal safety	51.46	71
4.2.3	Physician density	11.34	84
4.2.4	Sanitation	63.52	90

5	**VOCATIONAL AND TECHNICAL SKILLS**	**40.82**	**75**
5.1	Mid-Level Skills	42.57	55
5.1.1	Workforce with secondary education	45.54	55
5.1.2	Population with secondary education	n/a	n/a
5.1.3	Technicians and associate professionals	39.59	51
5.1.4	Labour productivity per employee	n/a	n/a
5.2	Employability	39.08	114
5.2.1	Ease of finding skilled employees	36.35	111
5.2.2	Relevance of education system to the economy	21.89	115
5.2.3	Availability of scientists and engineers	29.84	117
5.2.4	Skills gap as major constraint	68.23	55

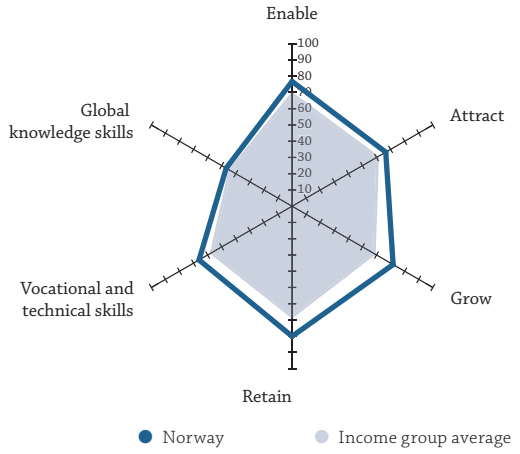
6	**GLOBAL KNOWLEDGE SKILLS**	**7.93**	**118**
6.1	High-Level Skills	13.85	105
6.1.1	Workforce with tertiary education	20.71	85
6.1.2	Population with tertiary education	n/a	n/a
6.1.3	Professionals	10.61	89
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	14.61	71
6.1.6	Quality of scientific institutions	22.26	116
6.1.7	Scientific journal articles	1.08	114
6.2	Talent Impact	2.01	117
6.2.1	Innovation output	3.77	117
6.2.2	High-value exports	0.26	116
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	n/a	n/a

NORWAY

Key Indicators

Rank (out of 118)	**10**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**5.20**
GDP per capita (PPP US$)	**61,471.57**
GDP (US$ billions)	**388.31**
GTCI score	**68.01**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**76.77**	**13**
1.1	Regulatory Landscape	90.09	5
1.1.1	Government effectiveness	88.94	7
1.1.2	Business-government relations	90.52	7
1.1.3	Political stability	90.81	10
1.1.4	Regulatory quality	85.61	15
1.1.5	Corruption	94.59	5
1.2	Market Landscape	73.00	15
1.2.1	Competition intensity	71.41	48
1.2.2	Ease of doing business	88.94	8
1.2.3	Cluster development	70.13	11
1.2.4	R&D expenditure	39.29	21
1.2.5	ICT infrastructure	84.02	16
1.2.6	Technology utilisation	84.21	4
1.3	Business and Labour Landscape	67.23	38
	Labour Market Flexibility		
1.3.1	Ease of hiring	39.00	101
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	83.56	4
1.3.4	Professional management	87.77	2
1.3.5	Relationship of pay to productivity	55.83	37

2	**ATTRACT**	**66.55**	**14**
2.1	External Openness	48.95	30
	Attract Business		
2.1.1	FDI and technology transfer	63.35	38
2.1.2	Prevalence of foreign ownership	71.17	21
	Attract People		
2.1.3	Migrant stock	31.25	24
2.1.4	International students	18.69	45
2.1.5	Brain gain	60.28	19
2.2	Internal Openness	84.16	3
	Social Diversity		
2.2.1	Tolerance of minorities	70.00	16
2.2.2	Tolerance of immigrants	90.47	11
2.2.3	Social mobility	87.46	3
	Gender Equality		
2.2.4	Female graduates	74.38	44
2.2.5	Gender earnings gap	100.00	1
2.2.6	Business opportunities for women	82.67	2

3	**GROW**	**71.78**	**10**
3.1	Formal Education	60.00	11
	Enrolment		
3.1.1	Vocational enrolment	63.38	22
3.1.2	Tertiary enrolment	68.04	19
	Quality		
3.1.3	Tertiary education expenditure	45.88	11
3.1.4	Reading, maths, science	66.90	22
3.1.5	University ranking	55.80	22
3.2	Lifelong Learning	72.76	9
3.2.1	Quality of management schools	73.44	14
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	72.08	7
3.3	Access to Growth Opportunities	82.59	7
	Networks		
3.3.1	Use of virtual social networks	92.91	2
3.3.2	Use of virtual professional networks	66.33	13
	Empowerment		
3.3.3	Delegation of authority	82.71	2
3.3.4	Personal rights	88.40	12

4	**RETAIN**	**80.05**	**2**
4.1	Sustainability	73.86	5
4.1.1	Pension system	92.93	8
4.1.2	Taxation	53.02	31
4.1.3	Brain retention	75.63	4
4.2	Lifestyle	86.23	4
4.2.1	Environmental performance	92.95	17
4.2.2	Personal safety	98.94	3
4.2.3	Physician density	55.19	7
4.2.4	Sanitation	97.84	31

5	**VOCATIONAL AND TECHNICAL SKILLS**	**66.11**	**6**
5.1	Mid-Level Skills	62.13	10
5.1.1	Workforce with secondary education	54.32	40
5.1.2	Population with secondary education	53.59	33
5.1.3	Technicians and associate professionals	78.17	16
5.1.4	Labour productivity per employee	62.43	7
5.2	Employability	70.09	9
5.2.1	Ease of finding skilled employees	71.70	4
5.2.2	Relevance of education system to the economy	71.52	11
5.2.3	Availability of scientists and engineers	67.06	12
5.2.4	Skills gap as major constraint	n/a	n/a

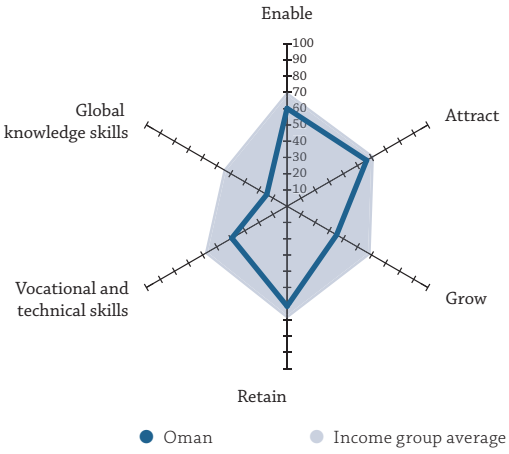
6	**GLOBAL KNOWLEDGE SKILLS**	**46.82**	**22**
6.1	High-Level Skills	57.84	17
6.1.1	Workforce with tertiary education	67.15	11
6.1.2	Population with tertiary education	41.90	21
6.1.3	Professionals	66.97	9
6.1.4	Researchers	67.30	8
6.1.5	Senior officials and managers	36.52	32
6.1.6	Quality of scientific institutions	73.26	17
6.1.7	Scientific journal articles	51.77	29
6.2	Talent Impact	35.79	33
6.2.1	Innovation output	58.35	24
6.2.2	High-value exports	28.39	31
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	11.80	83
6.2.4	New business density	44.63	14

OMAN

Key Indicators

Rank (out of 118)	**59**
Income group	**High income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**4.49**
GDP per capita (PPP US$)	**38,234.05**
GDP (US$ billions)	**70.25**
GTCI score	**44.51**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**60.20**	**39**
1.1	Regulatory Landscape	61.28	39
1.1.1	Government effectiveness	45.07	53
1.1.2	Business-government relations	82.11	13
1.1.3	Political stability	78.77	36
1.1.4	Regulatory quality	62.60	40
1.1.5	Corruption	37.84	55
1.2	Market Landscape	50.15	66
1.2.1	Competition intensity	61.82	87
1.2.2	Ease of doing business	57.67	65
1.2.3	Cluster development	43.14	75
1.2.4	R&D expenditure	3.81	87
1.2.5	ICT infrastructure	71.23	40
1.2.6	Technology utilisation	63.20	55
1.3	Business and Labour Landscape	69.17	30
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	56.95	54
1.3.4	Professional management	57.26	48
1.3.5	Relationship of pay to productivity	42.67	89

2	**ATTRACT**	**56.49**	**29**
2.1	External Openness	52.69	20
	Attract Business		
2.1.1	FDI and technology transfer	53.45	80
2.1.2	Prevalence of foreign ownership	50.11	92
	Attract People		
2.1.3	Migrant stock	90.50	7
2.1.4	International students	15.66	48
2.1.5	Brain gain	53.72	24
2.2	Internal Openness	60.30	43
	Social Diversity		
2.2.1	Tolerance of minorities	81.11	6
2.2.2	Tolerance of immigrants	n/a	n/a
2.2.3	Social mobility	59.45	44
	Gender Equality		
2.2.4	Female graduates	65.75	68
2.2.5	Gender earnings gap	32.04	107
2.2.6	Business opportunities for women	63.14	41

		Score	Rank
3	**GROW**	**35.19**	**92**
3.1	Formal Education	18.97	85
	Enrolment		
3.1.1	Vocational enrolment	0.00	110
3.1.2	Tertiary enrolment	23.40	80
	Quality		
3.1.3	Tertiary education expenditure	24.84	44
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	27.65	50
3.2	Lifelong Learning	42.43	92
3.2.1	Quality of management schools	35.17	112
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	49.70	60
3.3	Access to Growth Opportunities	44.16	79
	Networks		
3.3.1	Use of virtual social networks	73.16	83
3.3.2	Use of virtual professional networks	16.90	59
	Empowerment		
3.3.3	Delegation of authority	52.57	33
3.3.4	Personal rights	34.01	94

4	**RETAIN**	**61.51**	**40**
4.1	Sustainability	63.42	15
4.1.1	Pension system	n/a	n/a
4.1.2	Taxation	77.08	5
4.1.3	Brain retention	49.75	38
4.2	Lifestyle	59.60	63
4.2.1	Environmental performance	42.98	100
4.2.2	Personal safety	67.99	44
4.2.3	Physician density	31.19	52
4.2.4	Sanitation	96.25	42

5	**VOCATIONAL AND TECHNICAL SKILLS**	**39.25**	**80**
5.1	Mid-Level Skills	43.34	54
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	31.71	64
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	54.98	10
5.2	Employability	35.16	116
5.2.1	Ease of finding skilled employees	30.90	116
5.2.2	Relevance of education system to the economy	34.85	93
5.2.3	Availability of scientists and engineers	39.74	100
5.2.4	Skills gap as major constraint	n/a	n/a

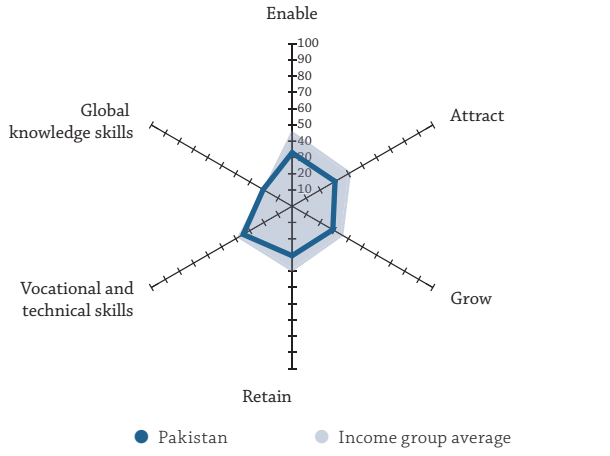
6	**GLOBAL KNOWLEDGE SKILLS**	**14.43**	**100**
6.1	High-Level Skills	17.00	95
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	27.31	49
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	1.46	79
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	32.29	105
6.1.7	Scientific journal articles	6.91	86
6.2	Talent Impact	11.86	99
6.2.1	Innovation output	27.47	65
6.2.2	High-value exports	2.36	106
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	5.75	68

PAKISTAN

Key Indicators

Rank (out of 118)	**111**
Income group	**Lower-middle income**
Regional group	**Central and Southern Asia**
Population (millions)	**188.92**
GDP per capita (PPP US$)	**5,041.72**
GDP (US$ billions)	**269.97**
GTCI score	**29.67**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



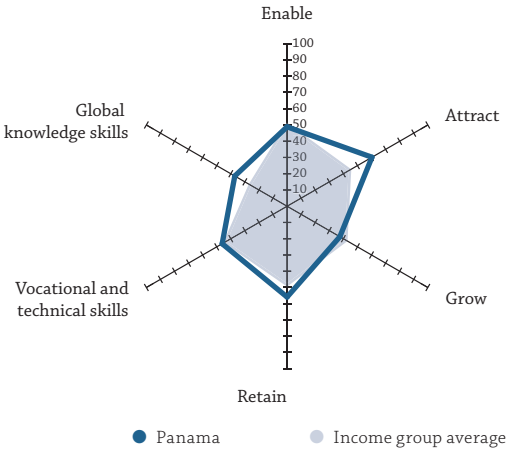
		Score	Rank
1	**ENABLE**	**32.91**	**115**
1.1	Regulatory Landscape	20.34	116
1.1.1	Government effectiveness	15.24	108
1.1.2	Business-government relations	39.68	99
1.1.3	Political stability	0.00	118
1.1.4	Regulatory quality	29.21	105
1.1.5	Corruption	17.57	98
1.2	Market Landscape	36.66	108
1.2.1	Competition intensity	61.48	90
1.2.2	Ease of doing business	31.22	106
1.2.3	Cluster development	44.68	64
1.2.4	R&D expenditure	6.67	75
1.2.5	ICT infrastructure	18.93	106
1.2.6	Technology utilisation	57.00	75
1.3	Business and Labour Landscape	41.73	113
	Labour Market Flexibility		
1.3.1	Ease of hiring	11.00	113
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	42.42	112
1.3.4	Professional management	40.90	106
1.3.5	Relationship of pay to productivity	44.32	84
2	**ATTRACT**	**30.51**	**117**
2.1	External Openness	33.71	74
	Attract Business		
2.1.1	FDI and technology transfer	55.64	73
2.1.2	Prevalence of foreign ownership	44.10	102
	Attract People		
2.1.3	Migrant stock	4.08	80
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	31.03	79
2.2	Internal Openness	27.31	118
	Social Diversity		
2.2.1	Tolerance of minorities	0.00	117
2.2.2	Tolerance of immigrants	32.77	100
2.2.3	Social mobility	43.93	101
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	18.79	113
2.2.6	Business opportunities for women	41.05	116
3	**GROW**	**28.95**	**110**
3.1	Formal Education	11.47	105
	Enrolment		
3.1.1	Vocational enrolment	6.94	93
3.1.2	Tertiary enrolment	6.30	99
	Quality		
3.1.3	Tertiary education expenditure	9.72	88
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	22.91	55
3.2	Lifelong Learning	42.90	90
3.2.1	Quality of management schools	52.09	64
3.2.2	Prevalence of training in firms	37.73	54
3.2.3	Employee development	38.87	106
3.3	Access to Growth Opportunities	32.48	110
	Networks		
3.3.1	Use of virtual social networks	54.75	113
3.3.2	Use of virtual professional networks	4.46	92
	Empowerment		
3.3.3	Delegation of authority	37.85	101
3.3.4	Personal rights	32.86	97
4	**RETAIN**	**30.43**	**106**
4.1	Sustainability	29.75	109
4.1.1	Pension system	3.03	102
4.1.2	Taxation	44.90	67
4.1.3	Brain retention	41.32	61
4.2	Lifestyle	31.10	102
4.2.1	Environmental performance	26.73	109
4.2.2	Personal safety	28.73	102
4.2.3	Physician density	10.43	86
4.2.4	Sanitation	58.52	93
5	**VOCATIONAL AND TECHNICAL SKILLS**	**34.70**	**95**
5.1	Mid-Level Skills	16.90	96
5.1.1	Workforce with secondary education	13.23	93
5.1.2	Population with secondary education	25.45	74
5.1.3	Technicians and associate professionals	21.83	75
5.1.4	Labour productivity per employee	7.08	83
5.2	Employability	52.50	69
5.2.1	Ease of finding skilled employees	44.05	92
5.2.2	Relevance of education system to the economy	42.87	65
5.2.3	Availability of scientists and engineers	55.11	42
5.2.4	Skills gap as major constraint	67.96	56
6	**GLOBAL KNOWLEDGE SKILLS**	**20.54**	**81**
6.1	High-Level Skills	25.87	70
6.1.1	Workforce with tertiary education	40.45	47
6.1.2	Population with tertiary education	9.75	83
6.1.3	Professionals	4.55	98
6.1.4	Researchers	1.95	72
6.1.5	Senior officials and managers	71.35	6
6.1.6	Quality of scientific institutions	36.77	95
6.1.7	Scientific journal articles	16.26	62
6.2	Talent Impact	15.22	89
6.2.1	Innovation output	12.57	105
6.2.2	High-value exports	1.80	110
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	46.46	40
6.2.4	New business density	0.06	94

PANAMA

Key Indicators

Rank (out of 118)	**48**
Income group	**Upper-middle income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**3.93**
GDP per capita (PPP US$)	**22,192.05**
GDP (US$ billions)	**52.13**
GTCI score	**47.63**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



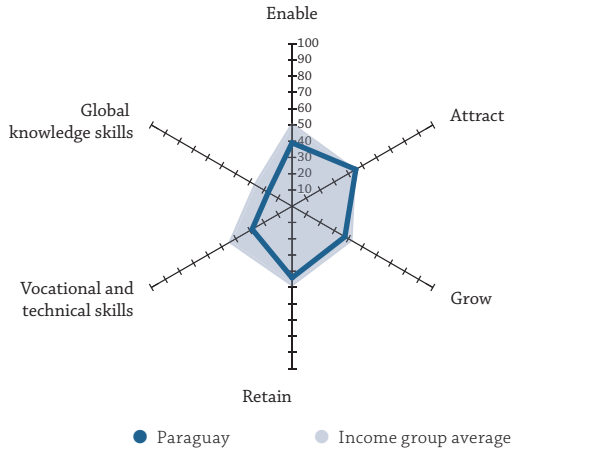
		Score	Rank
1	**ENABLE**	**48.87**	**80**
1.1	Regulatory Landscape	51.30	54
1.1.1	Government effectiveness	44.71	55
1.1.2	Business-government relations	62.69	43
1.1.3	Political stability	64.45	56
1.1.4	Regulatory quality	54.91	55
1.1.5	Corruption	29.73	66
1.2	Market Landscape	51.41	59
1.2.1	Competition intensity	71.33	50
1.2.2	Ease of doing business	58.33	64
1.2.3	Cluster development	50.61	39
1.2.4	R&D expenditure	4.05	85
1.2.5	ICT infrastructure	51.79	67
1.2.6	Technology utilisation	72.34	32
1.3	Business and Labour Landscape	43.89	107
	Labour Market Flexibility		
1.3.1	Ease of hiring	22.33	104
1.3.2	Ease of redundancy	40	104
	Management Practice		
1.3.3	Labour-employer cooperation	60.56	40
1.3.4	Professional management	50.22	74
1.3.5	Relationship of pay to productivity	46.33	78
2	**ATTRACT**	**60.28**	**23**
2.1	External Openness	57.04	15
	Attract Business		
2.1.1	FDI and technology transfer	75.08	6
2.1.2	Prevalence of foreign ownership	76.90	10
	Attract People		
2.1.3	Migrant stock	10.22	55
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	65.94	13
2.2	Internal Openness	63.52	34
	Social Diversity		
2.2.1	Tolerance of minorities	52.22	45
2.2.2	Tolerance of immigrants	53.43	69
2.2.3	Social mobility	64.66	34
	Gender Equality		
2.2.4	Female graduates	89.37	9
2.2.5	Gender earnings gap	59.33	71
2.2.6	Business opportunities for women	62.13	45
3	**GROW**	**37.50**	**82**
3.1	Formal Education	19.45	84
	Enrolment		
3.1.1	Vocational enrolment	30.03	55
3.1.2	Tertiary enrolment	32.95	65
	Quality		
3.1.3	Tertiary education expenditure	14.80	79
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	37.49	107
3.2.1	Quality of management schools	48.49	81
3.2.2	Prevalence of training in firms	10.03	87
3.2.3	Employee development	53.94	44
3.3	Access to Growth Opportunities	55.56	42
	Networks		
3.3.1	Use of virtual social networks	81.75	37
3.3.2	Use of virtual professional networks	25.62	41
	Empowerment		
3.3.3	Delegation of authority	44.89	65
3.3.4	Personal rights	69.98	43
4	**RETAIN**	**55.86**	**52**
4.1	Sustainability	57.71	29
4.1.1	Pension system	n/a	n/a
4.1.2	Taxation	54.50	27
4.1.3	Brain retention	60.93	17
4.2	Lifestyle	54.01	72
4.2.1	Environmental performance	76.33	49
4.2.2	Personal safety	47.00	78
4.2.3	Physician density	21.10	69
4.2.4	Sanitation	71.59	86
5	**VOCATIONAL AND TECHNICAL SKILLS**	**46.13**	**61**
5.1	Mid-Level Skills	40.97	57
5.1.1	Workforce with secondary education	58.50	29
5.1.2	Population with secondary education	28.39	68
5.1.3	Technicians and associate professionals	36.04	56
5.1.4	Labour productivity per employee	n/a	n/a
5.2	Employability	51.28	75
5.2.1	Ease of finding skilled employees	43.88	94
5.2.2	Relevance of education system to the economy	37.85	82
5.2.3	Availability of scientists and engineers	48.33	73
5.2.4	Skills gap as major constraint	75.07	49
6	**GLOBAL KNOWLEDGE SKILLS**	**37.16**	**37**
6.1	High-Level Skills	27.69	68
6.1.1	Workforce with tertiary education	46.12	37
6.1.2	Population with tertiary education	31.37	38
6.1.3	Professionals	29.70	60
6.1.4	Researchers	1.37	80
6.1.5	Senior officials and managers	32.58	39
6.1.6	Quality of scientific institutions	49.63	53
6.1.7	Scientific journal articles	3.10	104
6.2	Talent Impact	46.62	19
6.2.1	Innovation output	34.65	52
6.2.2	High-value exports	25.22	40
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	44.97	41
6.2.4	New business density	81.66	5

PARAGUAY

Key Indicators

Rank (out of 118)	**94**
Income group	**Upper-middle income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**6.64**
GDP per capita (PPP US$)	**9,184.49**
GDP (US$ billions)	**27.62**
GTCI score	**35.19**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**39.00**	**108**
1.1	Regulatory Landscape	34.93	95
1.1.1	Government effectiveness	10.17	114
1.1.2	Business-government relations	54.99	67
1.1.3	Political stability	56.88	75
1.1.4	Regulatory quality	39.10	86
1.1.5	Corruption	13.51	107
1.2	Market Landscape	38.54	103
1.2.1	Competition intensity	65.85	75
1.2.2	Ease of doing business	47.62	83
1.2.3	Cluster development	29.63	115
1.2.4	R&D expenditure	1.90	97
1.2.5	ICT infrastructure	35.42	87
1.2.6	Technology utilisation	50.84	103
1.3	Business and Labour Landscape	43.53	110
	Labour Market Flexibility		
1.3.1	Ease of hiring	44.33	95
1.3.2	Ease of redundancy	40	104
	Management Practice		
1.3.3	Labour-employer cooperation	57.02	53
1.3.4	Professional management	38.66	109
1.3.5	Relationship of pay to productivity	37.63	107

2	**ATTRACT**	**45.28**	**68**
2.1	External Openness	35.75	63
	Attract Business		
2.1.1	FDI and technology transfer	51.77	82
2.1.2	Prevalence of foreign ownership	54.77	71
	Attract People		
2.1.3	Migrant stock	5.04	74
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	31.43	78
2.2	Internal Openness	54.81	70
	Social Diversity		
2.2.1	Tolerance of minorities	42.22	65
2.2.2	Tolerance of immigrants	83.49	22
2.2.3	Social mobility	50.29	77
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	51.87	91
2.2.6	Business opportunities for women	46.19	102

		Score	Rank
3	**GROW**	**37.52**	**81**
3.1	Formal Education	21.83	76
	Enrolment		
3.1.1	Vocational enrolment	33.36	49
3.1.2	Tertiary enrolment	29.51	71
	Quality		
3.1.3	Tertiary education expenditure	24.47	46
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	47.13	77
3.2.1	Quality of management schools	33.59	116
3.2.2	Prevalence of training in firms	67.94	19
3.2.3	Employee development	39.85	99
3.3	Access to Growth Opportunities	43.61	83
	Networks		
3.3.1	Use of virtual social networks	67.48	95
3.3.2	Use of virtual professional networks	7.95	80
	Empowerment		
3.3.3	Delegation of authority	32.70	113
3.3.4	Personal rights	66.33	48

4	**RETAIN**	**44.00**	**78**
4.1	Sustainability	35.18	87
4.1.1	Pension system	11.11	86
4.1.2	Taxation	57.47	19
4.1.3	Brain retention	36.96	77
4.2	Lifestyle	52.82	75
4.2.1	Environmental performance	62.08	73
4.2.2	Personal safety	46.54	79
4.2.3	Physician density	15.61	73
4.2.4	Sanitation	87.05	67

5	**VOCATIONAL AND TECHNICAL SKILLS**	**28.38**	**112**
5.1	Mid-Level Skills	30.40	76
5.1.1	Workforce with secondary education	32.03	72
5.1.2	Population with secondary education	32.26	63
5.1.3	Technicians and associate professionals	26.90	70
5.1.4	Labour productivity per employee	n/a	n/a
5.2	Employability	26.36	117
5.2.1	Ease of finding skilled employees	30.39	117
5.2.2	Relevance of education system to the economy	17.55	118
5.2.3	Availability of scientists and engineers	25.98	118
5.2.4	Skills gap as major constraint	31.50	89

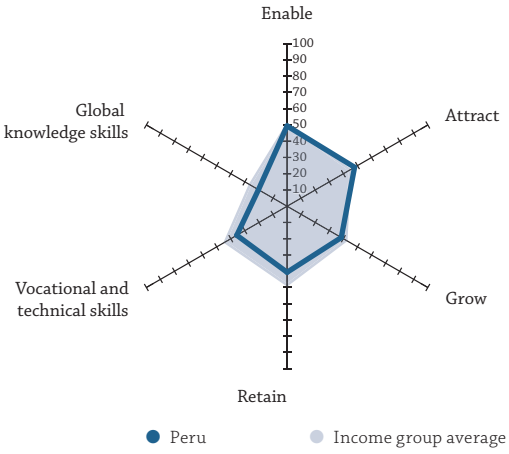
6	**GLOBAL KNOWLEDGE SKILLS**	**16.98**	**92**
6.1	High-Level Skills	16.88	96
6.1.1	Workforce with tertiary education	36.25	55
6.1.2	Population with tertiary education	11.40	81
6.1.3	Professionals	22.12	69
6.1.4	Researchers	1.97	70
6.1.5	Senior officials and managers	25.28	53
6.1.6	Quality of scientific institutions	19.79	118
6.1.7	Scientific journal articles	1.35	113
6.2	Talent Impact	17.08	86
6.2.1	Innovation output	23.88	78
6.2.2	High-value exports	10.28	78
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	n/a	n/a

PERU

Key Indicators

Rank (out of 118)	**83**
Income group	**Upper-middle income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**31.38**
GDP per capita (PPP US$)	**12,402.42**
GDP (US$ billions)	**192.08**
GTCI score	**38.76**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**49.40**	**74**
1.1	Regulatory Landscape	43.26	79
1.1.1	Government effectiveness	28.84	84
1.1.2	Business-government relations	54.58	68
1.1.3	Political stability	48.70	88
1.1.4	Regulatory quality	58.50	49
1.1.5	Corruption	25.68	79
1.2	Market Landscape	54.31	49
1.2.1	Competition intensity	69.45	56
1.2.2	Ease of doing business	69.11	47
1.2.3	Cluster development	36.50	94
1.2.4	R&D expenditure	n/a	n/a
1.2.5	ICT infrastructure	38.49	82
1.2.6	Technology utilisation	57.98	71
1.3	Business and Labour Landscape	50.65	95
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	40	104
	Management Practice		
1.3.3	Labour-employer cooperation	55.73	61
1.3.4	Professional management	55.15	57
1.3.5	Relationship of pay to productivity	46.68	74
2	**ATTRACT**	**47.94**	**55**
2.1	External Openness	44.19	38
	Attract Business		
2.1.1	FDI and technology transfer	64.39	33
2.1.2	Prevalence of foreign ownership	66.19	42
	Attract People		
2.1.3	Migrant stock	0.48	110
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	45.69	42
2.2	Internal Openness	51.69	89
	Social Diversity		
2.2.1	Tolerance of minorities	30.00	80
2.2.2	Tolerance of immigrants	66.64	50
2.2.3	Social mobility	59.09	46
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	57.42	81
2.2.6	Business opportunities for women	45.31	104

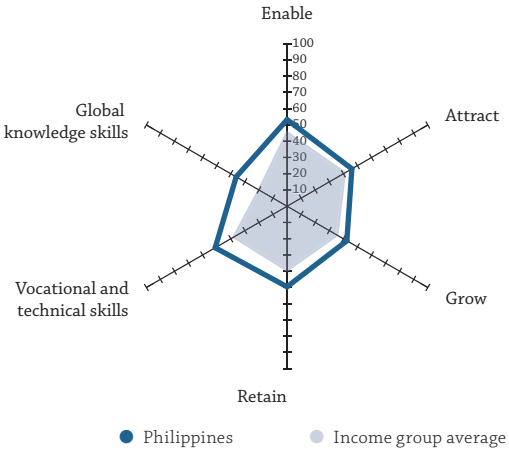
		Score	Rank
3	**GROW**	**38.51**	**76**
3.1	Formal Education	13.57	99
	Enrolment		
3.1.1	Vocational enrolment	2.99	104
3.1.2	Tertiary enrolment	34.61	61
	Quality		
3.1.3	Tertiary education expenditure	8.99	89
3.1.4	Reading, maths, science	0.00	60
3.1.5	University ranking	21.26	61
3.2	Lifelong Learning	57.25	37
3.2.1	Quality of management schools	51.68	65
3.2.2	Prevalence of training in firms	74.80	12
3.2.3	Employee development	45.27	80
3.3	Access to Growth Opportunities	44.70	76
	Networks		
3.3.1	Use of virtual social networks	67.25	96
3.3.2	Use of virtual professional networks	1.52	106
	Empowerment		
3.3.3	Delegation of authority	46.18	59
3.3.4	Personal rights	63.86	52
4	**RETAIN**	**40.63**	**89**
4.1	Sustainability	35.13	89
4.1.1	Pension system	21.21	76
4.1.2	Taxation	36.86	91
4.1.3	Brain retention	47.32	40
4.2	Lifestyle	46.14	89
4.2.1	Environmental performance	66.91	65
4.2.2	Personal safety	30.32	101
4.2.3	Physician density	14.38	79
4.2.4	Sanitation	72.95	85
5	**VOCATIONAL AND TECHNICAL SKILLS**	**35.72**	**90**
5.1	Mid-Level Skills	28.87	78
5.1.1	Workforce with secondary education	24.23	84
5.1.2	Population with secondary education	48.54	40
5.1.3	Technicians and associate professionals	29.95	65
5.1.4	Labour productivity per employee	12.75	73
5.2	Employability	42.56	109
5.2.1	Ease of finding skilled employees	45.71	79
5.2.2	Relevance of education system to the economy	24.88	112
5.2.3	Availability of scientists and engineers	37.32	107
5.2.4	Skills gap as major constraint	62.33	62
6	**GLOBAL KNOWLEDGE SKILLS**	**20.35**	**82**
6.1	High-Level Skills	21.74	79
6.1.1	Workforce with tertiary education	38.03	52
6.1.2	Population with tertiary education	31.98	37
6.1.3	Professionals	23.03	68
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	2.81	92
6.1.6	Quality of scientific institutions	31.88	106
6.1.7	Scientific journal articles	2.72	106
6.2	Talent Impact	18.96	81
6.2.1	Innovation output	23.88	78
6.2.2	High-value exports	4.07	101
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	33.91	61
6.2.4	New business density	13.99	40

PHILIPPINES

Key Indicators

Rank (out of 118)	**52**
Income group	**Lower-middle income**
Regional group	**Eastern, Southeastern Asia and Oceania**
Population (millions)	**100.70**
GDP per capita (PPP US$)	**7,358.82**
GDP (US$ billions)	**291.97**
GTCI score	**46.42**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**53.26**	**59**
1.1	Regulatory Landscape	45.92	66
1.1.1	Government effectiveness	42.36	58
1.1.2	Business-government relations	73.28	21
1.1.3	Political stability	44.11	94
1.1.4	Regulatory quality	45.50	72
1.1.5	Corruption	24.32	85
1.2	Market Landscape	45.42	83
1.2.1	Competition intensity	70.45	54
1.2.2	Ease of doing business	47.39	86
1.2.3	Cluster development	49.64	43
1.2.4	R&D expenditure	2.38	95
1.2.5	ICT infrastructure	34.78	89
1.2.6	Technology utilisation	67.89	38
1.3	Business and Labour Landscape	68.44	34
	Labour Market Flexibility		
1.3.1	Ease of hiring	77.67	44
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	67.89	24
1.3.4	Professional management	66.12	26
1.3.5	Relationship of pay to productivity	60.52	16
2	**ATTRACT**	**46.03**	**62**
2.1	External Openness	33.14	77
	Attract Business		
2.1.1	FDI and technology transfer	63.00	41
2.1.2	Prevalence of foreign ownership	62.93	46
	Attract People		
2.1.3	Migrant stock	0.31	113
2.1.4	International students	0.31	93
2.1.5	Brain gain	39.15	60
2.2	Internal Openness	58.92	49
	Social Diversity		
2.2.1	Tolerance of minorities	18.89	103
2.2.2	Tolerance of immigrants	61.43	54
2.2.3	Social mobility	55.37	58
	Gender Equality		
2.2.4	Female graduates	71.52	52
2.2.5	Gender earnings gap	68.95	41
2.2.6	Business opportunities for women	77.35	6

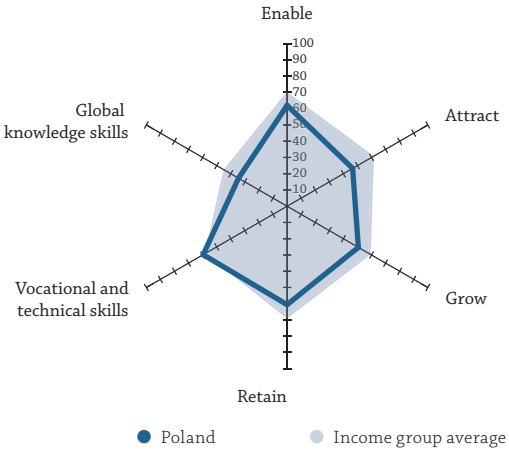
		Score	Rank
3	**GROW**	**42.45**	**65**
3.1	Formal Education	20.55	79
	Enrolment		
3.1.1	Vocational enrolment	n/a	n/a
3.1.2	Tertiary enrolment	30.14	70
	Quality		
3.1.3	Tertiary education expenditure	3.68	100
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	27.82	49
3.2	Lifelong Learning	53.07	50
3.2.1	Quality of management schools	61.56	38
3.2.2	Prevalence of training in firms	36.54	57
3.2.3	Employee development	61.11	25
3.3	Access to Growth Opportunities	53.74	46
	Networks		
3.3.1	Use of virtual social networks	85.11	26
3.3.2	Use of virtual professional networks	8.08	78
	Empowerment		
3.3.3	Delegation of authority	60.89	23
3.3.4	Personal rights	60.89	57
4	**RETAIN**	**49.57**	**66**
4.1	Sustainability	40.22	68
4.1.1	Pension system	24.24	71
4.1.2	Taxation	50.45	38
4.1.3	Brain retention	45.96	42
4.2	Lifestyle	58.92	65
4.2.1	Environmental performance	68.31	61
4.2.2	Personal safety	38.10	89
4.2.3	Physician density	n/a	n/a
4.2.4	Sanitation	70.34	88
5	**VOCATIONAL AND TECHNICAL SKILLS**	**51.07**	**43**
5.1	Mid-Level Skills	37.90	61
5.1.1	Workforce with secondary education	99.16	2
5.1.2	Population with secondary education	36.12	56
5.1.3	Technicians and associate professionals	8.12	88
5.1.4	Labour productivity per employee	8.17	82
5.2	Employability	64.24	30
5.2.1	Ease of finding skilled employees	59.03	34
5.2.2	Relevance of education system to the economy	57.85	31
5.2.3	Availability of scientists and engineers	50.13	65
5.2.4	Skills gap as major constraint	89.95	16
6	**GLOBAL KNOWLEDGE SKILLS**	**36.17**	**40**
6.1	High-Level Skills	34.04	51
6.1.1	Workforce with tertiary education	40.29	48
6.1.2	Population with tertiary education	43.78	16
6.1.3	Professionals	14.85	83
6.1.4	Researchers	0.87	84
6.1.5	Senior officials and managers	91.01	2
6.1.6	Quality of scientific institutions	45.45	67
6.1.7	Scientific journal articles	2.04	109
6.2	Talent Impact	38.30	28
6.2.1	Innovation output	25.13	74
6.2.2	High-value exports	71.63	2
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	55.06	21
6.2.4	New business density	1.39	88

POLAND

Key Indicators

Rank (out of 118)	**38**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**38**
GDP per capita (PPP US$)	**26,135.32**
GDP (US$ billions)	**474.78**
GTCI score	**52.32**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**62.02**	**36**
1.1	Regulatory Landscape	64.61	35
1.1.1	Government effectiveness	60.56	39
1.1.2	Business-government relations	46.08	87
1.1.3	Political stability	84.02	26
1.1.4	Regulatory quality	71.57	29
1.1.5	Corruption	60.81	29
1.2	Market Landscape	56.22	42
1.2.1	Competition intensity	71.45	47
1.2.2	Ease of doing business	78.99	23
1.2.3	Cluster development	43.02	76
1.2.4	R&D expenditure	20.48	37
1.2.5	ICT infrastructure	70.08	43
1.2.6	Technology utilisation	53.29	91
1.3	Business and Labour Landscape	65.25	46
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	80	46
	Management Practice		
1.3.3	Labour-employer cooperation	51.03	87
1.3.4	Professional management	55.30	56
1.3.5	Relationship of pay to productivity	50.92	60
2	**ATTRACT**	**46.58**	**59**
2.1	External Openness	32.04	81
	Attract Business		
2.1.1	FDI and technology transfer	58.55	61
2.1.2	Prevalence of foreign ownership	67.07	36
	Attract People		
2.1.3	Migrant stock	3.38	85
2.1.4	International students	7.42	69
2.1.5	Brain gain	23.80	105
2.2	Internal Openness	61.11	39
	Social Diversity		
2.2.1	Tolerance of minorities	65.56	26
2.2.2	Tolerance of immigrants	46.07	83
2.2.3	Social mobility	51.38	73
	Gender Equality		
2.2.4	Female graduates	93.46	4
2.2.5	Gender earnings gap	57.73	77
2.2.6	Business opportunities for women	52.46	87

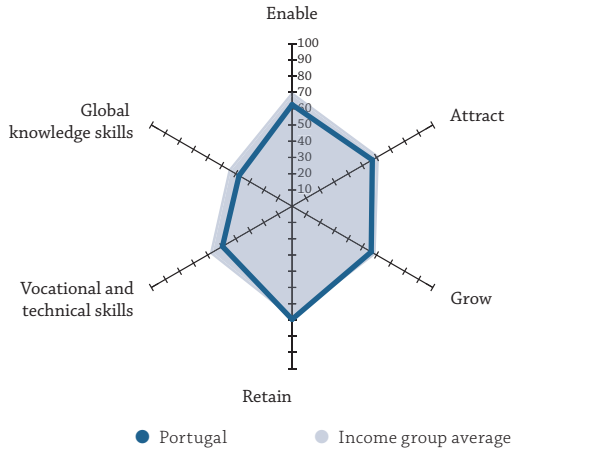
		Score	Rank
3	**GROW**	**50.63**	**34**
3.1	Formal Education	52.19	24
	Enrolment		
3.1.1	Vocational enrolment	60.65	24
3.1.2	Tertiary enrolment	63.38	24
	Quality		
3.1.3	Tertiary education expenditure	24.41	47
3.1.4	Reading, maths, science	80.50	7
3.1.5	University ranking	32.02	41
3.2	Lifelong Learning	47.29	76
3.2.1	Quality of management schools	50.92	69
3.2.2	Prevalence of training in firms	41.16	51
3.2.3	Employee development	49.77	58
3.3	Access to Growth Opportunities	52.42	50
	Networks		
3.3.1	Use of virtual social networks	70.06	90
3.3.2	Use of virtual professional networks	11.44	69
	Empowerment		
3.3.3	Delegation of authority	47.18	55
3.3.4	Personal rights	81.01	27
4	**RETAIN**	**60.55**	**42**
4.1	Sustainability	48.11	46
4.1.1	Pension system	80.81	30
4.1.2	Taxation	35.33	94
4.1.3	Brain retention	28.20	101
4.2	Lifestyle	72.99	37
4.2.1	Environmental performance	82.42	37
4.2.2	Personal safety	84.25	24
4.2.3	Physician density	28.47	55
4.2.4	Sanitation	96.82	39
5	**VOCATIONAL AND TECHNICAL SKILLS**	**59.63**	**22**
5.1	Mid-Level Skills	61.29	13
5.1.1	Workforce with secondary education	83.98	8
5.1.2	Population with secondary education	79.73	5
5.1.3	Technicians and associate professionals	51.27	41
5.1.4	Labour productivity per employee	30.19	38
5.2	Employability	57.96	45
5.2.1	Ease of finding skilled employees	53.59	51
5.2.2	Relevance of education system to the economy	43.28	63
5.2.3	Availability of scientists and engineers	52.82	50
5.2.4	Skills gap as major constraint	82.17	35
6	**GLOBAL KNOWLEDGE SKILLS**	**34.52**	**43**
6.1	High-Level Skills	38.67	40
6.1.1	Workforce with tertiary education	50.00	30
6.1.2	Population with tertiary education	7.83	85
6.1.3	Professionals	52.42	21
6.1.4	Researchers	22.29	35
6.1.5	Senior officials and managers	34.27	37
6.1.6	Quality of scientific institutions	48.46	61
6.1.7	Scientific journal articles	55.40	25
6.2	Talent Impact	30.38	47
6.2.1	Innovation output	34.11	55
6.2.2	High-value exports	20.58	47
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	63.92	11
6.2.4	New business density	2.90	81

PORTUGAL

Key Indicators

Rank (out of 118)	**31**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**10.35**
GDP per capita (PPP US$)	**29,214.32**
GDP (US$ billions)	**198.93**
GTCI score	**55.40**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



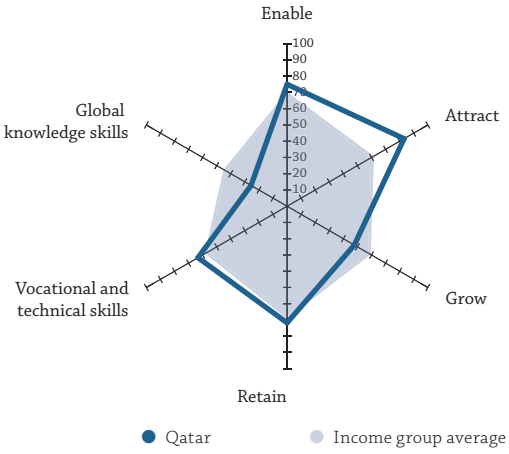
		Score	Rank
1	**ENABLE**	**62.48**	**33**
1.1	Regulatory Landscape	67.58	28
1.1.1	Government effectiveness	65.90	33
1.1.2	Business-government relations	63.11	42
1.1.3	Political stability	82.18	29
1.1.4	Regulatory quality	64.53	37
1.1.5	Corruption	62.16	27
1.2	Market Landscape	65.35	27
1.2.1	Competition intensity	70.98	52
1.2.2	Ease of doing business	81.15	21
1.2.3	Cluster development	52.64	33
1.2.4	R&D expenditure	32.38	26
1.2.5	ICT infrastructure	78.01	31
1.2.6	Technology utilisation	76.94	20
1.3	Business and Labour Landscape	54.53	84
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	60	81
	Management Practice		
1.3.3	Labour-employer cooperation	58.91	46
1.3.4	Professional management	51.77	68
1.3.5	Relationship of pay to productivity	46.28	79
2	**ATTRACT**	**57.00**	**27**
2.1	External Openness	41.22	45
	Attract Business		
2.1.1	FDI and technology transfer	70.22	14
2.1.2	Prevalence of foreign ownership	59.63	57
	Attract People		
2.1.3	Migrant stock	17.69	45
2.1.4	International students	20.28	39
2.1.5	Brain gain	38.26	64
2.2	Internal Openness	72.78	20
	Social Diversity		
2.2.1	Tolerance of minorities	85.56	5
2.2.2	Tolerance of immigrants	96.00	8
2.2.3	Social mobility	55.85	55
	Gender Equality		
2.2.4	Female graduates	77.14	35
2.2.5	Gender earnings gap	69.12	40
2.2.6	Business opportunities for women	53.02	83
3	**GROW**	**56.22**	**27**
3.1	Formal Education	48.26	28
	Enrolment		
3.1.1	Vocational enrolment	58.96	25
3.1.2	Tertiary enrolment	58.75	28
	Quality		
3.1.3	Tertiary education expenditure	21.78	55
3.1.4	Reading, maths, science	62.52	28
3.1.5	University ranking	39.32	34
3.2	Lifelong Learning	53.01	52
3.2.1	Quality of management schools	69.81	25
3.2.2	Prevalence of training in firms	37.60	55
3.2.3	Employee development	51.62	51
3.3	Access to Growth Opportunities	67.38	18
	Networks		
3.3.1	Use of virtual social networks	81.18	42
3.3.2	Use of virtual professional networks	50.71	17
	Empowerment		
3.3.3	Delegation of authority	43.77	71
3.3.4	Personal rights	93.84	7
4	**RETAIN**	**69.58**	**22**
4.1	Sustainability	54.37	34
4.1.1	Pension system	91.92	12
4.1.2	Taxation	31.35	106
4.1.3	Brain retention	39.85	67
4.2	Lifestyle	84.79	9
4.2.1	Environmental performance	96.17	7
4.2.2	Personal safety	90.50	17
4.2.3	Physician density	52.84	10
4.2.4	Sanitation	99.66	15
5	**VOCATIONAL AND TECHNICAL SKILLS**	**49.46**	**50**
5.1	Mid-Level Skills	31.05	73
5.1.1	Workforce with secondary education	31.48	73
5.1.2	Population with secondary education	22.83	83
5.1.3	Technicians and associate professionals	39.59	51
5.1.4	Labour productivity per employee	30.28	37
5.2	Employability	67.88	12
5.2.1	Ease of finding skilled employees	67.89	12
5.2.2	Relevance of education system to the economy	55.10	37
5.2.3	Availability of scientists and engineers	64.74	21
5.2.4	Skills gap as major constraint	83.78	33
6	**GLOBAL KNOWLEDGE SKILLS**	**37.67**	**35**
6.1	High-Level Skills	46.36	29
6.1.1	Workforce with tertiary education	37.22	54
6.1.2	Population with tertiary education	5.82	88
6.1.3	Professionals	43.03	37
6.1.4	Researchers	49.98	19
6.1.5	Senior officials and managers	34.83	35
6.1.6	Quality of scientific institutions	70.74	21
6.1.7	Scientific journal articles	82.87	5
6.2	Talent Impact	28.99	50
6.2.1	Innovation output	47.58	31
6.2.2	High-value exports	11.27	71
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	30.48	66
6.2.4	New business density	26.64	24

QATAR

Key Indicators

Rank (out of 118)	**21**
Income group	**High income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**2.24**
GDP per capita (PPP US$)	**143,788.24**
GDP (US$ billions)	**166.91**
GTCI score	**61.09**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



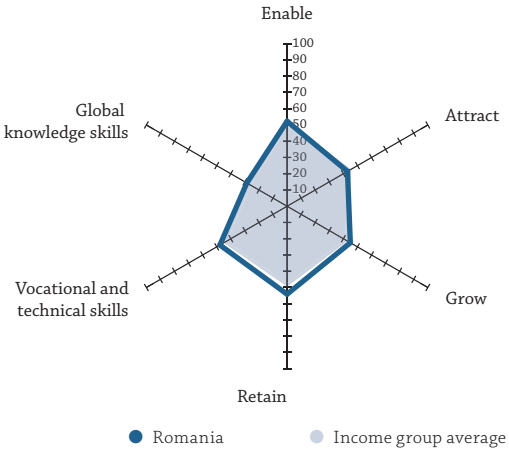
		Score	Rank
1	**ENABLE**	**75.03**	**18**
1.1	Regulatory Landscape	76.41	19
1.1.1	Government effectiveness	65.39	36
1.1.2	Business-government relations	96.63	3
1.1.3	Political stability	87.44	20
1.1.4	Regulatory quality	59.61	46
1.1.5	Corruption	72.97	21
1.2	Market Landscape	63.15	29
1.2.1	Competition intensity	75.82	24
1.2.2	Ease of doing business	58.77	63
1.2.3	Cluster development	71.41	8
1.2.4	R&D expenditure	10.95	59
1.2.5	ICT infrastructure	82.61	19
1.2.6	Technology utilisation	79.33	12
1.3	Business and Labour Landscape	85.52	3
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	76.30	9
1.3.4	Professional management	75.85	19
1.3.5	Relationship of pay to productivity	75.45	1
2	**ATTRACT**	**83.11**	**3**
2.1	External Openness	85.41	4
	Attract Business		
2.1.1	FDI and technology transfer	78.66	4
2.1.2	Prevalence of foreign ownership	66.67	39
	Attract People		
2.1.3	Migrant stock	100.00	1
2.1.4	International students	100.00	1
2.1.5	Brain gain	81.69	5
2.2	Internal Openness	80.81	8
	Social Diversity		
2.2.1	Tolerance of minorities	56.67	38
2.2.2	Tolerance of immigrants	87.60	16
2.2.3	Social mobility	80.62	12
	Gender Equality		
2.2.4	Female graduates	84.69	20
2.2.5	Gender earnings gap	100.00	1
2.2.6	Business opportunities for women	75.27	9
3	**GROW**	**47.77**	**47**
3.1	Formal Education	11.72	104
	Enrolment		
3.1.1	Vocational enrolment	1.39	106
3.1.2	Tertiary enrolment	11.44	94
	Quality		
3.1.3	Tertiary education expenditure	n/a	n/a
3.1.4	Reading, maths, science	4.10	59
3.1.5	University ranking	29.97	44
3.2	Lifelong Learning	76.32	6
3.2.1	Quality of management schools	79.16	7
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	73.49	5
3.3	Access to Growth Opportunities	55.27	43
	Networks		
3.3.1	Use of virtual social networks	88.92	12
3.3.2	Use of virtual professional networks	32.88	28
	Empowerment		
3.3.3	Delegation of authority	72.45	7
3.3.4	Personal rights	26.83	101
4	**RETAIN**	**71.74**	**17**
4.1	Sustainability	55.69	31
4.1.1	Pension system	3.43	101
4.1.2	Taxation	85.47	2
4.1.3	Brain retention	78.18	3
4.2	Lifestyle	87.79	2
4.2.1	Environmental performance	61.29	76
4.2.2	Personal safety	92.13	16
4.2.3	Physician density	100.00	1
4.2.4	Sanitation	97.73	32
5	**VOCATIONAL AND TECHNICAL SKILLS**	**63.29**	**13**
5.1	Mid-Level Skills	50.39	38
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	27.31	69
5.1.3	Technicians and associate professionals	23.86	73
5.1.4	Labour productivity per employee	100.00	1
5.2	Employability	76.19	2
5.2.1	Ease of finding skilled employees	70.35	6
5.2.2	Relevance of education system to the economy	81.35	2
5.2.3	Availability of scientists and engineers	76.88	2
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**25.61**	**70**
6.1	High-Level Skills	29.09	64
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	41.13	22
6.1.3	Professionals	30.00	59
6.1.4	Researchers	7.14	56
6.1.5	Senior officials and managers	15.17	69
6.1.6	Quality of scientific institutions	76.89	14
6.1.7	Scientific journal articles	4.23	99
6.2	Talent Impact	22.12	75
6.2.1	Innovation output	29.98	60
6.2.2	High-value exports	0.78	113
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	48.05	34
6.2.4	New business density	9.69	50

ROMANIA

Key Indicators

Rank (out of 118)	**55**
Income group	**Upper-middle income**
Regional group	**Europe**
Population (millions)	**19.83**
GDP per capita (PPP US$)	**21,403.08**
GDP (US$ billions)	**177.95**
GTCI score	**45.09**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**52.28**	**65**
1.1	Regulatory Landscape	48.45	56
1.1.1	Government effectiveness	36.70	68
1.1.2	Business-government relations	42.05	94
1.1.3	Political stability	63.97	59
1.1.4	Regulatory quality	60.34	44
1.1.5	Corruption	39.19	53
1.2	Market Landscape	51.19	61
1.2.1	Competition intensity	58.58	102
1.2.2	Ease of doing business	73.84	35
1.2.3	Cluster development	44.14	70
1.2.4	R&D expenditure	9.05	64
1.2.5	ICT infrastructure	64.19	53
1.2.6	Technology utilisation	57.31	73
1.3	Business and Labour Landscape	57.19	74
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	52.29	80
1.3.4	Professional management	46.11	85
1.3.5	Relationship of pay to productivity	50.89	62

2	**ATTRACT**	**42.90**	**82**
2.1	External Openness	32.70	78
	Attract Business		
2.1.1	FDI and technology transfer	62.45	43
2.1.2	Prevalence of foreign ownership	54.47	72
	Attract People		
2.1.3	Migrant stock	2.41	89
2.1.4	International students	18.03	47
2.1.5	Brain gain	26.12	92
2.2	Internal Openness	53.10	81
	Social Diversity		
2.2.1	Tolerance of minorities	37.78	73
2.2.2	Tolerance of immigrants	32.63	101
2.2.3	Social mobility	42.30	107
	Gender Equality		
2.2.4	Female graduates	76.97	36
2.2.5	Gender earnings gap	70.93	35
2.2.6	Business opportunities for women	57.97	63

3	**GROW**	**44.93**	**53**
3.1	Formal Education	35.94	47
	Enrolment		
3.1.1	Vocational enrolment	65.70	20
3.1.2	Tertiary enrolment	45.55	50
	Quality		
3.1.3	Tertiary education expenditure	15.82	75
3.1.4	Reading, maths, science	36.09	43
3.1.5	University ranking	16.55	69
3.2	Lifelong Learning	47.56	73
3.2.1	Quality of management schools	47.61	85
3.2.2	Prevalence of training in firms	49.21	39
3.2.3	Employee development	45.87	77
3.3	Access to Growth Opportunities	51.29	54
	Networks		
3.3.1	Use of virtual social networks	76.95	65
3.3.2	Use of virtual professional networks	20.79	48
	Empowerment		
3.3.3	Delegation of authority	43.56	73
3.3.4	Personal rights	63.86	52

4	**RETAIN**	**54.11**	**56**
4.1	Sustainability	41.25	65
4.1.1	Pension system	67.68	36
4.1.2	Taxation	34.51	97
4.1.3	Brain retention	21.55	112
4.2	Lifestyle	66.97	49
4.2.1	Environmental performance	86.11	34
4.2.2	Personal safety	74.07	38
4.2.3	Physician density	31.44	51
4.2.4	Sanitation	76.25	80

5	**VOCATIONAL AND TECHNICAL SKILLS**	**47.72**	**56**
5.1	Mid-Level Skills	47.99	43
5.1.1	Workforce with secondary education	75.77	16
5.1.2	Population with secondary education	64.69	20
5.1.3	Technicians and associate professionals	29.44	66
5.1.4	Labour productivity per employee	22.05	53
5.2	Employability	47.46	90
5.2.1	Ease of finding skilled employees	47.03	73
5.2.2	Relevance of education system to the economy	38.72	78
5.2.3	Availability of scientists and engineers	52.23	54
5.2.4	Skills gap as major constraint	51.88	76

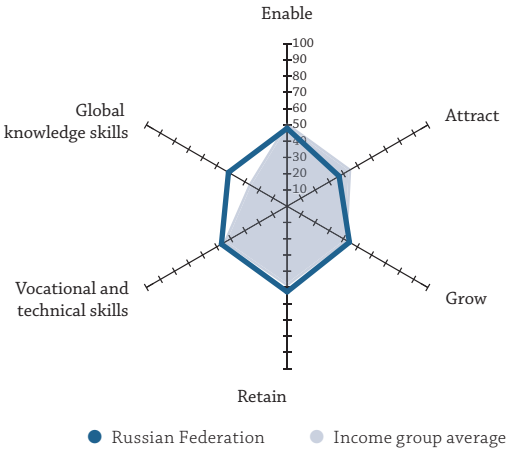
6	**GLOBAL KNOWLEDGE SKILLS**	**28.61**	**60**
6.1	High-Level Skills	28.23	66
6.1.1	Workforce with tertiary education	29.45	73
6.1.2	Population with tertiary education	6.33	86
6.1.3	Professionals	42.42	40
6.1.4	Researchers	11.35	47
6.1.5	Senior officials and managers	11.80	78
6.1.6	Quality of scientific institutions	45.33	68
6.1.7	Scientific journal articles	50.91	30
6.2	Talent Impact	28.99	51
6.2.1	Innovation output	35.19	51
6.2.2	High-value exports	14.15	66
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	43.16	48
6.2.4	New business density	23.45	29

RUSSIAN FEDERATION

Key Indicators

Rank (out of 118)	**56**
Income group	**Upper-middle income**
Regional group	**Europe**
Population (millions)	**144.10**
GDP per capita (PPP US$)	**24,451.37**
GDP (US$ billions)	**1,326.02**
GTCI score	**45.03**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**47.94**	**81**
1.1	Regulatory Landscape	34.88	96
1.1.1	Government effectiveness	34.54	74
1.1.2	Business-government relations	47.01	85
1.1.3	Political stability	40.61	99
1.1.4	Regulatory quality	36.03	97
1.1.5	Corruption	16.22	100
1.2	Market Landscape	53.71	50
1.2.1	Competition intensity	66.23	73
1.2.2	Ease of doing business	68.45	48
1.2.3	Cluster development	35.56	98
1.2.4	R&D expenditure	26.67	32
1.2.5	ICT infrastructure	71.23	40
1.2.6	Technology utilisation	54.11	88
1.3	Business and Labour Landscape	55.23	80
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	60	81
	Management Practice		
1.3.3	Labour-employer cooperation	51.64	85
1.3.4	Professional management	49.49	75
1.3.5	Relationship of pay to productivity	59.34	22

2	**ATTRACT**	**36.97**	**107**
2.1	External Openness	29.65	94
	Attract Business		
2.1.1	FDI and technology transfer	46.18	103
2.1.2	Prevalence of foreign ownership	39.86	107
	Attract People		
2.1.3	Migrant stock	17.75	44
2.1.4	International students	9.41	63
2.1.5	Brain gain	35.05	74
2.2	Internal Openness	44.29	105
	Social Diversity		
2.2.1	Tolerance of minorities	16.67	105
2.2.2	Tolerance of immigrants	31.85	103
2.2.3	Social mobility	49.48	80
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	61.46	59
2.2.6	Business opportunities for women	62.01	46

		Score	Rank
3	**GROW**	**44.29**	**57**
3.1	Formal Education	47.08	30
	Enrolment		
3.1.1	Vocational enrolment	36.50	44
3.1.2	Tertiary enrolment	69.80	17
	Quality		
3.1.3	Tertiary education expenditure	18.38	68
3.1.4	Reading, maths, science	58.74	34
3.1.5	University ranking	52.00	26
3.2	Lifelong Learning	49.85	64
3.2.1	Quality of management schools	45.78	92
3.2.2	Prevalence of training in firms	56.46	31
3.2.3	Employee development	47.29	71
3.3	Access to Growth Opportunities	35.93	106
	Networks		
3.3.1	Use of virtual social networks	77.18	64
3.3.2	Use of virtual professional networks	8.36	77
	Empowerment		
3.3.3	Delegation of authority	43.67	72
3.3.4	Personal rights	14.52	112

4	**RETAIN**	**52.66**	**60**
4.1	Sustainability	44.41	53
4.1.1	Pension system	66.67	37
4.1.2	Taxation	34.14	99
4.1.3	Brain retention	32.42	86
4.2	Lifestyle	60.90	59
4.2.1	Environmental performance	86.64	32
4.2.2	Personal safety	33.01	98
4.2.3	Physician density	55.55	6
4.2.4	Sanitation	68.41	89

5	**VOCATIONAL AND TECHNICAL SKILLS**	**46.65**	**58**
5.1	Mid-Level Skills	44.31	53
5.1.1	Workforce with secondary education	52.09	44
5.1.2	Population with secondary education	30.91	67
5.1.3	Technicians and associate professionals	71.07	21
5.1.4	Labour productivity per employee	23.18	52
5.2	Employability	49.00	82
5.2.1	Ease of finding skilled employees	37.29	109
5.2.2	Relevance of education system to the economy	41.28	71
5.2.3	Availability of scientists and engineers	51.06	62
5.2.4	Skills gap as major constraint	66.35	58

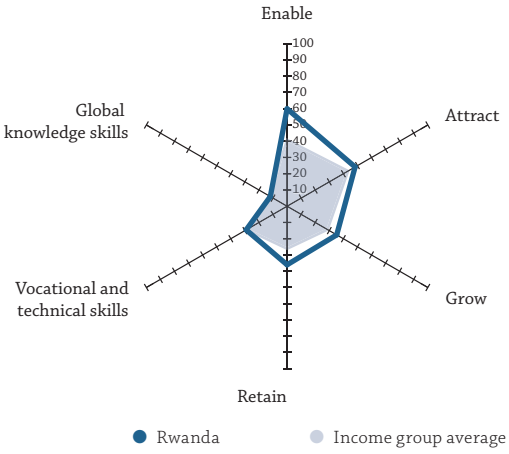
6	**GLOBAL KNOWLEDGE SKILLS**	**41.65**	**28**
6.1	High-Level Skills	57.91	16
6.1.1	Workforce with tertiary education	90.94	2
6.1.2	Population with tertiary education	100.00	1
6.1.3	Professionals	60.30	15
6.1.4	Researchers	37.06	27
6.1.5	Senior officials and managers	48.31	16
6.1.6	Quality of scientific institutions	49.30	56
6.1.7	Scientific journal articles	19.44	58
6.2	Talent Impact	25.39	64
6.2.1	Innovation output	36.62	48
6.2.2	High-value exports	14.91	64
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	25.83	71
6.2.4	New business density	24.20	27

RWANDA

Key Indicators

Rank (out of 118)	**91**
Income group	**Low income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**11.61**
GDP per capita (PPP US$)	**1,758.73**
GDP (US$ billions)	**8.10**
GTCI score	**36.75**
GTCI score (income group average)	**30.03**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**59.95**	**40**
1.1	Regulatory Landscape	57.73	43
1.1.1	Government effectiveness	37.51	67
1.1.2	Business-government relations	91.45	6
1.1.3	Political stability	59.45	70
1.1.4	Regulatory quality	50.26	63
1.1.5	Corruption	50.00	40
1.2	Market Landscape	51.53	57
1.2.1	Competition intensity	67.35	66
1.2.2	Ease of doing business	62.92	58
1.2.3	Cluster development	50.11	41
1.2.4	R&D expenditure	n/a	n/a
1.2.5	ICT infrastructure	11.13	114
1.2.6	Technology utilisation	66.12	46
1.3	Business and Labour Landscape	70.59	24
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	68.55	21
1.3.4	Professional management	61.76	32
1.3.5	Relationship of pay to productivity	52.65	55

2	**ATTRACT**	**48.32**	**54**
2.1	External Openness	39.32	53
	Attract Business		
2.1.1	FDI and technology transfer	64.47	31
2.1.2	Prevalence of foreign ownership	55.72	68
	Attract People		
2.1.3	Migrant stock	8.23	63
2.1.4	International students	4.78	73
2.1.5	Brain gain	63.38	14
2.2	Internal Openness	57.33	58
	Social Diversity		
2.2.1	Tolerance of minorities	16.67	105
2.2.2	Tolerance of immigrants	59.36	59
2.2.3	Social mobility	70.45	26
	Gender Equality		
2.2.4	Female graduates	34.75	91
2.2.5	Gender earnings gap	78.28	27
2.2.6	Business opportunities for women	84.48	1

3	**GROW**	**35.25**	**91**
3.1	Formal Education	11.78	103
	Enrolment		
3.1.1	Vocational enrolment	29.63	56
3.1.2	Tertiary enrolment	3.64	102
	Quality		
3.1.3	Tertiary education expenditure	13.83	83
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	56.86	38
3.2.1	Quality of management schools	51.06	68
3.2.2	Prevalence of training in firms	68.60	17
3.2.3	Employee development	50.91	53
3.3	Access to Growth Opportunities	37.10	103
	Networks		
3.3.1	Use of virtual social networks	69.44	93
3.3.2	Use of virtual professional networks	1.62	105
	Empowerment		
3.3.3	Delegation of authority	46.35	58
3.3.4	Personal rights	31.00	98

4	**RETAIN**	**36.02**	**97**
4.1	Sustainability	42.42	60
4.1.1	Pension system	4.04	99
4.1.2	Taxation	64.58	12
4.1.3	Brain retention	58.65	22
4.2	Lifestyle	29.61	104
4.2.1	Environmental performance	24.71	111
4.2.2	Personal safety	36.94	93
4.2.3	Physician density	0.44	110
4.2.4	Sanitation	56.36	95

5	**VOCATIONAL AND TECHNICAL SKILLS**	**29.07**	**109**
5.1	Mid-Level Skills	4.88	109
5.1.1	Workforce with secondary education	3.34	96
5.1.2	Population with secondary education	6.42	95
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	n/a	n/a
5.2	Employability	53.26	67
5.2.1	Ease of finding skilled employees	48.57	66
5.2.2	Relevance of education system to the economy	52.65	42
5.2.3	Availability of scientists and engineers	49.51	68
5.2.4	Skills gap as major constraint	62.33	62

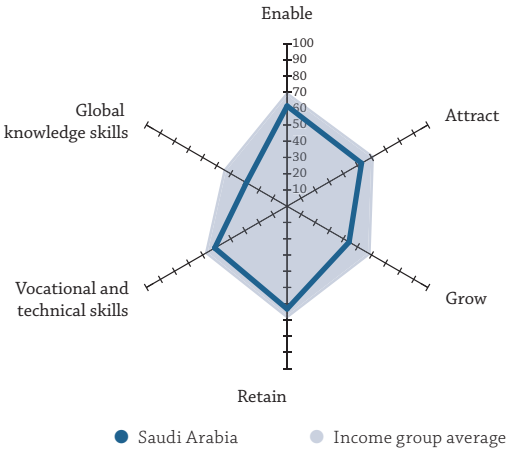
6	**GLOBAL KNOWLEDGE SKILLS**	**11.92**	**107**
6.1	High-Level Skills	9.84	115
6.1.1	Workforce with tertiary education	4.21	97
6.1.2	Population with tertiary education	4.66	91
6.1.3	Professionals	6.06	93
6.1.4	Researchers	0.07	96
6.1.5	Senior officials and managers	0.56	97
6.1.6	Quality of scientific institutions	45.96	66
6.1.7	Scientific journal articles	7.34	83
6.2	Talent Impact	14.00	95
6.2.1	Innovation output	8.98	114
6.2.2	High-value exports	24.56	41
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	8.47	57

SAUDI ARABIA

Key Indicators

Rank (out of 118)	**42**
Income group	**High income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**31.54**
GDP per capita (PPP US$)	**53,430.05**
GDP (US$ billions)	**646**
GTCI score	**50.36**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



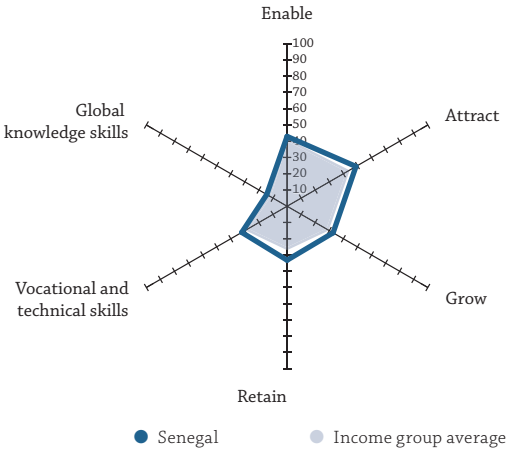
		Score	Rank
1	**ENABLE**	**61.69**	**37**
1.1	Regulatory Landscape	52.76	52
1.1.1	Government effectiveness	43.29	57
1.1.2	Business-government relations	71.56	24
1.1.3	Political stability	55.94	78
1.1.4	Regulatory quality	45.69	70
1.1.5	Corruption	47.30	44
1.2	Market Landscape	55.88	43
1.2.1	Competition intensity	73.13	39
1.2.2	Ease of doing business	53.37	74
1.2.3	Cluster development	60.03	19
1.2.4	R&D expenditure	1.43	99
1.2.5	ICT infrastructure	73.53	35
1.2.6	Technology utilisation	73.82	28
1.3	Business and Labour Landscape	76.44	14
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	62.78	35
1.3.4	Professional management	60.95	37
1.3.5	Relationship of pay to productivity	58.44	25
2	**ATTRACT**	**52.89**	**38**
2.1	External Openness	54.91	16
	Attract Business		
2.1.1	FDI and technology transfer	68.70	17
2.1.2	Prevalence of foreign ownership	47.73	94
	Attract People		
2.1.3	Migrant stock	71.10	10
2.1.4	International students	24.86	31
2.1.5	Brain gain	62.18	17
2.2	Internal Openness	50.87	92
	Social Diversity		
2.2.1	Tolerance of minorities	25.56	92
2.2.2	Tolerance of immigrants	70.51	39
2.2.3	Social mobility	69.43	29
	Gender Equality		
2.2.4	Female graduates	51.73	80
2.2.5	Gender earnings gap	44.36	100
2.2.6	Business opportunities for women	43.61	108
3	**GROW**	**44.06**	**59**
3.1	Formal Education	37.98	42
	Enrolment		
3.1.1	Vocational enrolment	11.54	80
3.1.2	Tertiary enrolment	53.95	40
	Quality		
3.1.3	Tertiary education expenditure	n/a	n/a
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	48.47	29
3.2	Lifelong Learning	53.37	48
3.2.1	Quality of management schools	54.95	57
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	51.78	50
3.3	Access to Growth Opportunities	40.84	93
	Networks		
3.3.1	Use of virtual social networks	84.02	30
3.3.2	Use of virtual professional networks	17.87	57
	Empowerment		
3.3.3	Delegation of authority	56.54	28
3.3.4	Personal rights	4.93	113
4	**RETAIN**	**63.20**	**35**
4.1	Sustainability	62.61	18
4.1.1	Pension system	n/a	n/a
4.1.2	Taxation	65.46	10
4.1.3	Brain retention	59.76	20
4.2	Lifestyle	63.80	56
4.2.1	Environmental performance	58.85	82
4.2.2	Personal safety	64.36	50
4.2.3	Physician density	31.99	49
4.2.4	Sanitation	100.00	1
5	**VOCATIONAL AND TECHNICAL SKILLS**	**51.42**	**41**
5.1	Mid-Level Skills	50.98	33
5.1.1	Workforce with secondary education	36.63	67
5.1.2	Population with secondary education	32.43	62
5.1.3	Technicians and associate professionals	53.81	37
5.1.4	Labour productivity per employee	81.04	3
5.2	Employability	51.86	72
5.2.1	Ease of finding skilled employees	46.14	78
5.2.2	Relevance of education system to the economy	51.71	43
5.2.3	Availability of scientists and engineers	57.74	37
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**28.90**	**57**
6.1	High-Level Skills	30.18	61
6.1.1	Workforce with tertiary education	33.33	63
6.1.2	Population with tertiary education	34.03	32
6.1.3	Professionals	35.45	50
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	18.54	64
6.1.6	Quality of scientific institutions	51.18	47
6.1.7	Scientific journal articles	8.53	79
6.2	Talent Impact	27.63	57
6.2.1	Innovation output	37.88	43
6.2.2	High-value exports	1.66	111
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	43.34	47
6.2.4	New business density	n/a	n/a

SENEGAL

Key Indicators

Rank (out of 118)	**100**
Income group	**Low income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**15.13**
GDP per capita (PPP US$)	**2,430.80**
GDP (US$ billions)	**13.78**
GTCI score	**34.07**
GTCI score (income group average)	**30.03**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**42.95**	**98**
1.1	Regulatory Landscape	45.66	68
1.1.1	Government effectiveness	25.53	90
1.1.2	Business-government relations	67.06	34
1.1.3	Political stability	58.76	72
1.1.4	Regulatory quality	40.48	82
1.1.5	Corruption	36.49	56
1.2	Market Landscape	39.65	100
1.2.1	Competition intensity	65.80	76
1.2.2	Ease of doing business	25.20	111
1.2.3	Cluster development	43.39	73
1.2.4	R&D expenditure	12.62	54
1.2.5	ICT infrastructure	23.53	102
1.2.6	Technology utilisation	67.38	40
1.3	Business and Labour Landscape	43.53	109
	Labour Market Flexibility		
1.3.1	Ease of hiring	0.00	115
1.3.2	Ease of redundancy	.60	81
	Management Practice		
1.3.3	Labour-employer cooperation	56.10	57
1.3.4	Professional management	53.14	64
1.3.5	Relationship of pay to productivity	48.41	68
2	**ATTRACT**	**48.93**	**50**
2.1	External Openness	38.89	54
	Attract Business		
2.1.1	FDI and technology transfer	51.02	86
2.1.2	Prevalence of foreign ownership	59.90	54
	Attract People		
2.1.3	Migrant stock	3.68	82
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	40.95	55
2.2	Internal Openness	58.97	48
	Social Diversity		
2.2.1	Tolerance of minorities	37.78	73
2.2.2	Tolerance of immigrants	81.93	23
2.2.3	Social mobility	54.37	61
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	58.89	74
2.2.6	Business opportunities for women	61.90	48

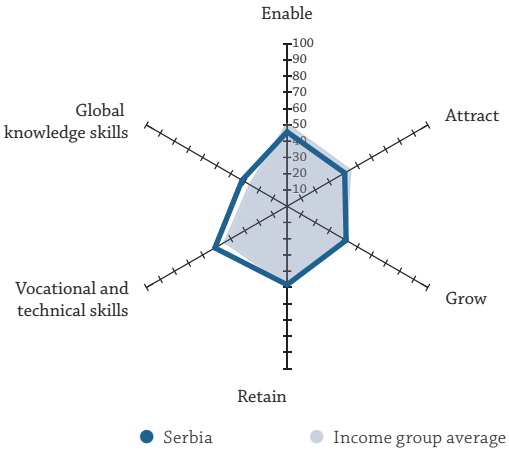
		Score	Rank
3	**GROW**	**32.69**	**97**
3.1	Formal Education	11.13	106
	Enrolment		
3.1.1	Vocational enrolment	9.61	86
3.1.2	Tertiary enrolment	3.51	103
	Quality		
3.1.3	Tertiary education expenditure	31.39	24
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	42.93	89
3.2.1	Quality of management schools	61.95	36
3.2.2	Prevalence of training in firms	18.47	82
3.2.3	Employee development	48.36	67
3.3	Access to Growth Opportunities	44.02	81
	Networks		
3.3.1	Use of virtual social networks	69.88	91
3.3.2	Use of virtual professional networks	4.84	91
	Empowerment		
3.3.3	Delegation of authority	42.94	79
3.3.4	Personal rights	58.42	62
4	**RETAIN**	**33.18**	**103**
4.1	Sustainability	30.29	107
4.1.1	Pension system	4.04	99
4.1.2	Taxation	49.53	41
4.1.3	Brain retention	37.29	75
4.2	Lifestyle	36.08	98
4.2.1	Environmental performance	49.70	97
4.2.2	Personal safety	53.69	68
4.2.3	Physician density	0.48	109
4.2.4	Sanitation	40.45	101
5	**VOCATIONAL AND TECHNICAL SKILLS**	**32.19**	**102**
5.1	Mid-Level Skills	3.79	111
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	5.45	97
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	2.13	93
5.2	Employability	60.59	41
5.2.1	Ease of finding skilled employees	59.17	33
5.2.2	Relevance of education system to the economy	45.91	54
5.2.3	Availability of scientists and engineers	49.20	69
5.2.4	Skills gap as major constraint	88.07	21
6	**GLOBAL KNOWLEDGE SKILLS**	**14.46**	**99**
6.1	High-Level Skills	19.04	85
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	3.01	95
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	4.29	64
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	54.40	38
6.1.7	Scientific journal articles	14.45	65
6.2	Talent Impact	9.88	106
6.2.1	Innovation output	26.75	69
6.2.2	High-value exports	8.74	88
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	2.48	89
6.2.4	New business density	1.57	86

SERBIA

Key Indicators

Rank (out of 118)	**60**
Income group	**Upper-middle income**
Regional group	**Europe**
Population (millions)	**7.10**
GDP per capita (PPP US$)	**13,481.94**
GDP (US$ billions)	**36.51**
GTCI score	**43.38**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**45.73**	**89**
1.1	Regulatory Landscape	45.41	70
1.1.1	Government effectiveness	39.42	64
1.1.2	Business-government relations	40.63	96
1.1.3	Political stability	66.56	54
1.1.4	Regulatory quality	49.36	65
1.1.5	Corruption	31.08	65
1.2	Market Landscape	48.26	71
1.2.1	Competition intensity	54.58	111
1.2.2	Ease of doing business	63.48	55
1.2.3	Cluster development	35.39	100
1.2.4	R&D expenditure	17.14	44
1.2.5	ICT infrastructure	71.74	39
1.2.6	Technology utilisation	47.25	111
1.3	Business and Labour Landscape	43.53	111
	Labour Market Flexibility		
1.3.1	Ease of hiring	22.33	104
1.3.2	Ease of redundancy	80	46
	Management Practice		
1.3.3	Labour-employer cooperation	39.17	115
1.3.4	Professional management	36.57	114
1.3.5	Relationship of pay to productivity	39.56	101
2	**ATTRACT**	**40.92**	**95**
2.1	External Openness	29.53	96
	Attract Business		
2.1.1	FDI and technology transfer	46.76	100
2.1.2	Prevalence of foreign ownership	51.25	85
	Attract People		
2.1.3	Migrant stock	19.97	41
2.1.4	International students	18.98	43
2.1.5	Brain gain	10.67	117
2.2	Internal Openness	52.31	85
	Social Diversity		
2.2.1	Tolerance of minorities	22.22	98
2.2.2	Tolerance of immigrants	67.92	48
2.2.3	Social mobility	34.39	116
	Gender Equality		
2.2.4	Female graduates	72.31	49
2.2.5	Gender earnings gap	65.82	47
2.2.6	Business opportunities for women	51.20	91

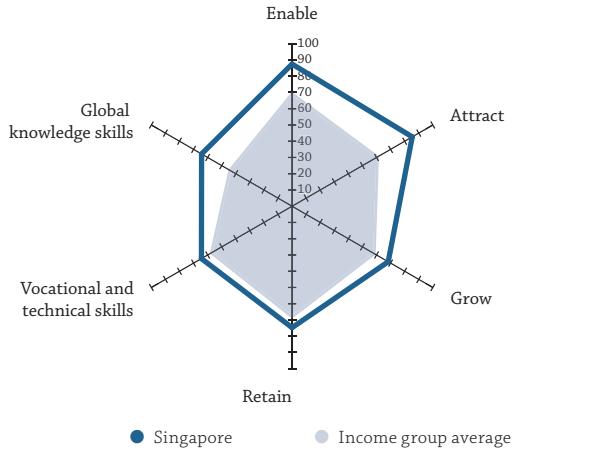
		Score	Rank
3	**GROW**	**41.97**	**66**
3.1	Formal Education	42.45	38
	Enrolment		
3.1.1	Vocational enrolment	79.56	7
3.1.2	Tertiary enrolment	51.08	42
	Quality		
3.1.3	Tertiary education expenditure	29.11	31
3.1.4	Reading, maths, science	39.58	39
3.1.5	University ranking	12.92	72
3.2	Lifelong Learning	39.42	101
3.2.1	Quality of management schools	39.41	105
3.2.2	Prevalence of training in firms	45.38	43
3.2.3	Employee development	33.46	115
3.3	Access to Growth Opportunities	44.05	80
	Networks		
3.3.1	Use of virtual social networks	76.92	66
3.3.2	Use of virtual professional networks	13.80	65
	Empowerment		
3.3.3	Delegation of authority	31.27	116
3.3.4	Personal rights	54.21	68
4	**RETAIN**	**48.33**	**69**
4.1	Sustainability	28.29	112
4.1.1	Pension system	44.44	53
4.1.2	Taxation	29.25	108
4.1.3	Brain retention	11.18	118
4.2	Lifestyle	68.37	44
4.2.1	Environmental performance	77.58	46
4.2.2	Personal safety	72.90	39
4.2.3	Physician density	27.08	58
4.2.4	Sanitation	95.91	43
5	**VOCATIONAL AND TECHNICAL SKILLS**	**51.30**	**42**
5.1	Mid-Level Skills	50.93	34
5.1.1	Workforce with secondary education	44.57	59
5.1.2	Population with secondary education	68.19	17
5.1.3	Technicians and associate professionals	69.04	23
5.1.4	Labour productivity per employee	21.94	54
5.2	Employability	51.67	73
5.2.1	Ease of finding skilled employees	40.32	101
5.2.2	Relevance of education system to the economy	34.28	97
5.2.3	Availability of scientists and engineers	46.81	78
5.2.4	Skills gap as major constraint	85.25	28
6	**GLOBAL KNOWLEDGE SKILLS**	**32.00**	**51**
6.1	High-Level Skills	40.37	36
6.1.1	Workforce with tertiary education	34.47	60
6.1.2	Population with tertiary education	28.98	46
6.1.3	Professionals	35.76	49
6.1.4	Researchers	16.61	41
6.1.5	Senior officials and managers	28.65	47
6.1.6	Quality of scientific institutions	46.05	65
6.1.7	Scientific journal articles	92.06	2
6.2	Talent Impact	23.63	69
6.2.1	Innovation output	32.85	57
6.2.2	High-value exports	11.53	70
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	40.90	50
6.2.4	New business density	9.23	52

SINGAPORE

Key Indicators

Rank (out of 118)	**2**
Income group	**High income**
Regional group	**Eastern, Southeastern Asia and Oceania**
Population (millions)	**5.54**
GDP per capita (PPP US$)	**85,208.81**
GDP (US$ billions)	**292.74**
GTCI score	**74.09**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**87.46**	**1**
1.1	Regulatory Landscape	97.02	1
1.1.1	Government effectiveness	100.00	1
1.1.2	Business-government relations	100.00	1
1.1.3	Political stability	93.20	8
1.1.4	Regulatory quality	100.00	1
1.1.5	Corruption	91.89	8
1.2	Market Landscape	76.69	8
1.2.1	Competition intensity	76.29	20
1.2.2	Ease of doing business	100.00	1
1.2.3	Cluster development	68.81	12
1.2.4	R&D expenditure	47.38	17
1.2.5	ICT infrastructure	89.13	13
1.2.6	Technology utilisation	78.54	16
1.3	Business and Labour Landscape	88.66	1
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	84.12	3
1.3.4	Professional management	85.38	5
1.3.5	Relationship of pay to productivity	73.81	2
2	**ATTRACT**	**85.37**	**1**
2.1	External Openness	90.05	1
	Attract Business		
2.1.1	FDI and technology transfer	82.87	2
2.1.2	Prevalence of foreign ownership	84.50	4
	Attract People		
2.1.3	Migrant stock	100.00	1
2.1.4	International students	100.00	1
2.1.5	Brain gain	82.86	2
2.2	Internal Openness	80.70	9
	Social Diversity		
2.2.1	Tolerance of minorities	80.00	8
2.2.2	Tolerance of immigrants	60.83	55
2.2.3	Social mobility	84.28	6
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	100.00	1
2.2.6	Business opportunities for women	78.41	5

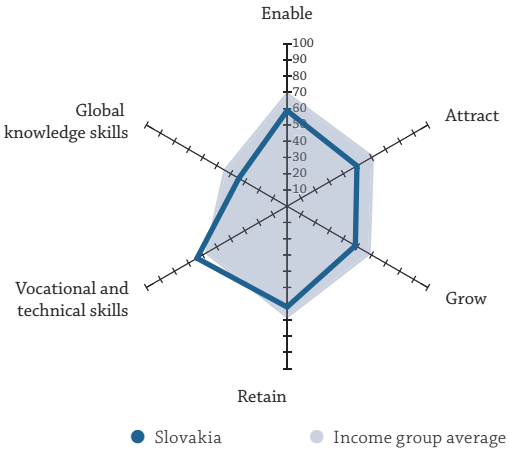
		Score	Rank
3	**GROW**	**68.29**	**13**
3.1	Formal Education	60.47	10
	Enrolment		
3.1.1	Vocational enrolment	24.78	62
3.1.2	Tertiary enrolment	n/a	n/a
	Quality		
3.1.3	Tertiary education expenditure	22.20	54
3.1.4	Reading, maths, science	100.00	1
3.1.5	University ranking	94.90	3
3.2	Lifelong Learning	77.62	2
3.2.1	Quality of management schools	81.51	4
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	73.74	4
3.3	Access to Growth Opportunities	66.77	19
	Networks		
3.3.1	Use of virtual social networks	89.79	8
3.3.2	Use of virtual professional networks	67.96	12
	Empowerment		
3.3.3	Delegation of authority	61.71	21
3.3.4	Personal rights	47.62	75
4	**RETAIN**	**74.69**	**7**
4.1	Sustainability	72.89	6
4.1.1	Pension system	61.62	41
4.1.2	Taxation	84.09	3
4.1.3	Brain retention	72.96	6
4.2	Lifestyle	76.48	27
4.2.1	Environmental performance	93.21	14
4.2.2	Personal safety	87.73	21
4.2.3	Physician density	24.98	62
4.2.4	Sanitation	100.00	1
5	**VOCATIONAL AND TECHNICAL SKILLS**	**64.42**	**8**
5.1	Mid-Level Skills	57.71	23
5.1.1	Workforce with secondary education	39.28	63
5.1.2	Population with secondary education	25.90	72
5.1.3	Technicians and associate professionals	100.00	1
5.1.4	Labour productivity per employee	65.65	6
5.2	Employability	71.13	7
5.2.1	Ease of finding skilled employees	65.03	21
5.2.2	Relevance of education system to the economy	80.76	3
5.2.3	Availability of scientists and engineers	67.59	11
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**64.31**	**1**
6.1	High-Level Skills	70.42	1
6.1.1	Workforce with tertiary education	80.58	5
6.1.2	Population with tertiary education	71.74	5
6.1.3	Professionals	41.52	41
6.1.4	Researchers	77.77	7
6.1.5	Senior officials and managers	100.00	1
6.1.6	Quality of scientific institutions	77.49	12
6.1.7	Scientific journal articles	43.82	39
6.2	Talent Impact	58.19	6
6.2.1	Innovation output	60.50	19
6.2.2	High-value exports	68.38	3
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	48.88	33
6.2.4	New business density	55.02	10

SLOVAKIA

Key Indicators

Rank (out of 118)	**37**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**5.42**
GDP per capita (PPP US$)	**28,877.35**
GDP (US$ billions)	**86.58**
GTCI score	**52.87**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**58.80**	**45**
1.1	Regulatory Landscape	57.68	44
1.1.1	Government effectiveness	61.89	38
1.1.2	Business-government relations	24.99	115
1.1.3	Political stability	87.98	17
1.1.4	Regulatory quality	67.62	34
1.1.5	Corruption	45.95	46
1.2	Market Landscape	58.77	36
1.2.1	Competition intensity	75.62	26
1.2.2	Ease of doing business	77.39	27
1.2.3	Cluster development	48.00	52
1.2.4	R&D expenditure	19.52	38
1.2.5	ICT infrastructure	68.67	45
1.2.6	Technology utilisation	63.44	54
1.3	Business and Labour Landscape	59.95	64
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	51.02	88
1.3.4	Professional management	55.44	55
1.3.5	Relationship of pay to productivity	56.60	34

2	**ATTRACT**	**49.63**	**45**
2.1	External Openness	41.98	43
	Attract Business		
2.1.1	FDI and technology transfer	71.78	10
2.1.2	Prevalence of foreign ownership	84.14	5
	Attract People		
2.1.3	Migrant stock	7.05	68
2.1.4	International students	25.20	30
2.1.5	Brain gain	21.72	108
2.2	Internal Openness	57.29	60
	Social Diversity		
2.2.1	Tolerance of minorities	48.89	50
2.2.2	Tolerance of immigrants	41.89	91
2.2.3	Social mobility	54.72	60
	Gender Equality		
2.2.4	Female graduates	86.56	14
2.2.5	Gender earnings gap	57.41	82
2.2.6	Business opportunities for women	54.27	75

3	**GROW**	**48.51**	**44**
3.1	Formal Education	42.62	36
	Enrolment		
3.1.1	Vocational enrolment	69.18	16
3.1.2	Tertiary enrolment	47.68	47
	Quality		
3.1.3	Tertiary education expenditure	20.09	61
3.1.4	Reading, maths, science	53.57	36
3.1.5	University ranking	22.60	57
3.2	Lifelong Learning	49.26	67
3.2.1	Quality of management schools	47.16	86
3.2.2	Prevalence of training in firms	52.90	32
3.2.3	Employee development	47.71	70
3.3	Access to Growth Opportunities	53.66	48
	Networks		
3.3.1	Use of virtual social networks	78.47	56
3.3.2	Use of virtual professional networks	15.32	63
	Empowerment		
3.3.3	Delegation of authority	42.31	83
3.3.4	Personal rights	78.55	32

4	**RETAIN**	**61.99**	**38**
4.1	Sustainability	43.81	54
4.1.1	Pension system	78.79	31
4.1.2	Taxation	28.40	110
4.1.3	Brain retention	24.24	109
4.2	Lifestyle	80.16	18
4.2.1	Environmental performance	90.18	24
4.2.2	Personal safety	89.10	20
4.2.3	Physician density	42.74	27
4.2.4	Sanitation	98.64	27

5	**VOCATIONAL AND TECHNICAL SKILLS**	**63.99**	**9**
5.1	Mid-Level Skills	79.14	2
5.1.1	Workforce with secondary education	98.05	4
5.1.2	Population with secondary education	93.14	2
5.1.3	Technicians and associate professionals	91.37	5
5.1.4	Labour productivity per employee	34.00	33
5.2	Employability	48.84	84
5.2.1	Ease of finding skilled employees	43.40	96
5.2.2	Relevance of education system to the economy	29.88	107
5.2.3	Availability of scientists and engineers	47.41	76
5.2.4	Skills gap as major constraint	74.66	50

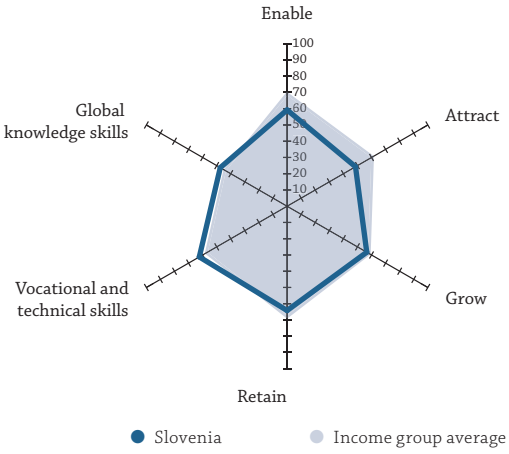
6	**GLOBAL KNOWLEDGE SKILLS**	**34.31**	**45**
6.1	High-Level Skills	34.32	50
6.1.1	Workforce with tertiary education	33.66	61
6.1.2	Population with tertiary education	4.06	94
6.1.3	Professionals	35.15	51
6.1.4	Researchers	32.77	29
6.1.5	Senior officials and managers	29.78	45
6.1.6	Quality of scientific institutions	48.76	60
6.1.7	Scientific journal articles	56.06	23
6.2	Talent Impact	34.31	35
6.2.1	Innovation output	43.27	37
6.2.2	High-value exports	28.66	30
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	47.48	35
6.2.4	New business density	17.82	35

SLOVENIA

Key Indicators

Rank (out of 118)	**27**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**2.06**
GDP per capita (PPP US$)	**31,122.42**
GDP (US$ billions)	**42.75**
GTCI score	**56.41**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



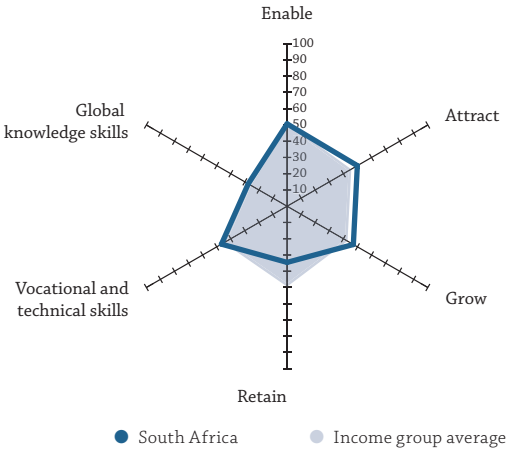
		Score	Rank
1	**ENABLE**	**59.25**	**42**
1.1	Regulatory Landscape	60.02	41
1.1.1	Government effectiveness	65.86	34
1.1.2	Business-government relations	32.04	111
1.1.3	Political stability	82.18	28
1.1.4	Regulatory quality	61.94	41
1.1.5	Corruption	58.11	33
1.2	Market Landscape	65.72	26
1.2.1	Competition intensity	68.69	61
1.2.2	Ease of doing business	77.39	27
1.2.3	Cluster development	40.94	85
1.2.4	R&D expenditure	61.43	11
1.2.5	ICT infrastructure	80.18	24
1.2.6	Technology utilisation	65.72	48
1.3	Business and Labour Landscape	52.00	91
	Labour Market Flexibility		
1.3.1	Ease of hiring	22.33	104
1.3.2	Ease of redundancy	90	35
	Management Practice		
1.3.3	Labour-employer cooperation	50.01	93
1.3.4	Professional management	50.59	73
1.3.5	Relationship of pay to productivity	47.06	73
2	**ATTRACT**	**48.61**	**53**
2.1	External Openness	30.67	88
	Attract Business		
2.1.1	FDI and technology transfer	51.23	85
2.1.2	Prevalence of foreign ownership	37.91	113
	Attract People		
2.1.3	Migrant stock	25.03	34
2.1.4	International students	13.50	54
2.1.5	Brain gain	25.69	97
2.2	Internal Openness	66.55	27
	Social Diversity		
2.2.1	Tolerance of minorities	71.11	15
2.2.2	Tolerance of immigrants	53.90	67
2.2.3	Social mobility	52.84	69
	Gender Equality		
2.2.4	Female graduates	78.34	31
2.2.5	Gender earnings gap	80.30	22
2.2.6	Business opportunities for women	62.80	42
3	**GROW**	**56.60**	**26**
3.1	Formal Education	57.34	15
	Enrolment		
3.1.1	Vocational enrolment	89.03	3
3.1.2	Tertiary enrolment	76.58	7
	Quality		
3.1.3	Tertiary education expenditure	26.83	38
3.1.4	Reading, maths, science	68.51	20
3.1.5	University ranking	25.73	51
3.2	Lifelong Learning	53.04	51
3.2.1	Quality of management schools	58.25	43
3.2.2	Prevalence of training in firms	50.26	38
3.2.3	Employee development	50.61	54
3.3	Access to Growth Opportunities	59.43	32
	Networks		
3.3.1	Use of virtual social networks	80.17	46
3.3.2	Use of virtual professional networks	28.18	33
	Empowerment		
3.3.3	Delegation of authority	48.36	47
3.3.4	Personal rights	81.01	27
4	**RETAIN**	**64.16**	**33**
4.1	Sustainability	47.05	47
4.1.1	Pension system	86.87	23
4.1.2	Taxation	21.33	117
4.1.3	Brain retention	32.96	85
4.2	Lifestyle	81.26	16
4.2.1	Environmental performance	96.83	5
4.2.2	Personal safety	96.91	9
4.2.3	Physician density	32.32	48
4.2.4	Sanitation	98.98	23
5	**VOCATIONAL AND TECHNICAL SKILLS**	**62.37**	**15**
5.1	Mid-Level Skills	63.15	9
5.1.1	Workforce with secondary education	77.16	13
5.1.2	Population with secondary education	77.20	6
5.1.3	Technicians and associate professionals	65.99	27
5.1.4	Labour productivity per employee	32.25	35
5.2	Employability	61.59	38
5.2.1	Ease of finding skilled employees	54.68	47
5.2.2	Relevance of education system to the economy	51.25	45
5.2.3	Availability of scientists and engineers	51.17	60
5.2.4	Skills gap as major constraint	89.28	17
6	**GLOBAL KNOWLEDGE SKILLS**	**47.47**	**20**
6.1	High-Level Skills	55.56	20
6.1.1	Workforce with tertiary education	49.68	32
6.1.2	Population with tertiary education	19.48	69
6.1.3	Professionals	59.09	16
6.1.4	Researchers	50.88	17
6.1.5	Senior officials and managers	46.63	19
6.1.6	Quality of scientific institutions	63.16	29
6.1.7	Scientific journal articles	100.00	1
6.2	Talent Impact	39.39	26
6.2.1	Innovation output	55.48	26
6.2.2	High-value exports	29.04	27
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	47.45	36
6.2.4	New business density	25.59	25

SOUTH AFRICA

Key Indicators

Rank (out of 118)	**67**
Income group	**Upper-middle income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**54.96**
GDP per capita (PPP US$)	**13,165.15**
GDP (US$ billions)	**312.80**
GTCI score	**42.75**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**50.69**	**71**
1.1	Regulatory Landscape	46.75	62
1.1.1	Government effectiveness	46.26	51
1.1.2	Business-government relations	37.27	101
1.1.3	Political stability	60.07	69
1.1.4	Regulatory quality	53.67	58
1.1.5	Corruption	36.49	56
1.2	Market Landscape	53.40	53
1.2.1	Competition intensity	72.53	42
1.2.2	Ease of doing business	56.69	68
1.2.3	Cluster development	53.58	31
1.2.4	R&D expenditure	17.14	44
1.2.5	ICT infrastructure	46.55	73
1.2.6	Technology utilisation	73.91	26
1.3	Business and Labour Landscape	51.92	92
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	24.51	118
1.3.4	Professional management	72.95	23
1.3.5	Relationship of pay to productivity	36.50	109

2	**ATTRACT**	**49.91**	**44**
2.1	External Openness	40.90	48
	Attract Business		
2.1.1	FDI and technology transfer	58.39	62
2.1.2	Prevalence of foreign ownership	66.15	43
	Attract People		
2.1.3	Migrant stock	12.57	50
2.1.4	International students	21.17	34
2.1.5	Brain gain	46.21	41
2.2	Internal Openness	58.91	50
	Social Diversity		
2.2.1	Tolerance of minorities	46.67	55
2.2.2	Tolerance of immigrants	48.19	76
2.2.3	Social mobility	58.37	47
	Gender Equality		
2.2.4	Female graduates	78.84	29
2.2.5	Gender earnings gap	59.48	69
2.2.6	Business opportunities for women	61.94	47

3	**GROW**	**47.08**	**48**
3.1	Formal Education	22.88	72
	Enrolment		
3.1.1	Vocational enrolment	14.78	78
3.1.2	Tertiary enrolment	15.04	90
	Quality		
3.1.3	Tertiary education expenditure	14.69	81
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	47.02	31
3.2	Lifelong Learning	59.62	33
3.2.1	Quality of management schools	70.52	23
3.2.2	Prevalence of training in firms	44.06	44
3.2.3	Employee development	64.29	19
3.3	Access to Growth Opportunities	58.72	35
	Networks		
3.3.1	Use of virtual social networks	75.68	71
3.3.2	Use of virtual professional networks	26.57	37
	Empowerment		
3.3.3	Delegation of authority	57.74	25
3.3.4	Personal rights	74.90	35

4	**RETAIN**	**34.55**	**101**
4.1	Sustainability	34.38	96
4.1.1	Pension system	5.05	97
4.1.2	Taxation	55.35	24
4.1.3	Brain retention	42.74	52
4.2	Lifestyle	34.73	99
4.2.1	Environmental performance	62.37	72
4.2.2	Personal safety	4.96	114
4.2.3	Physician density	9.77	87
4.2.4	Sanitation	61.82	91

5	**VOCATIONAL AND TECHNICAL SKILLS**	**46.63**	**59**
5.1	Mid-Level Skills	45.36	47
5.1.1	Workforce with secondary education	40.67	61
5.1.2	Population with secondary education	68.60	15
5.1.3	Technicians and associate professionals	52.28	40
5.1.4	Labour productivity per employee	19.90	57
5.2	Employability	47.90	89
5.2.1	Ease of finding skilled employees	42.07	99
5.2.2	Relevance of education system to the economy	20.82	116
5.2.3	Availability of scientists and engineers	39.99	98
5.2.4	Skills gap as major constraint	88.74	19

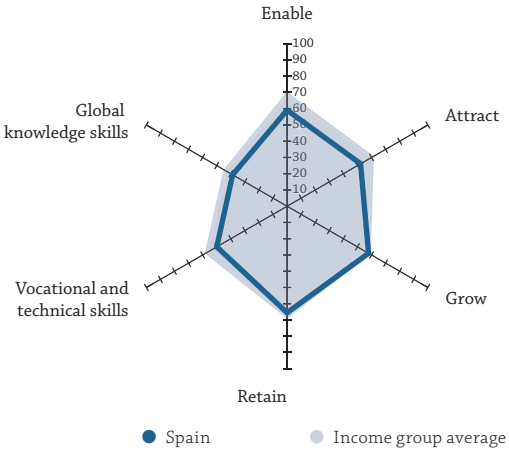
6	**GLOBAL KNOWLEDGE SKILLS**	**27.61**	**63**
6.1	High-Level Skills	29.18	63
6.1.1	Workforce with tertiary education	27.51	76
6.1.2	Population with tertiary education	22.25	60
6.1.3	Professionals	17.88	79
6.1.4	Researchers	4.82	61
6.1.5	Senior officials and managers	45.51	21
6.1.6	Quality of scientific institutions	61.21	31
6.1.7	Scientific journal articles	25.07	51
6.2	Talent Impact	26.04	63
6.2.1	Innovation output	30.16	59
6.2.2	High-value exports	10.60	73
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	53.00	26
6.2.4	New business density	10.39	47

SPAIN

Key Indicators

Rank (out of 118)	**35**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**46.42**
GDP per capita (PPP US$)	**34,526.50**
GDP (US$ billions)	**1,199.06**
GTCI score	**53.90**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**59.15**	**43**
1.1	Regulatory Landscape	64.52	36
1.1.1	Government effectiveness	70.05	25
1.1.2	Business-government relations	62.37	45
1.1.3	Political stability	70.05	48
1.1.4	Regulatory quality	64.72	36
1.1.5	Corruption	55.41	34
1.2	Market Landscape	62.36	32
1.2.1	Competition intensity	76.86	17
1.2.2	Ease of doing business	75.92	31
1.2.3	Cluster development	48.72	48
1.2.4	R&D expenditure	29.29	29
1.2.5	ICT infrastructure	78.39	29
1.2.6	Technology utilisation	65.00	49
1.3	Business and Labour Landscape	50.57	96
	Labour Market Flexibility		
1.3.1	Ease of hiring	22.33	104
1.3.2	Ease of redundancy	.80	46
	Management Practice		
1.3.3	Labour-employer cooperation	52.90	75
1.3.4	Professional management	57.63	45
1.3.5	Relationship of pay to productivity	40.01	99

2	**ATTRACT**	**52.21**	**41**
2.1	External Openness	40.65	50
	Attract Business		
2.1.1	FDI and technology transfer	63.43	37
2.1.2	Prevalence of foreign ownership	66.56	40
	Attract People		
2.1.3	Migrant stock	27.84	29
2.1.4	International students	14.75	51
2.1.5	Brain gain	30.68	81
2.2	Internal Openness	63.78	32
	Social Diversity		
2.2.1	Tolerance of minorities	43.33	61
2.2.2	Tolerance of immigrants	96.89	6
2.2.3	Social mobility	59.81	43
	Gender Equality		
2.2.4	Female graduates	68.13	63
2.2.5	Gender earnings gap	64.65	51
2.2.6	Business opportunities for women	49.85	94

3	**GROW**	**57.88**	**23**
3.1	Formal Education	50.99	25
	Enrolment		
3.1.1	Vocational enrolment	35.58	47
3.1.2	Tertiary enrolment	78.32	5
	Quality		
3.1.3	Tertiary education expenditure	20.87	59
3.1.4	Reading, maths, science	63.37	26
3.1.5	University ranking	56.81	20
3.2	Lifelong Learning	61.86	28
3.2.1	Quality of management schools	79.18	6
3.2.2	Prevalence of training in firms	63.19	24
3.2.3	Employee development	43.21	90
3.3	Access to Growth Opportunities	60.80	29
	Networks		
3.3.1	Use of virtual social networks	76.50	67
3.3.2	Use of virtual professional networks	41.54	24
	Empowerment		
3.3.3	Delegation of authority	41.69	85
3.3.4	Personal rights	83.47	24

4	**RETAIN**	**65.53**	**30**
4.1	Sustainability	45.64	51
4.1.1	Pension system	68.69	35
4.1.2	Taxation	32.71	103
4.1.3	Brain retention	35.54	81
4.2	Lifestyle	85.42	7
4.2.1	Environmental performance	96.70	6
4.2.2	Personal safety	81.26	26
4.2.3	Physician density	63.85	3
4.2.4	Sanitation	99.89	12

5	**VOCATIONAL AND TECHNICAL SKILLS**	**49.95**	**48**
5.1	Mid-Level Skills	36.95	63
5.1.1	Workforce with secondary education	29.53	77
5.1.2	Population with secondary education	25.71	73
5.1.3	Technicians and associate professionals	50.25	42
5.1.4	Labour productivity per employee	42.30	24
5.2	Employability	62.95	34
5.2.1	Ease of finding skilled employees	63.02	28
5.2.2	Relevance of education system to the economy	40.69	73
5.2.3	Availability of scientists and engineers	66.19	16
5.2.4	Skills gap as major constraint	81.90	36

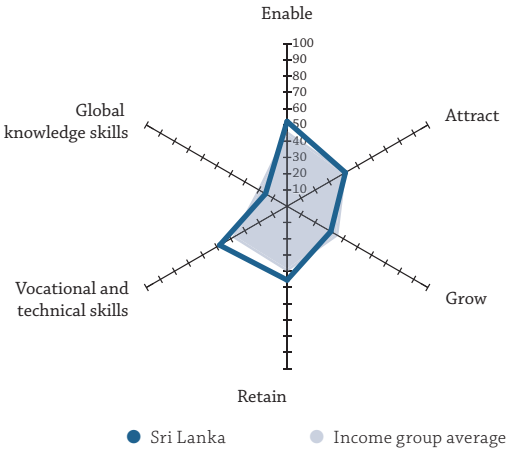
6	**GLOBAL KNOWLEDGE SKILLS**	**38.69**	**32**
6.1	High-Level Skills	48.21	26
6.1.1	Workforce with tertiary education	60.03	19
6.1.2	Population with tertiary education	48.68	13
6.1.3	Professionals	48.48	28
6.1.4	Researchers	31.98	30
6.1.5	Senior officials and managers	28.09	49
6.1.6	Quality of scientific institutions	57.49	35
6.1.7	Scientific journal articles	62.71	19
6.2	Talent Impact	29.17	49
6.2.1	Innovation output	50.63	28
6.2.2	High-value exports	18.44	55
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	30.56	65
6.2.4	New business density	17.06	36

SRI LANKA

Key Indicators

Rank (out of 118)	**82**
Income group	**Lower-middle income**
Regional group	**Central and Southern Asia**
Population (millions)	**20.97**
GDP per capita (PPP US$)	**11,738.88**
GDP (US$ billions)	**82.32**
GTCI score	**38.88**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**52.19**	**66**
1.1	Regulatory Landscape	47.21	60
1.1.1	Government effectiveness	39.36	66
1.1.2	Business-government relations	70.20	27
1.1.3	Political stability	55.62	79
1.1.4	Regulatory quality	43.83	76
1.1.5	Corruption	27.03	76
1.2	Market Landscape	44.87	86
1.2.1	Competition intensity	77.76	15
1.2.2	Ease of doing business	45.24	87
1.2.3	Cluster development	45.90	60
1.2.4	R&D expenditure	3.57	89
1.2.5	ICT infrastructure	31.97	93
1.2.6	Technology utilisation	64.80	50
1.3	Business and Labour Landscape	64.48	48
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	40	104
	Management Practice		
1.3.3	Labour-employer cooperation	63.27	34
1.3.4	Professional management	60.97	36
1.3.5	Relationship of pay to productivity	58.16	26
2	**ATTRACT**	**41.42**	**90**
2.1	External Openness	29.70	93
	Attract Business		
2.1.1	FDI and technology transfer	61.00	52
2.1.2	Prevalence of foreign ownership	60.07	53
	Attract People		
2.1.3	Migrant stock	0.26	114
2.1.4	International students	1.23	86
2.1.5	Brain gain	25.95	93
2.2	Internal Openness	53.14	80
	Social Diversity		
2.2.1	Tolerance of minorities	7.78	114
2.2.2	Tolerance of immigrants	51.87	71
2.2.3	Social mobility	69.61	28
	Gender Equality		
2.2.4	Female graduates	78.42	30
2.2.5	Gender earnings gap	38.86	106
2.2.6	Business opportunities for women	72.30	17

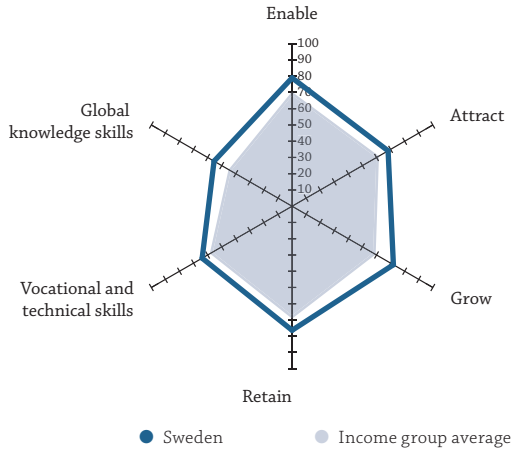
		Score	Rank
3	**GROW**	**31.06**	**104**
3.1	Formal Education	10.07	107
	Enrolment		
3.1.1	Vocational enrolment	3.09	103
3.1.2	Tertiary enrolment	16.02	89
	Quality		
3.1.3	Tertiary education expenditure	3.83	99
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	17.36	68
3.2	Lifelong Learning	44.96	82
3.2.1	Quality of management schools	65.14	30
3.2.2	Prevalence of training in firms	19.79	81
3.2.3	Employee development	49.94	56
3.3	Access to Growth Opportunities	38.16	99
	Networks		
3.3.1	Use of virtual social networks	75.52	72
3.3.2	Use of virtual professional networks	8.06	79
	Empowerment		
3.3.3	Delegation of authority	47.22	54
3.3.4	Personal rights	21.86	108
4	**RETAIN**	**45.40**	**76**
4.1	Sustainability	38.06	74
4.1.1	Pension system	23.23	72
4.1.2	Taxation	50.56	37
4.1.3	Brain retention	40.38	65
4.2	Lifestyle	52.74	76
4.2.1	Environmental performance	53.10	90
4.2.2	Personal safety	54.88	66
4.2.3	Physician density	8.53	89
4.2.4	Sanitation	94.43	50
5	**VOCATIONAL AND TECHNICAL SKILLS**	**47.88**	**55**
5.1	Mid-Level Skills	29.87	77
5.1.1	Workforce with secondary education	19.36	91
5.1.2	Population with secondary education	62.74	22
5.1.3	Technicians and associate professionals	23.86	73
5.1.4	Labour productivity per employee	13.52	70
5.2	Employability	65.89	24
5.2.1	Ease of finding skilled employees	56.72	39
5.2.2	Relevance of education system to the economy	60.89	24
5.2.3	Availability of scientists and engineers	67.01	13
5.2.4	Skills gap as major constraint	78.95	45
6	**GLOBAL KNOWLEDGE SKILLS**	**15.33**	**95**
6.1	High-Level Skills	20.33	82
6.1.1	Workforce with tertiary education	28.48	75
6.1.2	Population with tertiary education	23.20	57
6.1.3	Professionals	19.39	77
6.1.4	Researchers	1.21	81
6.1.5	Senior officials and managers	10.11	82
6.1.6	Quality of scientific institutions	54.58	37
6.1.7	Scientific journal articles	5.32	90
6.2	Talent Impact	10.33	105
6.2.1	Innovation output	24.60	75
6.2.2	High-value exports	3.62	103
	Entrepreneurship		
6.2.3	New product entrepreneurial activity		
6.2.4	New business density	2.79	84

SWEDEN

Key Indicators

Rank (out of 118)	**5**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**9.80**
GDP per capita (PPP US$)	**46,420.42**
GDP (US$ billions)	**492.62**
GTCI score	**69.14**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



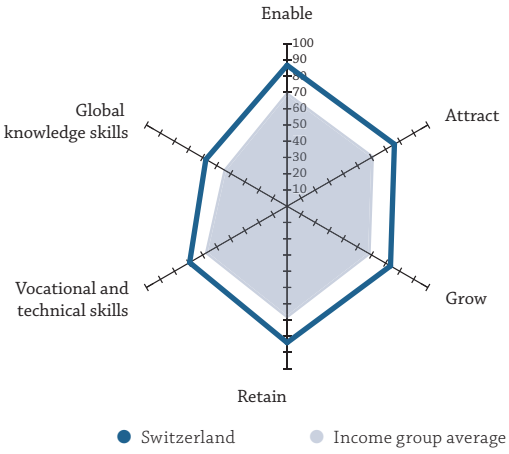
		Score	Rank
1	**ENABLE**	**78.97**	**9**
1.1	Regulatory Landscape	88.63	7
1.1.1	Government effectiveness	88.33	9
1.1.2	Business-government relations	78.53	17
1.1.3	Political stability	89.34	13
1.1.4	Regulatory quality	89.63	8
1.1.5	Corruption	97.30	3
1.2	Market Landscape	80.11	4
1.2.1	Competition intensity	74.27	32
1.2.2	Ease of doing business	89.16	7
1.2.3	Cluster development	63.74	17
1.2.4	R&D expenditure	78.33	5
1.2.5	ICT infrastructure	92.46	9
1.2.6	Technology utilisation	82.73	9
1.3	Business and Labour Landscape	68.17	35
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	60	81
	Management Practice		
1.3.3	Labour-employer cooperation	77.52	7
1.3.4	Professional management	82.14	10
1.3.5	Relationship of pay to productivity	54.54	40
2	**ATTRACT**	**68.21**	**13**
2.1	External Openness	50.18	28
	Attract Business		
2.1.1	FDI and technology transfer	61.81	47
2.1.2	Prevalence of foreign ownership	68.34	31
	Attract People		
2.1.3	Migrant stock	36.84	19
2.1.4	International students	30.25	28
2.1.5	Brain gain	53.68	25
2.2	Internal Openness	86.23	2
	Social Diversity		
2.2.1	Tolerance of minorities	100.00	1
2.2.2	Tolerance of immigrants	86.83	18
2.2.3	Social mobility	77.00	17
	Gender Equality		
2.2.4	Female graduates	81.87	24
2.2.5	Gender earnings gap	99.99	7
2.2.6	Business opportunities for women	71.70	22
3	**GROW**	**71.98**	**8**
3.1	Formal Education	59.29	14
	Enrolment		
3.1.1	Vocational enrolment	62.89	23
3.1.2	Tertiary enrolment	56.09	34
	Quality		
3.1.3	Tertiary education expenditure	46.03	10
3.1.4	Reading, maths, science	59.25	33
3.1.5	University ranking	72.22	13
3.2	Lifelong Learning	77.33	3
3.2.1	Quality of management schools	72.65	15
3.2.2	Prevalence of training in firms	88.26	4
3.2.3	Employee development	71.09	8
3.3	Access to Growth Opportunities	79.31	12
	Networks		
3.3.1	Use of virtual social networks	91.10	7
3.3.2	Use of virtual professional networks	60.60	15
	Empowerment		
3.3.3	Delegation of authority	77.15	4
3.3.4	Personal rights	88.40	12
4	**RETAIN**	**76.32**	**4**
4.1	Sustainability	65.34	11
4.1.1	Pension system	88.89	21
4.1.2	Taxation	42.62	76
4.1.3	Brain retention	64.50	14
4.2	Lifestyle	87.30	3
4.2.1	Environmental performance	99.53	3
4.2.2	Personal safety	99.87	2
4.2.3	Physician density	50.59	12
4.2.4	Sanitation	99.20	19
5	**VOCATIONAL AND TECHNICAL SKILLS**	**63.90**	**10**
5.1	Mid-Level Skills	60.23	16
5.1.1	Workforce with secondary education	62.81	24
5.1.2	Population with secondary education	52.67	35
5.1.3	Technicians and associate professionals	78.17	16
5.1.4	Labour productivity per employee	47.26	14
5.2	Employability	67.57	14
5.2.1	Ease of finding skilled employees	66.31	16
5.2.2	Relevance of education system to the economy	60.15	25
5.2.3	Availability of scientists and engineers	66.61	14
5.2.4	Skills gap as major constraint	77.21	47
6	**GLOBAL KNOWLEDGE SKILLS**	**55.44**	**11**
6.1	High-Level Skills	62.45	7
6.1.1	Workforce with tertiary education	59.39	20
6.1.2	Population with tertiary education	33.51	34
6.1.3	Professionals	76.36	2
6.1.4	Researchers	78.14	5
6.1.5	Senior officials and managers	30.90	43
6.1.6	Quality of scientific institutions	78.64	11
6.1.7	Scientific journal articles	80.21	8
6.2	Talent Impact	48.43	15
6.2.1	Innovation output	80.61	4
6.2.2	High-value exports	29.18	26
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	44.24	42
6.2.4	New business density	39.70	15

SWITZERLAND

Key Indicators

Rank (out of 118)	**1**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**8.29**
GDP per capita (PPP US$)	**60,535.16**
GDP (US$ billions)	**664.74**
GTCI score	**74.55**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**86.72**	**2**
1.1	Regulatory Landscape	92.33	4
1.1.1	Government effectiveness	98.11	2
1.1.2	Business-government relations	86.64	11
1.1.3	Political stability	93.67	6
1.1.4	Regulatory quality	89.99	7
1.1.5	Corruption	93.24	7
1.2	Market Landscape	79.32	6
1.2.1	Competition intensity	75.34	29
1.2.2	Ease of doing business	78.20	24
1.2.3	Cluster development	71.70	6
1.2.4	R&D expenditure	70.24	7
1.2.5	ICT infrastructure	96.29	5
1.2.6	Technology utilisation	84.13	6
1.3	Business and Labour Landscape	88.52	2
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	85.20	1
1.3.4	Professional management	83.86	6
1.3.5	Relationship of pay to productivity	73.56	3

2	**ATTRACT**	**76.26**	**5**
2.1	External Openness	76.12	5
	Attract Business		
2.1.1	FDI and technology transfer	71.57	11
2.1.2	Prevalence of foreign ownership	71.14	23
	Attract People		
2.1.3	Migrant stock	64.68	11
2.1.4	International students	87.94	7
2.1.5	Brain gain	85.26	1
2.2	Internal Openness	76.41	15
	Social Diversity		
2.2.1	Tolerance of minorities	72.22	13
2.2.2	Tolerance of immigrants	80.36	27
2.2.3	Social mobility	87.99	2
	Gender Equality		
2.2.4	Female graduates	48.52	83
2.2.5	Gender earnings gap	100.00	1
2.2.6	Business opportunities for women	69.36	25

3	**GROW**	**73.47**	**5**
3.1	Formal Education	64.23	7
	Enrolment		
3.1.1	Vocational enrolment	74.33	11
3.1.2	Tertiary enrolment	49.40	45
	Quality		
3.1.3	Tertiary education expenditure	30.13	29
3.1.4	Reading, maths, science	79.35	9
3.1.5	University ranking	87.96	4
3.2	Lifelong Learning	83.29	1
3.2.1	Quality of management schools	87.61	1
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	78.97	1
3.3	Access to Growth Opportunities	72.88	15
	Networks		
3.3.1	Use of virtual social networks	84.20	29
3.3.2	Use of virtual professional networks	46.67	20
	Empowerment		
3.3.3	Delegation of authority	72.23	8
3.3.4	Personal rights	88.40	12

4	**RETAIN**	**83.91**	**1**
4.1	Sustainability	81.81	1
4.1.1	Pension system	94.95	3
4.1.2	Taxation	69.72	6
4.1.3	Brain retention	80.76	1
4.2	Lifestyle	86.00	5
4.2.1	Environmental performance	93.00	16
4.2.2	Personal safety	98.94	3
4.2.3	Physician density	52.18	11
4.2.4	Sanitation	99.89	12

5	**VOCATIONAL AND TECHNICAL SKILLS**	**69.24**	**3**
5.1	Mid-Level Skills	66.79	6
5.1.1	Workforce with secondary education	63.37	23
5.1.2	Population with secondary education	69.12	14
5.1.3	Technicians and associate professionals	87.31	9
5.1.4	Labour productivity per employee	47.38	13
5.2	Employability	71.69	6
5.2.1	Ease of finding skilled employees	65.59	20
5.2.2	Relevance of education system to the economy	85.54	1
5.2.3	Availability of scientists and engineers	63.95	23
5.2.4	Skills gap as major constraint	n/a	n/a

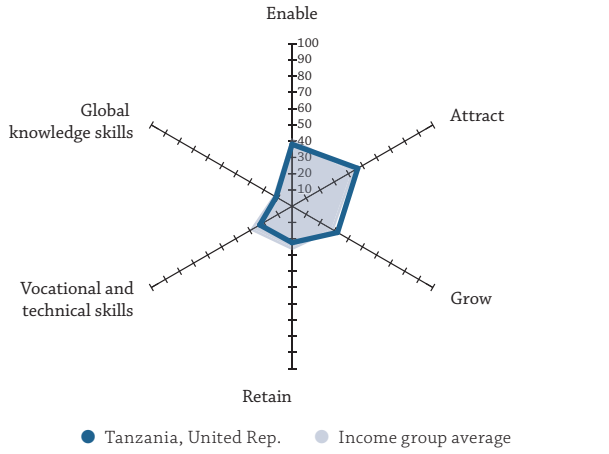
6	**GLOBAL KNOWLEDGE SKILLS**	**57.70**	**7**
6.1	High-Level Skills	60.88	12
6.1.1	Workforce with tertiary education	60.68	18
6.1.2	Population with tertiary education	28.75	47
6.1.3	Professionals	69.39	5
6.1.4	Researchers	54.07	13
6.1.5	Senior officials and managers	43.82	24
6.1.6	Quality of scientific institutions	90.74	1
6.1.7	Scientific journal articles	78.68	11
6.2	Talent Impact	54.52	8
6.2.1	Innovation output	100.00	1
6.2.2	High-value exports	49.37	8
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	54.21	23
6.2.4	New business density	14.51	38

TANZANIA, UNITED REP.

Key Indicators

Rank (out of 118)	**114**
Income group	**Low income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**53.47**
GDP per capita (PPP US$)	**2,667.29**
GDP (US$ billions)	**44.90**
GTCI score	**28.95**
GTCI score (income group average)	**30.03**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**38.12**	**110**
1.1	Regulatory Landscape	33.29	102
1.1.1	Government effectiveness	18.30	103
1.1.2	Business-government relations	44.72	92
1.1.3	Political stability	48.34	89
1.1.4	Regulatory quality	37.53	90
1.1.5	Corruption	17.57	98
1.2	Market Landscape	32.77	112
1.2.1	Competition intensity	58.82	101
1.2.2	Ease of doing business	31.08	107
1.2.3	Cluster development	40.98	82
1.2.4	R&D expenditure	8.81	66
1.2.5	ICT infrastructure	10.36	115
1.2.6	Technology utilisation	46.59	113
1.3	Business and Labour Landscape	48.30	101
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	50	97
	Management Practice		
1.3.3	Labour-employer cooperation	49.23	96
1.3.4	Professional management	47.68	79
1.3.5	Relationship of pay to productivity	38.91	103

2	**ATTRACT**	**46.62**	**58**
2.1	External Openness	35.95	62
	Attract Business		
2.1.1	FDI and technology transfer	48.05	98
2.1.2	Prevalence of foreign ownership	52.45	81
	Attract People		
2.1.3	Migrant stock	0.92	103
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	42.37	51
2.2	Internal Openness	57.30	59
	Social Diversity		
2.2.1	Tolerance of minorities	45.56	57
2.2.2	Tolerance of immigrants	44.37	87
2.2.3	Social mobility	49.12	82
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	92.99	9
2.2.6	Business opportunities for women	54.46	74

		Score	Rank
3	**GROW**	**32.27**	**98**
3.1	Formal Education	12.12	102
	Enrolment		
3.1.1	Vocational enrolment	25.92	60
3.1.2	Tertiary enrolment	0.00	112
	Quality		
3.1.3	Tertiary education expenditure	14.88	78
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	7.67	74
3.2	Lifelong Learning	37.66	106
3.2.1	Quality of management schools	37.21	110
3.2.2	Prevalence of training in firms	36.02	58
3.2.3	Employee development	39.75	100
3.3	Access to Growth Opportunities	47.04	70
	Networks		
3.3.1	Use of virtual social networks	54.11	115
3.3.2	Use of virtual professional networks	n/a	n/a
	Empowerment		
3.3.3	Delegation of authority	39.62	93
3.3.4	Personal rights	47.38	77

4	**RETAIN**	**22.41**	**116**
4.1	Sustainability	24.42	118
4.1.1	Pension system	3.03	102
4.1.2	Taxation	34.30	98
4.1.3	Brain retention	35.92	78
4.2	Lifestyle	20.41	113
4.2.1	Environmental performance	39.64	104
4.2.2	Personal safety	37.79	90
4.2.3	Physician density	0.12	113
4.2.4	Sanitation	4.09	115

5	**VOCATIONAL AND TECHNICAL SKILLS**	**22.95**	**117**
5.1	Mid-Level Skills	2.62	114
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	1.01	105
5.1.3	Technicians and associate professionals	6.09	91
5.1.4	Labour productivity per employee	0.76	100
5.2	Employability	43.28	107
5.2.1	Ease of finding skilled employees	47.00	75
5.2.2	Relevance of education system to the economy	36.47	86
5.2.3	Availability of scientists and engineers	43.94	90
5.2.4	Skills gap as major constraint	45.71	86

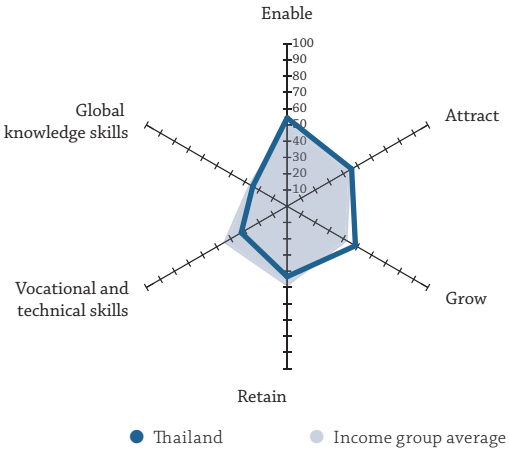
6	**GLOBAL KNOWLEDGE SKILLS**	**11.33**	**111**
6.1	High-Level Skills	8.65	117
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	2.33	99
6.1.3	Professionals	1.21	100
6.1.4	Researchers	0.35	93
6.1.5	Senior officials and managers	1.69	95
6.1.6	Quality of scientific institutions	41.21	79
6.1.7	Scientific journal articles	5.14	92
6.2	Talent Impact	14.00	96
6.2.1	Innovation output	19.21	86
6.2.2	High-value exports	8.79	87
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	n/a	n/a

THAILAND

Key Indicators

Rank (out of 118)	**73**
Income group	**Upper-middle income**
Regional group	**Eastern, Southeastern Asia and Oceania**
Population (millions)	**67.96**
GDP per capita (PPP US$)	**16,305.45**
GDP (US$ billions)	**395.28**
GTCI score	**41.50**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**54.31**	**55**
1.1	Regulatory Landscape	44.63	72
1.1.1	Government effectiveness	46.57	50
1.1.2	Business-government relations	57.02	63
1.1.3	Political stability	38.89	102
1.1.4	Regulatory quality	52.30	60
1.1.5	Corruption	28.38	69
1.2	Market Landscape	51.95	56
1.2.1	Competition intensity	72.72	41
1.2.2	Ease of doing business	69.28	46
1.2.3	Cluster development	51.16	37
1.2.4	R&D expenditure	9.05	64
1.2.5	ICT infrastructure	45.14	76
1.2.6	Technology utilisation	64.36	52
1.3	Business and Labour Landscape	66.34	41
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	63.37	33
1.3.4	Professional management	59.14	42
1.3.5	Relationship of pay to productivity	53.52	49

2	**ATTRACT**	**45.86**	**66**
2.1	External Openness	38.02	60
	Attract Business		
2.1.1	FDI and technology transfer	65.14	28
2.1.2	Prevalence of foreign ownership	60.84	52
	Attract People		
2.1.3	Migrant stock	12.55	51
2.1.4	International students	4.16	74
2.1.5	Brain gain	47.42	36
2.2	Internal Openness	53.69	75
	Social Diversity		
2.2.1	Tolerance of minorities	22.22	98
2.2.2	Tolerance of immigrants	24.33	109
2.2.3	Social mobility	54.10	63
	Gender Equality		
2.2.4	Female graduates	70.44	56
2.2.5	Gender earnings gap	79.23	25
2.2.6	Business opportunities for women	71.83	19

3	**GROW**	**48.56**	**43**
3.1	Formal Education	33.07	55
	Enrolment		
3.1.1	Vocational enrolment	33.61	48
3.1.2	Tertiary enrolment	44.81	51
	Quality		
3.1.3	Tertiary education expenditure	13.97	82
3.1.4	Reading, maths, science	34.44	44
3.1.5	University ranking	38.51	35
3.2	Lifelong Learning	66.90	21
3.2.1	Quality of management schools	50.80	70
3.2.2	Prevalence of training in firms	94.85	2
3.2.3	Employee development	55.04	40
3.3	Access to Growth Opportunities	45.72	73
	Networks		
3.3.1	Use of virtual social networks	88.33	14
3.3.2	Use of virtual professional networks	2.97	99
	Empowerment		
3.3.3	Delegation of authority	52.68	32
3.3.4	Personal rights	38.90	89

4	**RETAIN**	**43.33**	**79**
4.1	Sustainability	40.23	67
4.1.1	Pension system	22.22	74
4.1.2	Taxation	47.75	48
4.1.3	Brain retention	50.71	34
4.2	Lifestyle	46.44	87
4.2.1	Environmental performance	60.54	79
4.2.2	Personal safety	28.38	103
4.2.3	Physician density	4.81	93
4.2.4	Sanitation	92.05	59

5	**VOCATIONAL AND TECHNICAL SKILLS**	**32.54**	**100**
5.1	Mid-Level Skills	16.65	97
5.1.1	Workforce with secondary education	24.23	84
5.1.2	Population with secondary education	17.33	90
5.1.3	Technicians and associate professionals	12.18	85
5.1.4	Labour productivity per employee	12.86	71
5.2	Employability	48.43	87
5.2.1	Ease of finding skilled employees	47.88	69
5.2.2	Relevance of education system to the economy	43.04	64
5.2.3	Availability of scientists and engineers	54.38	44
5.2.4	Skills gap as major constraint	48.39	83

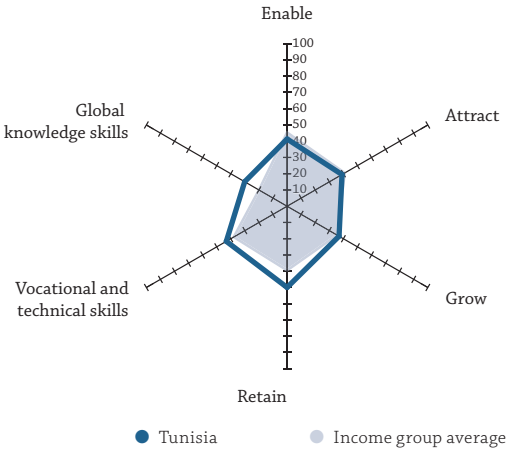
6	**GLOBAL KNOWLEDGE SKILLS**	**24.39**	**71**
6.1	High-Level Skills	20.80	80
6.1.1	Workforce with tertiary education	20.55	86
6.1.2	Population with tertiary education	24.82	55
6.1.3	Professionals	14.55	85
6.1.4	Researchers	6.49	59
6.1.5	Senior officials and managers	14.61	71
6.1.6	Quality of scientific institutions	50.08	51
6.1.7	Scientific journal articles	14.49	64
6.2	Talent Impact	27.99	54
6.2.1	Innovation output	36.09	49
6.2.2	High-value exports	31.71	25
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	39.12	55
6.2.4	New business density	5.05	74

TUNISIA

Key Indicators

Rank (out of 118)	**77**
Income group	**Lower-middle income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**11.11**
GDP per capita (PPP US$)	**11,397.24**
GDP (US$ billions)	**43.02**
GTCI score	**40.09**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**41.36**	**102**
1.1	Regulatory Landscape	36.73	92
1.1.1	Government effectiveness	33.11	76
1.1.2	Business-government relations	46.55	86
1.1.3	Political stability	38.24	104
1.1.4	Regulatory quality	37.39	91
1.1.5	Corruption	28.38	69
1.2	Market Landscape	45.68	82
1.2.1	Competition intensity	62.50	83
1.2.2	Ease of doing business	56.67	69
1.2.3	Cluster development	38.77	90
1.2.4	R&D expenditure	15.95	47
1.2.5	ICT infrastructure	42.58	79
1.2.6	Technology utilisation	57.58	72
1.3	Business and Labour Landscape	41.66	114
	Labour Market Flexibility		
1.3.1	Ease of hiring	61.00	69
1.3.2	Ease of redundancy	20	116
	Management Practice		
1.3.3	Labour-employer cooperation	43.58	106
1.3.4	Professional management	45.38	86
1.3.5	Relationship of pay to productivity	38.33	104
2	**ATTRACT**	**39.02**	**104**
2.1	External Openness	28.41	104
	Attract Business		
2.1.1	FDI and technology transfer	53.29	81
2.1.2	Prevalence of foreign ownership	54.12	75
	Attract People		
2.1.3	Migrant stock	0.95	102
2.1.4	International students	9.45	62
2.1.5	Brain gain	24.23	102
2.2	Internal Openness	49.63	97
	Social Diversity		
2.2.1	Tolerance of minorities	24.44	94
2.2.2	Tolerance of immigrants	46.91	82
2.2.3	Social mobility	50.11	78
	Gender Equality		
2.2.4	Female graduates	91.34	6
2.2.5	Gender earnings gap	27.11	110
2.2.6	Business opportunities for women	57.87	66

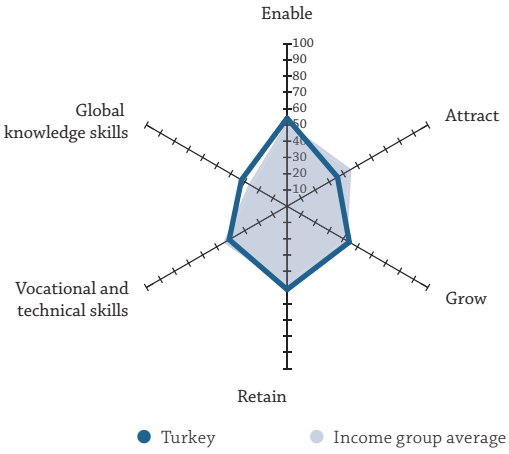
		Score	Rank
3	**GROW**	**36.91**	**84**
3.1	Formal Education	20.42	80
	Enrolment		
3.1.1	Vocational enrolment	19.85	68
3.1.2	Tertiary enrolment	29.04	73
	Quality		
3.1.3	Tertiary education expenditure	41.27	17
3.1.4	Reading, maths, science	11.92	55
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	43.32	88
3.2.1	Quality of management schools	53.24	63
3.2.2	Prevalence of training in firms	33.64	60
3.2.3	Employee development	43.07	92
3.3	Access to Growth Opportunities	47.00	71
	Networks		
3.3.1	Use of virtual social networks	76.04	70
3.3.2	Use of virtual professional networks	15.47	62
	Empowerment		
3.3.3	Delegation of authority	39.87	91
3.3.4	Personal rights	56.63	64
4	**RETAIN**	**49.96**	**64**
4.1	Sustainability	39.86	70
4.1.1	Pension system	48.48	50
4.1.2	Taxation	43.46	75
4.1.3	Brain retention	27.64	102
4.2	Lifestyle	60.05	62
4.2.1	Environmental performance	74.99	51
4.2.2	Personal safety	59.22	63
4.2.3	Physician density	15.55	74
4.2.4	Sanitation	90.45	61
5	**VOCATIONAL AND TECHNICAL SKILLS**	**43.18**	**67**
5.1	Mid-Level Skills	35.37	66
5.1.1	Workforce with secondary education	49.86	51
5.1.2	Population with secondary education	38.75	52
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	17.51	62
5.2	Employability	50.98	77
5.2.1	Ease of finding skilled employees	49.13	63
5.2.2	Relevance of education system to the economy	39.11	77
5.2.3	Availability of scientists and engineers	54.30	45
5.2.4	Skills gap as major constraint	61.39	64
6	**GLOBAL KNOWLEDGE SKILLS**	**30.13**	**55**
6.1	High-Level Skills	32.48	54
6.1.1	Workforce with tertiary education	31.23	68
6.1.2	Population with tertiary education	20.18	67
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	16.76	40
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	33.20	101
6.1.7	Scientific journal articles	61.02	21
6.2	Talent Impact	27.78	56
6.2.1	Innovation output	26.93	68
6.2.2	High-value exports	21.30	43
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	54.25	22
6.2.4	New business density	8.65	55

TURKEY

Key Indicators

Rank (out of 118)	**61**
Income group	**Upper-middle income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**78.67**
GDP per capita (PPP US$)	**19,618.22**
GDP (US$ billions)	**718.22**
GTCI score	**43.16**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**54.16**	**56**
1.1	Regulatory Landscape	46.56	63
1.1.1	Government effectiveness	47.77	47
1.1.2	Business-government relations	60.44	55
1.1.3	Political stability	35.04	109
1.1.4	Regulatory quality	55.76	53
1.1.5	Corruption	33.78	61
1.2	Market Landscape	57.12	38
1.2.1	Competition intensity	81.17	8
1.2.2	Ease of doing business	64.92	52
1.2.3	Cluster development	48.58	49
1.2.4	R&D expenditure	22.14	35
1.2.5	ICT infrastructure	55.37	65
1.2.6	Technology utilisation	70.54	34
1.3	Business and Labour Landscape	58.81	68
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	90	35
	Management Practice		
1.3.3	Labour-employer cooperation	48.03	98
1.3.4	Professional management	53.95	62
1.3.5	Relationship of pay to productivity	46.38	76

2	**ATTRACT**	**35.83**	**110**
2.1	External Openness	31.34	84
	Attract Business		
2.1.1	FDI and technology transfer	61.20	51
2.1.2	Prevalence of foreign ownership	52.73	80
	Attract People		
2.1.3	Migrant stock	8.16	64
2.1.4	International students	5.50	72
2.1.5	Brain gain	29.12	88
2.2	Internal Openness	40.32	112
	Social Diversity		
2.2.1	Tolerance of minorities	11.11	113
2.2.2	Tolerance of immigrants	54.42	66
2.2.3	Social mobility	45.50	96
	Gender Equality		
2.2.4	Female graduates	45.77	87
2.2.5	Gender earnings gap	39.40	105
2.2.6	Business opportunities for women	45.71	103

		Score	Rank
3	**GROW**	**44.18**	**58**
3.1	Formal Education	43.64	34
	Enrolment		
3.1.1	Vocational enrolment	46.08	34
3.1.2	Tertiary enrolment	70.73	15
	Quality		
3.1.3	Tertiary education expenditure	19.27	67
3.1.4	Reading, maths, science	48.27	38
3.1.5	University ranking	33.84	38
3.2	Lifelong Learning	40.25	99
3.2.1	Quality of management schools	44.40	97
3.2.2	Prevalence of training in firms	32.98	61
3.2.3	Employee development	43.36	88
3.3	Access to Growth Opportunities	48.66	64
	Networks		
3.3.1	Use of virtual social networks	79.94	47
3.3.2	Use of virtual professional networks	18.81	53
	Empowerment		
3.3.3	Delegation of authority	43.04	78
3.3.4	Personal rights	52.87	71

4	**RETAIN**	**51.25**	**62**
4.1	Sustainability	47.04	49
4.1.1	Pension system	58.59	43
4.1.2	Taxation	44.83	68
4.1.3	Brain retention	37.70	74
4.2	Lifestyle	55.46	70
4.2.1	Environmental performance	57.07	84
4.2.2	Personal safety	48.68	73
4.2.3	Physician density	21.89	68
4.2.4	Sanitation	94.20	51

5	**VOCATIONAL AND TECHNICAL SKILLS**	**41.12**	**74**
5.1	Mid-Level Skills	26.31	85
5.1.1	Workforce with secondary education	25.35	83
5.1.2	Population with secondary education	26.86	70
5.1.3	Technicians and associate professionals	24.87	71
5.1.4	Labour productivity per employee	28.16	42
5.2	Employability	55.93	55
5.2.1	Ease of finding skilled employees	45.19	82
5.2.2	Relevance of education system to the economy	38.51	80
5.2.3	Availability of scientists and engineers	53.57	47
5.2.4	Skills gap as major constraint	86.46	26

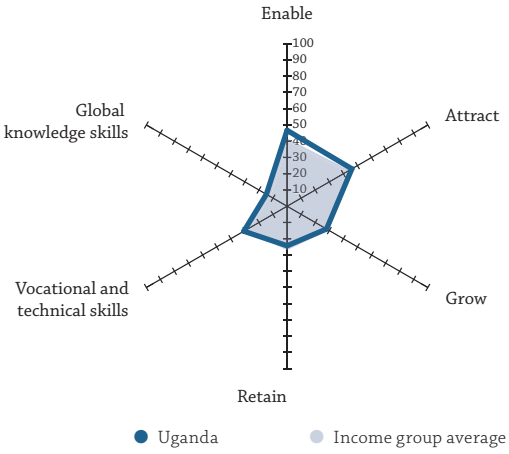
6	**GLOBAL KNOWLEDGE SKILLS**	**32.41**	**49**
6.1	High-Level Skills	31.01	57
6.1.1	Workforce with tertiary education	31.88	66
6.1.2	Population with tertiary education	22.92	59
6.1.3	Professionals	21.52	72
6.1.4	Researchers	14.05	44
6.1.5	Senior officials and managers	46.63	19
6.1.6	Quality of scientific institutions	42.58	76
6.1.7	Scientific journal articles	37.48	43
6.2	Talent Impact	33.82	36
6.2.1	Innovation output	37.70	45
6.2.2	High-value exports	6.16	98
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	85.02	2
6.2.4	New business density	6.38	64

UGANDA

Key Indicators

Rank (out of 118)	**106**
Income group	**Low income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**39.03**
GDP per capita (PPP US$)	**1,825.31**
GDP (US$ billions)	**26.37**
GTCI score	**31.75**
GTCI score (income group average)	**30.03**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**46.71**	**85**
1.1	Regulatory Landscape	34.17	97
1.1.1	Government effectiveness	25.32	91
1.1.2	Business-government relations	59.36	60
1.1.3	Political stability	38.35	103
1.1.4	Regulatory quality	36.99	92
1.1.5	Corruption	10.81	112
1.2	Market Landscape	37.51	104
1.2.1	Competition intensity	71.39	49
1.2.2	Ease of doing business	40.77	99
1.2.3	Cluster development	41.52	81
1.2.4	R&D expenditure	11.19	57
1.2.5	ICT infrastructure	8.70	116
1.2.6	Technology utilisation	51.50	99
1.3	Business and Labour Landscape	68.46	33
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	54.09	72
1.3.4	Professional management	48.46	77
1.3.5	Relationship of pay to productivity	39.73	100
2	**ATTRACT**	**46.02**	**63**
2.1	External Openness	44.68	37
	Attract Business		
2.1.1	FDI and technology transfer	58.86	59
2.1.2	Prevalence of foreign ownership	71.11	24
	Attract People		
2.1.3	Migrant stock	4.08	81
2.1.4	International students	55.91	13
2.1.5	Brain gain	33.46	76
2.2	Internal Openness	47.35	101
	Social Diversity		
2.2.1	Tolerance of minorities	18.89	103
2.2.2	Tolerance of immigrants	54.97	64
2.2.3	Social mobility	57.12	52
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	40.13	103
2.2.6	Business opportunities for women	65.66	33

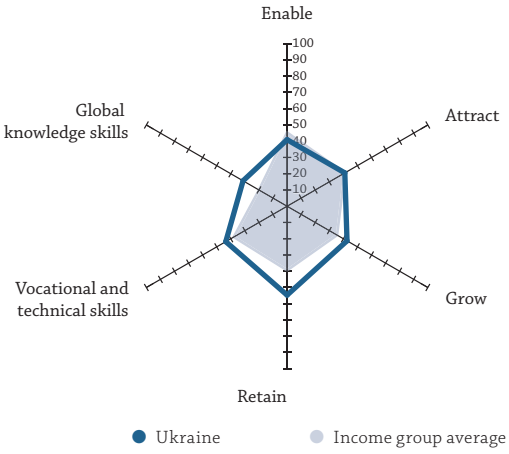
		Score	Rank
3	**GROW**	**28.01**	**112**
3.1	Formal Education	5.25	115
	Enrolment		
3.1.1	Vocational enrolment	8.84	89
3.1.2	Tertiary enrolment	0.78	109
	Quality		
3.1.3	Tertiary education expenditure	3.30	102
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	8.07	73
3.2	Lifelong Learning	43.99	87
3.2.1	Quality of management schools	47.65	84
3.2.2	Prevalence of training in firms	41.29	50
3.2.3	Employee development	43.03	93
3.3	Access to Growth Opportunities	34.80	108
	Networks		
3.3.1	Use of virtual social networks	63.95	101
3.3.2	Use of virtual professional networks	2.52	100
	Empowerment		
3.3.3	Delegation of authority	35.72	109
3.3.4	Personal rights	37.01	93
4	**RETAIN**	**24.33**	**113**
4.1	Sustainability	28.06	113
4.1.1	Pension system	9.09	89
4.1.2	Taxation	43.73	70
4.1.3	Brain retention	31.37	92
4.2	Lifestyle	20.60	112
4.2.1	Environmental performance	38.19	105
4.2.2	Personal safety	34.92	95
4.2.3	Physician density	1.23	104
4.2.4	Sanitation	8.07	114
5	**VOCATIONAL AND TECHNICAL SKILLS**	**30.73**	**105**
5.1	Mid-Level Skills	5.85	108
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	2.23	104
5.1.3	Technicians and associate professionals	13.71	84
5.1.4	Labour productivity per employee	1.61	96
5.2	Employability	55.60	58
5.2.1	Ease of finding skilled employees	54.31	49
5.2.2	Relevance of education system to the economy	41.53	70
5.2.3	Availability of scientists and engineers	44.67	86
5.2.4	Skills gap as major constraint	81.90	36
6	**GLOBAL KNOWLEDGE SKILLS**	**14.71**	**96**
6.1	High-Level Skills	14.87	104
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	12.77	79
6.1.3	Professionals	6.97	92
6.1.4	Researchers	0.39	91
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	41.82	77
6.1.7	Scientific journal articles	12.41	69
6.2	Talent Impact	14.55	93
6.2.1	Innovation output	12.93	102
6.2.2	High-value exports	33.14	23
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	5.51	87
6.2.4	New business density	6.62	63

UKRAINE

Key Indicators

Rank (out of 118)	**69**
Income group	**Lower-middle income**
Regional group	**Europe**
Population (millions)	**45.20**
GDP per capita (PPP US$)	**7,915.87**
GDP (US$ billions)	**90.62**
GTCI score	**42.34**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**40.94**	**103**
1.1	Regulatory Landscape	23.81	115
1.1.1	Government effectiveness	25.87	88
1.1.2	Business-government relations	36.10	105
1.1.3	Political stability	12.90	117
1.1.4	Regulatory quality	30.66	104
1.1.5	Corruption	13.51	107
1.2	Market Landscape	46.19	77
1.2.1	Competition intensity	60.94	91
1.2.2	Ease of doing business	53.12	75
1.2.3	Cluster development	32.50	108
1.2.4	R&D expenditure	17.86	43
1.2.5	ICT infrastructure	58.82	61
1.2.6	Technology utilisation	53.91	90
1.3	Business and Labour Landscape	52.81	87
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	50	97
	Management Practice		
1.3.3	Labour-employer cooperation	52.72	77
1.3.4	Professional management	44.18	91
1.3.5	Relationship of pay to productivity	61.48	14

2	**ATTRACT**	**41.02**	**94**
2.1	External Openness	30.72	87
	Attract Business		
2.1.1	FDI and technology transfer	46.04	105
2.1.2	Prevalence of foreign ownership	38.66	110
	Attract People		
2.1.3	Migrant stock	23.64	37
2.1.4	International students	14.42	53
2.1.5	Brain gain	30.83	80
2.2	Internal Openness	51.32	90
	Social Diversity		
2.2.1	Tolerance of minorities	40.00	70
2.2.2	Tolerance of immigrants	41.02	94
2.2.3	Social mobility	39.38	111
	Gender Equality		
2.2.4	Female graduates	63.53	71
2.2.5	Gender earnings gap	64.10	53
2.2.6	Business opportunities for women	59.92	55

		Score	Rank
3	**GROW**	**42.57**	**64**
3.1	Formal Education	43.37	35
	Enrolment		
3.1.1	Vocational enrolment	19.19	71
3.1.2	Tertiary enrolment	73.85	9
	Quality		
3.1.3	Tertiary education expenditure	51.01	7
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	29.43	46
3.2	Lifelong Learning	40.90	96
3.2.1	Quality of management schools	48.71	79
3.2.2	Prevalence of training in firms	25.33	75
3.2.3	Employee development	48.67	64
3.3	Access to Growth Opportunities	43.43	84
	Networks		
3.3.1	Use of virtual social networks	74.86	75
3.3.2	Use of virtual professional networks	7.74	83
	Empowerment		
3.3.3	Delegation of authority	35.84	108
3.3.4	Personal rights	55.29	67

4	**RETAIN**	**54.67**	**54**
4.1	Sustainability	42.33	61
4.1.1	Pension system	64.65	39
4.1.2	Taxation	33.78	100
4.1.3	Brain retention	28.56	99
4.2	Lifestyle	67.02	48
4.2.1	Environmental performance	79.49	43
4.2.2	Personal safety	47.62	75
4.2.3	Physician density	45.63	21
4.2.4	Sanitation	95.34	48

5	**VOCATIONAL AND TECHNICAL SKILLS**	**43.56**	**66**
5.1	Mid-Level Skills	21.79	91
5.1.1	Workforce with secondary education	0.00	98
5.1.2	Population with secondary education	n/a	n/a
5.1.3	Technicians and associate professionals	56.85	35
5.1.4	Labour productivity per employee	8.52	81
5.2	Employability	65.33	27
5.2.1	Ease of finding skilled employees	59.82	31
5.2.2	Relevance of education system to the economy	49.77	49
5.2.3	Availability of scientists and engineers	61.25	28
5.2.4	Skills gap as major constraint	90.48	13

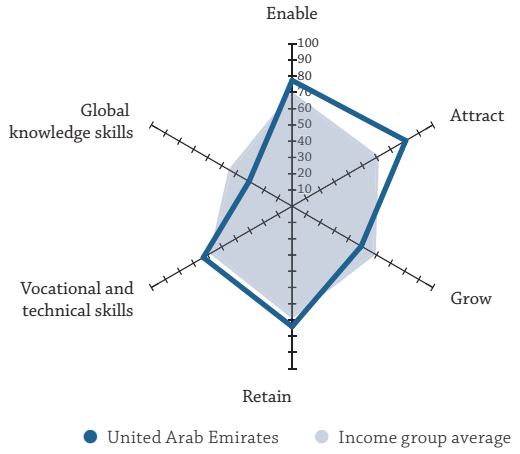
6	**GLOBAL KNOWLEDGE SKILLS**	**31.29**	**53**
6.1	High-Level Skills	45.13	30
6.1.1	Workforce with tertiary education	73.95	7
6.1.2	Population with tertiary education	n/a	n/a
6.1.3	Professionals	51.82	23
6.1.4	Researchers	14.00	45
6.1.5	Senior officials and managers	44.94	22
6.1.6	Quality of scientific institutions	53.41	41
6.1.7	Scientific journal articles	32.67	46
6.2	Talent Impact	17.45	85
6.2.1	Innovation output	37.70	45
6.2.2	High-value exports	9.48	86
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	5.17	73

UNITED ARAB EMIRATES

Key Indicators

Rank (out of 118)	**19**
Income group	**High income**
Regional group	**Northern Africa and Western Asia**
Population (millions)	**9.16**
GDP per capita (PPP US$)	**70,237.95**
GDP (US$ billions)	**370.29**
GTCI score	**62.49**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



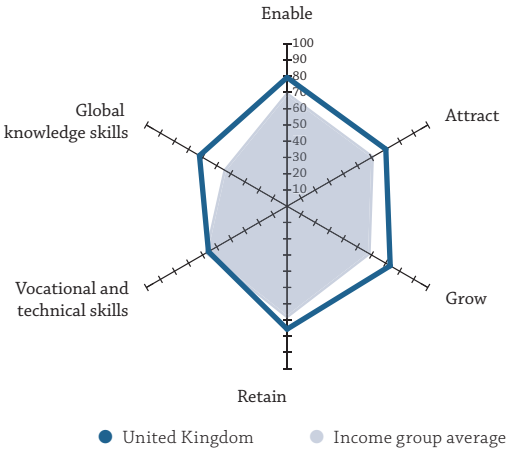
		Score	Rank
1	**ENABLE**	**77.40**	**12**
1.1	Regulatory Landscape	80.21	17
1.1.1	Government effectiveness	79.36	18
1.1.2	Business-government relations	97.74	2
1.1.3	Political stability	82.74	27
1.1.4	Regulatory quality	69.58	32
1.1.5	Corruption	71.62	22
1.2	Market Landscape	68.07	23
1.2.1	Competition intensity	82.60	6
1.2.2	Ease of doing business	76.38	29
1.2.3	Cluster development	74.83	1
1.2.4	R&D expenditure	11.43	56
1.2.5	ICT infrastructure	79.16	25
1.2.6	Technology utilisation	84.05	7
1.3	Business and Labour Landscape	83.92	5
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	74.74	13
1.3.4	Professional management	74.45	20
1.3.5	Relationship of pay to productivity	70.39	5
2	**ATTRACT**	**80.71**	**4**
2.1	External Openness	88.15	2
	Attract Business		
2.1.1	FDI and technology transfer	80.65	3
2.1.2	Prevalence of foreign ownership	77.63	9
	Attract People		
2.1.3	Migrant stock	100.00	1
2.1.4	International students	100.00	1
2.1.5	Brain gain	82.47	3
2.2	Internal Openness	73.27	19
	Social Diversity		
2.2.1	Tolerance of minorities	66.67	21
2.2.2	Tolerance of immigrants	100.00	1
2.2.3	Social mobility	82.89	8
	Gender Equality		
2.2.4	Female graduates	56.63	76
2.2.5	Gender earnings gap	59.17	73
2.2.6	Business opportunities for women	74.23	10
3	**GROW**	**49.14**	**40**
3.1	Formal Education	22.64	75
	Enrolment		
3.1.1	Vocational enrolment	3.87	98
3.1.2	Tertiary enrolment	17.27	87
	Quality		
3.1.3	Tertiary education expenditure	n/a	n/a
3.1.4	Reading, maths, science	36.68	41
3.1.5	University ranking	32.76	39
3.2	Lifelong Learning	69.65	14
3.2.1	Quality of management schools	71.04	19
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	68.26	12
3.3	Access to Growth Opportunities	55.13	44
	Networks		
3.3.1	Use of virtual social networks	91.57	6
3.3.2	Use of virtual professional networks	44.56	21
	Empowerment		
3.3.3	Delegation of authority	66.72	13
3.3.4	Personal rights	17.70	110
4	**RETAIN**	**74.05**	**10**
4.1	Sustainability	80.79	2
4.1.1	Pension system	n/a	n/a
4.1.2	Taxation	87.01	1
4.1.3	Brain retention	74.57	5
4.2	Lifestyle	67.30	46
4.2.1	Environmental performance	60.19	80
4.2.2	Personal safety	79.21	30
4.2.3	Physician density	32.54	47
4.2.4	Sanitation	97.27	35
5	**VOCATIONAL AND TECHNICAL SKILLS**	**63.07**	**14**
5.1	Mid-Level Skills	55.63	25
5.1.1	Workforce with secondary education	37.19	66
5.1.2	Population with secondary education	34.58	59
5.1.3	Technicians and associate professionals	68.53	24
5.1.4	Labour productivity per employee	82.22	2
5.2	Employability	70.51	8
5.2.1	Ease of finding skilled employees	69.37	9
5.2.2	Relevance of education system to the economy	71.33	12
5.2.3	Availability of scientists and engineers	70.82	7
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**30.56**	**54**
6.1	High-Level Skills	34.89	48
6.1.1	Workforce with tertiary education	26.70	77
6.1.2	Population with tertiary education	29.79	44
6.1.3	Professionals	42.73	38
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	42.13	26
6.1.6	Quality of scientific institutions	63.33	28
6.1.7	Scientific journal articles	4.69	97
6.2	Talent Impact	26.22	60
6.2.1	Innovation output	18.67	88
6.2.2	High-value exports	18.98	52
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	59.39	15
6.2.4	New business density	7.84	58

UNITED KINGDOM

Key Indicators

Rank (out of 118)	**3**
Income group	**High income**
Regional group	**Europe**
Population (millions)	**65.14**
GDP per capita (PPP US$)	**41,324.56**
GDP (US$ billions)	**2,848.76**
GTCI score	**69.40**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



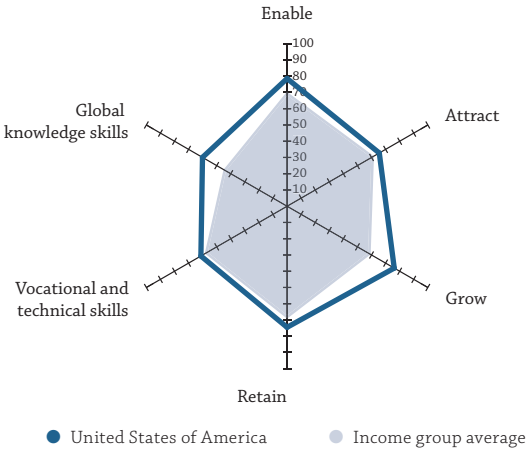
		Score	Rank
1	**ENABLE**	**79.24**	**8**
1.1	Regulatory Landscape	81.09	16
1.1.1	Government effectiveness	83.36	13
1.1.2	Business-government relations	72.12	22
1.1.3	Political stability	73.20	45
1.1.4	Regulatory quality	90.28	6
1.1.5	Corruption	86.49	10
1.2	Market Landscape	76.67	9
1.2.1	Competition intensity	83.69	2
1.2.2	Ease of doing business	90.58	5
1.2.3	Cluster development	71.69	7
1.2.4	R&D expenditure	38.57	22
1.2.5	ICT infrastructure	96.80	3
1.2.6	Technology utilisation	78.70	14
1.3	Business and Labour Landscape	79.97	11
	Labour Market Flexibility		
1.3.1	Ease of hiring	89.00	23
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	69.65	19
1.3.4	Professional management	81.03	12
1.3.5	Relationship of pay to productivity	60.17	18
2	**ATTRACT**	**70.15**	**11**
2.1	External Openness	71.61	7
	Attract Business		
2.1.1	FDI and technology transfer	69.50	16
2.1.2	Prevalence of foreign ownership	86.17	3
	Attract People		
2.1.3	Migrant stock	28.97	27
2.1.4	International students	91.10	6
2.1.5	Brain gain	82.29	4
2.2	Internal Openness	68.70	23
	Social Diversity		
2.2.1	Tolerance of minorities	52.22	45
2.2.2	Tolerance of immigrants	87.10	17
2.2.3	Social mobility	71.51	25
	Gender Equality		
2.2.4	Female graduates	70.35	57
2.2.5	Gender earnings gap	67.78	42
2.2.6	Business opportunities for women	63.23	40
3	**GROW**	**73.26**	**7**
3.1	Formal Education	63.84	8
	Enrolment		
3.1.1	Vocational enrolment	68.77	17
3.1.2	Tertiary enrolment	49.97	44
	Quality		
3.1.3	Tertiary education expenditure	31.24	25
3.1.4	Reading, maths, science	70.51	16
3.1.5	University ranking	98.72	2
3.2	Lifelong Learning	72.66	10
3.2.1	Quality of management schools	82.18	3
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	63.14	21
3.3	Access to Growth Opportunities	83.29	6
	Networks		
3.3.1	Use of virtual social networks	92.15	5
3.3.2	Use of virtual professional networks	76.19	10
	Empowerment		
3.3.3	Delegation of authority	66.04	16
3.3.4	Personal rights	98.77	2
4	**RETAIN**	**75.61**	**5**
4.1	Sustainability	72.56	7
4.1.1	Pension system	92.93	8
4.1.2	Taxation	53.86	28
4.1.3	Brain retention	70.89	9
4.2	Lifestyle	78.67	20
4.2.1	Environmental performance	93.84	12
4.2.2	Personal safety	85.61	23
4.2.3	Physician density	36.12	40
4.2.4	Sanitation	99.09	20
5	**VOCATIONAL AND TECHNICAL SKILLS**	**55.86**	**33**
5.1	Mid-Level Skills	47.95	44
5.1.1	Workforce with secondary education	55.43	37
5.1.2	Population with secondary education	41.87	49
5.1.3	Technicians and associate professionals	53.30	39
5.1.4	Labour productivity per employee	41.19	25
5.2	Employability	63.78	31
5.2.1	Ease of finding skilled employees	63.52	27
5.2.2	Relevance of education system to the economy	62.37	21
5.2.3	Availability of scientists and engineers	65.44	18
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**62.24**	**2**
6.1	High-Level Skills	63.22	6
6.1.1	Workforce with tertiary education	64.56	15
6.1.2	Population with tertiary education	41.98	20
6.1.3	Professionals	72.12	4
6.1.4	Researchers	48.92	20
6.1.5	Senior officials and managers	57.30	10
6.1.6	Quality of scientific institutions	87.68	2
6.1.7	Scientific journal articles	69.98	13
6.2	Talent Impact	61.25	3
6.2.1	Innovation output	80.43	5
6.2.2	High-value exports	33.99	22
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	55.91	20
6.2.4	New business density	74.70	8

UNITED STATES OF AMERICA

Key Indicators

Rank (out of 118)	**4**
Income group	**High income**
Regional group	**Northern America**
Population (millions)	**321.42**
GDP per capita (PPP US$)	**55,836.79**
GDP (US$ billions)	**17,947**
GTCI score	**69.34**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



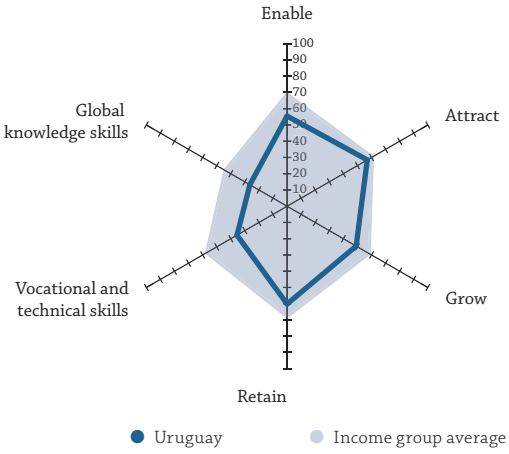
		Score	Rank
1	**ENABLE**	**78.57**	**11**
1.1	Regulatory Landscape	73.31	22
1.1.1	Government effectiveness	78.79	19
1.1.2	Business-government relations	53.52	69
1.1.3	Political stability	77.79	38
1.1.4	Regulatory quality	76.73	18
1.1.5	Corruption	79.73	16
1.2	Market Landscape	79.68	5
1.2.1	Competition intensity	83.58	3
1.2.2	Ease of doing business	89.99	6
1.2.3	Cluster development	74.78	2
1.2.4	R&D expenditure	66.67	10
1.2.5	ICT infrastructure	78.64	27
1.2.6	Technology utilisation	84.43	3
1.3	Business and Labour Landscape	82.71	7
	Labour Market Flexibility		
1.3.1	Ease of hiring	100.00	1
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	63.73	30
1.3.4	Professional management	82.16	9
1.3.5	Relationship of pay to productivity	67.64	7
2	**ATTRACT**	**65.51**	**16**
2.1	External Openness	52.65	21
	Attract Business		
2.1.1	FDI and technology transfer	64.30	34
2.1.2	Prevalence of foreign ownership	66.77	37
	Attract People		
2.1.3	Migrant stock	31.82	23
2.1.4	International students	20.32	38
2.1.5	Brain gain	80.06	6
2.2	Internal Openness	78.36	12
	Social Diversity		
2.2.1	Tolerance of minorities	61.11	33
2.2.2	Tolerance of immigrants	90.34	12
2.2.3	Social mobility	78.03	14
	Gender Equality		
2.2.4	Female graduates	74.12	45
2.2.5	Gender earnings gap	100.00	1
2.2.6	Business opportunities for women	66.58	32
3	**GROW**	**76.13**	**2**
3.1	Formal Education	68.95	2
	Enrolment		
3.1.1	Vocational enrolment	n/a	n/a
3.1.2	Tertiary enrolment	79.95	4
	Quality		
3.1.3	Tertiary education expenditure	31.07	27
3.1.4	Reading, maths, science	64.78	24
3.1.5	University ranking	100.00	1
3.2	Lifelong Learning	73.10	8
3.2.1	Quality of management schools	78.32	9
3.2.2	Prevalence of training in firms	n/a	n/a
3.2.3	Employee development	67.89	14
3.3	Access to Growth Opportunities	86.35	3
	Networks		
3.3.1	Use of virtual social networks	92.91	3
3.3.2	Use of virtual professional networks	100.00	1
	Empowerment		
3.3.3	Delegation of authority	70.19	9
3.3.4	Personal rights	82.29	26
4	**RETAIN**	**74.49**	**8**
4.1	Sustainability	74.73	4
4.1.1	Pension system	91.92	12
4.1.2	Taxation	53.57	29
4.1.3	Brain retention	78.71	2
4.2	Lifestyle	74.24	33
4.2.1	Environmental performance	88.88	26
4.2.2	Personal safety	76.60	33
4.2.3	Physician density	31.49	50
4.2.4	Sanitation	100.00	1
5	**VOCATIONAL AND TECHNICAL SKILLS**	**61.24**	**20**
5.1	Mid-Level Skills	53.66	28
5.1.1	Workforce with secondary education	37.33	65
5.1.2	Population with secondary education	65.64	18
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	58.03	9
5.2	Employability	68.82	11
5.2.1	Ease of finding skilled employees	68.59	10
5.2.2	Relevance of education system to the economy	64.25	19
5.2.3	Availability of scientists and engineers	73.62	4
5.2.4	Skills gap as major constraint	n/a	n/a
6	**GLOBAL KNOWLEDGE SKILLS**	**60.11**	**3**
6.1	High-Level Skills	69.19	2
6.1.1	Workforce with tertiary education	100.00	1
6.1.2	Population with tertiary education	50.64	10
6.1.3	Professionals	67.27	8
6.1.4	Researchers	48.49	21
6.1.5	Senior officials and managers	88.76	3
6.1.6	Quality of scientific institutions	84.97	4
6.1.7	Scientific journal articles	44.22	37
6.2	Talent Impact	51.03	12
6.2.1	Innovation output	71.81	9
6.2.2	High-value exports	34.53	19
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	46.74	39
6.2.4	New business density	n/a	n/a

URUGUAY

Key Indicators

Rank (out of 118)	**51**
Income group	**High income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**3.43**
GDP per capita (PPP US$)	**21,200.59**
GDP (US$ billions)	**53.44**
GTCI score	**47.28**
GTCI score (income group average)	**59.74**

GTCI 2017 Country Profile by Pillar



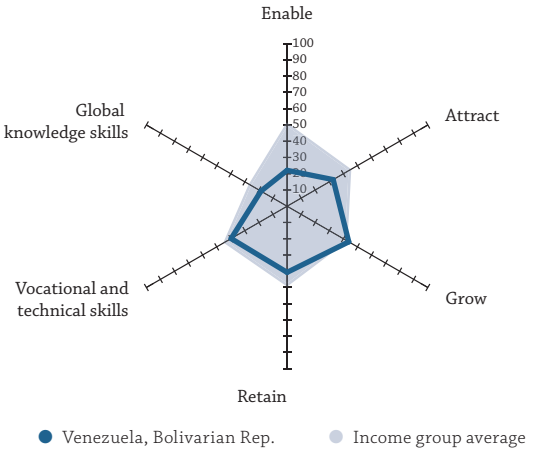
		Score	Rank
1	**ENABLE**	**55.48**	**51**
1.1	Regulatory Landscape	64.80	34
1.1.1	Government effectiveness	50.64	44
1.1.2	Business-government relations	50.37	76
1.1.3	Political stability	87.45	19
1.1.4	Regulatory quality	58.51	48
1.1.5	Corruption	77.03	20
1.2	Market Landscape	46.85	75
1.2.1	Competition intensity	62.26	85
1.2.2	Ease of doing business	49.59	79
1.2.3	Cluster development	38.56	91
1.2.4	R&D expenditure	5.24	79
1.2.5	ICT infrastructure	70.08	43
1.2.6	Technology utilisation	55.39	84
1.3	Business and Labour Landscape	54.80	82
	Labour Market Flexibility		
1.3.1	Ease of hiring	55.67	70
1.3.2	Ease of redundancy	100	1
	Management Practice		
1.3.3	Labour-employer cooperation	37.66	116
1.3.4	Professional management	51.44	69
1.3.5	Relationship of pay to productivity	29.23	116
2	**ATTRACT**	**56.98**	**28**
2.1	External Openness	42.68	39
	Attract Business		
2.1.1	FDI and technology transfer	66.88	23
2.1.2	Prevalence of foreign ownership	69.33	30
	Attract People		
2.1.3	Migrant stock	4.46	77
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	30.07	82
2.2	Internal Openness	71.27	21
	Social Diversity		
2.2.1	Tolerance of minorities	81.11	6
2.2.2	Tolerance of immigrants	92.65	10
2.2.3	Social mobility	61.69	39
	Gender Equality		
2.2.4	Female graduates	87.91	11
2.2.5	Gender earnings gap	56.21	83
2.2.6	Business opportunities for women	48.07	100
3	**GROW**	**49.06**	**41**
3.1	Formal Education	31.56	57
	Enrolment		
3.1.1	Vocational enrolment	32.78	51
3.1.2	Tertiary enrolment	55.85	35
	Quality		
3.1.3	Tertiary education expenditure	25.96	41
3.1.4	Reading, maths, science	20.51	51
3.1.5	University ranking	22.70	56
3.2	Lifelong Learning	54.17	46
3.2.1	Quality of management schools	56.18	48
3.2.2	Prevalence of training in firms	59.63	28
3.2.3	Employee development	46.70	73
3.3	Access to Growth Opportunities	61.44	28
	Networks		
3.3.1	Use of virtual social networks	77.72	62
3.3.2	Use of virtual professional networks	34.20	27
	Empowerment		
3.3.3	Delegation of authority	40.01	90
3.3.4	Personal rights	93.84	7
4	**RETAIN**	**60.15**	**44**
4.1	Sustainability	49.98	43
4.1.1	Pension system	77.78	33
4.1.2	Taxation	32.37	105
4.1.3	Brain retention	39.79	69
4.2	Lifestyle	70.33	40
4.2.1	Environmental performance	68.83	60
4.2.2	Personal safety	68.43	43
4.2.3	Physician density	48.13	17
4.2.4	Sanitation	95.91	43
5	**VOCATIONAL AND TECHNICAL SKILLS**	**35.58**	**92**
5.1	Mid-Level Skills	26.95	84
5.1.1	Workforce with secondary education	34.54	68
5.1.2	Population with secondary education	22.95	81
5.1.3	Technicians and associate professionals	29.44	66
5.1.4	Labour productivity per employee	20.85	55
5.2	Employability	44.20	102
5.2.1	Ease of finding skilled employees	44.35	91
5.2.2	Relevance of education system to the economy	33.21	100
5.2.3	Availability of scientists and engineers	40.14	97
5.2.4	Skills gap as major constraint	59.12	67
6	**GLOBAL KNOWLEDGE SKILLS**	**26.45**	**67**
6.1	High-Level Skills	26.80	69
6.1.1	Workforce with tertiary education	35.28	58
6.1.2	Population with tertiary education	17.03	73
6.1.3	Professionals	30.91	58
6.1.4	Researchers	6.32	60
6.1.5	Senior officials and managers	34.83	35
6.1.6	Quality of scientific institutions	48.82	59
6.1.7	Scientific journal articles	14.45	66
6.2	Talent Impact	26.10	61
6.2.1	Innovation output	27.83	63
6.2.2	High-value exports	10.31	77
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	51.99	28
6.2.4	New business density	14.28	39

VENEZUELA, BOLIVARIAN REP.

Key Indicators

Rank (out of 118)	**105**
Income group	**Upper-middle income**
Regional group	**Latin, Central America and the Caribbean**
Population (millions)	**31.11**
GDP per capita (PPP US$)	**18,309.15**
GDP (US$ billions)	**371.34**
GTCI score	**32.94**
GTCI score (income group average)	**42.66**

GTCI 2017 Country Profile by Pillar



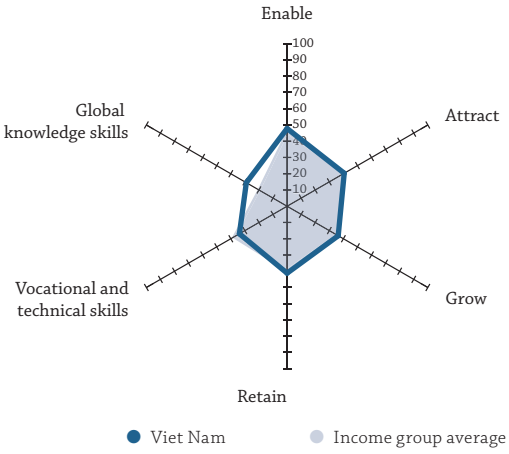
		Score	Rank
1	**ENABLE**	**22.09**	**118**
1.1	Regulatory Landscape	8.88	118
1.1.1	Government effectiveness	1.40	117
1.1.2	Business-government relations	0.00	118
1.1.3	Political stability	40.99	98
1.1.4	Regulatory quality	2.01	117
1.1.5	Corruption	0.00	117
1.2	Market Landscape	29.47	116
1.2.1	Competition intensity	29.13	118
1.2.2	Ease of doing business	0.00	118
1.2.3	Cluster development	22.13	117
1.2.4	R&D expenditure	n/a	n/a
1.2.5	ICT infrastructure	48.21	72
1.2.6	Technology utilisation	47.90	108
1.3	Business and Labour Landscape	27.93	117
	Labour Market Flexibility		
1.3.1	Ease of hiring	22.33	104
1.3.2	Ease of redundancy	0	117
	Management Practice		
1.3.3	Labour-employer cooperation	36.53	117
1.3.4	Professional management	52.87	65
1.3.5	Relationship of pay to productivity	27.92	118
2	**ATTRACT**	**32.75**	**115**
2.1	External Openness	16.08	118
	Attract Business		
2.1.1	FDI and technology transfer	28.08	118
2.1.2	Prevalence of foreign ownership	36.28	115
	Attract People		
2.1.3	Migrant stock	9.80	57
2.1.4	International students	0.26	96
2.1.5	Brain gain	5.98	118
2.2	Internal Openness	49.41	98
	Social Diversity		
2.2.1	Tolerance of minorities	35.56	76
2.2.2	Tolerance of immigrants	70.34	40
2.2.3	Social mobility	26.42	118
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	60.99	62
2.2.6	Business opportunities for women	53.76	79
3	**GROW**	**43.81**	**60**
3.1	Formal Education	34.57	52
	Enrolment		
3.1.1	Vocational enrolment	11.11	82
3.1.2	Tertiary enrolment	68.85	18
	Quality		
3.1.3	Tertiary education expenditure	36.03	20
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	22.30	58
3.2	Lifelong Learning	54.78	44
3.2.1	Quality of management schools	54.22	61
3.2.2	Prevalence of training in firms	69.39	16
3.2.3	Employee development	40.74	96
3.3	Access to Growth Opportunities	42.07	87
	Networks		
3.3.1	Use of virtual social networks	78.13	59
3.3.2	Use of virtual professional networks	18.63	54
	Empowerment		
3.3.3	Delegation of authority	37.57	103
3.3.4	Personal rights	33.93	95
4	**RETAIN**	**40.68**	**88**
4.1	Sustainability	25.80	117
4.1.1	Pension system	33.33	61
4.1.2	Taxation	32.61	104
4.1.3	Brain retention	11.47	117
4.2	Lifestyle	55.56	69
4.2.1	Environmental performance	73.03	54
4.2.2	Personal safety	0.00	115
4.2.3	Physician density	n/a	n/a
4.2.4	Sanitation	93.64	55
5	**VOCATIONAL AND TECHNICAL SKILLS**	**39.74**	**77**
5.1	Mid-Level Skills	35.65	65
5.1.1	Workforce with secondary education	32.59	70
5.1.2	Population with secondary education	55.21	30
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	19.15	58
5.2	Employability	43.84	104
5.2.1	Ease of finding skilled employees	45.52	81
5.2.2	Relevance of education system to the economy	25.09	111
5.2.3	Availability of scientists and engineers	37.45	106
5.2.4	Skills gap as major constraint	67.29	57
6	**GLOBAL KNOWLEDGE SKILLS**	**18.58**	**89**
6.1	High-Level Skills	25.71	71
6.1.1	Workforce with tertiary education	48.87	34
6.1.2	Population with tertiary education	40.11	24
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	3.44	65
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	32.79	103
6.1.7	Scientific journal articles	3.36	102
6.2	Talent Impact	11.45	102
6.2.1	Innovation output	9.87	108
6.2.2	High-value exports	0.00	118
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	24.49	72
6.2.4	New business density	n/a	n/a

VIET NAM

Key Indicators

Rank (out of 118)	**86**
Income group	**Lower-middle income**
Regional group	**Eastern, Southeastern Asia and Oceania**
Population (millions)	**91.70**
GDP per capita (PPP US$)	**6,022.62**
GDP (US$ billions)	**193.60**
GTCI score	**38.13**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



		Score	Rank
1	**ENABLE**	**47.83**	**83**
1.1	Regulatory Landscape	41.06	85
1.1.1	Government effectiveness	35.01	72
1.1.2	Business-government relations	57.93	62
1.1.3	Political stability	61.92	63
1.1.4	Regulatory quality	31.50	103
1.1.5	Corruption	18.92	95
1.2	Market Landscape	42.23	95
1.2.1	Competition intensity	67.29	67
1.2.2	Ease of doing business	51.30	78
1.2.3	Cluster development	47.00	55
1.2.4	R&D expenditure	4.29	84
1.2.5	ICT infrastructure	35.29	88
1.2.6	Technology utilisation	48.20	107
1.3	Business and Labour Landscape	60.19	62
	Labour Market Flexibility		
1.3.1	Ease of hiring	77.67	44
1.3.2	Ease of redundancy	70	63
	Management Practice		
1.3.3	Labour-employer cooperation	55.39	63
1.3.4	Professional management	43.57	95
1.3.5	Relationship of pay to productivity	54.35	41

2	**ATTRACT**	**40.60**	**96**
2.1	External Openness	29.06	100
	Attract Business		
2.1.1	FDI and technology transfer	54.00	77
2.1.2	Prevalence of foreign ownership	53.11	79
	Attract People		
2.1.3	Migrant stock	0.02	117
2.1.4	International students	0.28	95
2.1.5	Brain gain	37.90	65
2.2	Internal Openness	52.13	86
	Social Diversity		
2.2.1	Tolerance of minorities	44.44	58
2.2.2	Tolerance of immigrants	32.49	102
2.2.3	Social mobility	48.52	85
	Gender Equality		
2.2.4	Female graduates	52.18	79
2.2.5	Gender earnings gap	82.91	18
2.2.6	Business opportunities for women	52.26	88

		Score	Rank
3	**GROW**	**36.32**	**88**
3.1	Formal Education	31.51	58
	Enrolment		
3.1.1	Vocational enrolment	n/a	n/a
3.1.2	Tertiary enrolment	25.19	75
	Quality		
3.1.3	Tertiary education expenditure	22.87	51
3.1.4	Reading, maths, science	78.00	10
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	47.93	72
3.2.1	Quality of management schools	41.84	102
3.2.2	Prevalence of training in firms	52.90	32
3.2.3	Employee development	49.05	63
3.3	Access to Growth Opportunities	29.53	115
	Networks		
3.3.1	Use of virtual social networks	73.36	81
3.3.2	Use of virtual professional networks	1.70	104
	Empowerment		
3.3.3	Delegation of authority	38.85	98
3.3.4	Personal rights	4.20	115

4	**RETAIN**	**41.18**	**87**
4.1	Sustainability	33.43	98
4.1.1	Pension system	18.18	81
4.1.2	Taxation	44.92	66
4.1.3	Brain retention	37.18	76
4.2	Lifestyle	48.93	81
4.2.1	Environmental performance	39.94	103
4.2.2	Personal safety	65.65	48
4.2.3	Physician density	15.14	77
4.2.4	Sanitation	75.00	81

5	**VOCATIONAL AND TECHNICAL SKILLS**	**33.88**	**98**
5.1	Mid-Level Skills	11.65	103
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	19.11	87
5.1.3	Technicians and associate professionals	12.18	85
5.1.4	Labour productivity per employee	3.67	89
5.2	Employability	56.10	53
5.2.1	Ease of finding skilled employees	45.11	84
5.2.2	Relevance of education system to the economy	42.15	68
5.2.3	Availability of scientists and engineers	48.66	72
5.2.4	Skills gap as major constraint	88.47	20

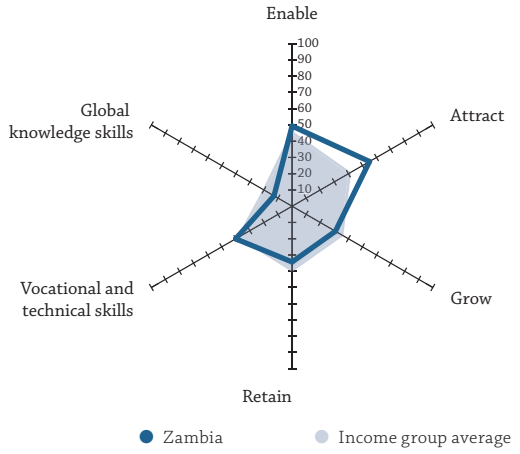
6	**GLOBAL KNOWLEDGE SKILLS**	**28.96**	**56**
6.1	High-Level Skills	15.64	101
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	10.50	82
6.1.3	Professionals	16.67	82
6.1.4	Researchers	n/a	n/a
6.1.5	Senior officials and managers	5.62	88
6.1.6	Quality of scientific institutions	38.96	88
6.1.7	Scientific journal articles	6.48	88
6.2	Talent Impact	42.28	23
6.2.1	Innovation output	42.55	38
6.2.2	High-value exports	40.14	13
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	44.14	43
6.2.4	New business density	n/a	n/a

ZAMBIA

Key Indicators

Rank (out of 118)	**89**
Income group	**Lower-middle income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**16.21**
GDP per capita (PPP US$)	**3,886.40**
GDP (US$ billions)	**22.06**
GTCI score	**37.05**
GTCI score (income group average)	**36.50**

GTCI 2017 Country Profile by Pillar



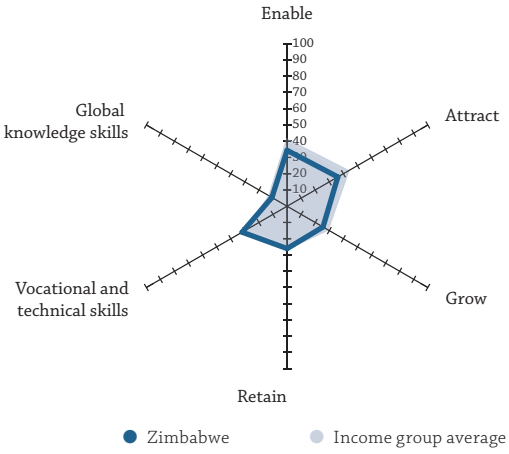
		Score	Rank
1	**ENABLE**	**49.33**	**76**
1.1	Regulatory Landscape	44.57	73
1.1.1	Government effectiveness	23.31	96
1.1.2	Business-government relations	70.59	25
1.1.3	Political stability	67.23	51
1.1.4	Regulatory quality	33.33	101
1.1.5	Corruption	28.38	69
1.2	Market Landscape	42.53	94
1.2.1	Competition intensity	75.71	25
1.2.2	Ease of doing business	48.22	81
1.2.3	Cluster development	51.22	36
1.2.4	R&D expenditure	6.43	76
1.2.5	ICT infrastructure	12.28	112
1.2.6	Technology utilisation	61.31	63
1.3	Business and Labour Landscape	60.89	61
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	80	46
	Management Practice		
1.3.3	Labour-employer cooperation	56.70	55
1.3.4	Professional management	57.39	46
1.3.5	Relationship of pay to productivity	43.69	85
2	**ATTRACT**	**54.99**	**31**
2.1	External Openness	48.96	29
	Attract Business		
2.1.1	FDI and technology transfer	61.86	46
2.1.2	Prevalence of foreign ownership	79.08	8
	Attract People		
2.1.3	Migrant stock	1.58	96
2.1.4	International students	n/a	n/a
2.1.5	Brain gain	53.29	26
2.2	Internal Openness	61.03	40
	Social Diversity		
2.2.1	Tolerance of minorities	44.44	58
2.2.2	Tolerance of immigrants	66.92	49
2.2.3	Social mobility	58.33	48
	Gender Equality		
2.2.4	Female graduates	n/a	n/a
2.2.5	Gender earnings gap	64.50	52
2.2.6	Business opportunities for women	70.96	23
3	**GROW**	**30.77**	**105**
3.1	Formal Education	3.54	116
	Enrolment		
3.1.1	Vocational enrolment	n/a	n/a
3.1.2	Tertiary enrolment	n/a	n/a
	Quality		
3.1.3	Tertiary education expenditure	7.08	91
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	45.82	81
3.2.1	Quality of management schools	55.57	54
3.2.2	Prevalence of training in firms	32.72	63
3.2.3	Employee development	49.17	62
3.3	Access to Growth Opportunities	42.96	86
	Networks		
3.3.1	Use of virtual social networks	66.86	97
3.3.2	Use of virtual professional networks	3.41	98
	Empowerment		
3.3.3	Delegation of authority	49.24	44
3.3.4	Personal rights	52.31	73
4	**RETAIN**	**34.28**	**102**
4.1	Sustainability	34.69	92
4.1.1	Pension system	10.10	88
4.1.2	Taxation	49.50	42
4.1.3	Brain retention	44.46	46
4.2	Lifestyle	33.86	101
4.2.1	Environmental performance	54.05	88
4.2.2	Personal safety	43.19	84
4.2.3	Physician density	1.96	101
4.2.4	Sanitation	36.25	103
5	**VOCATIONAL AND TECHNICAL SKILLS**	**40.10**	**76**
5.1	Mid-Level Skills	14.38	99
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	24.04	78
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	4.72	88
5.2	Employability	65.81	25
5.2.1	Ease of finding skilled employees	66.44	15
5.2.2	Relevance of education system to the economy	55.63	34
5.2.3	Availability of scientists and engineers	56.99	38
5.2.4	Skills gap as major constraint	84.18	30
6	**GLOBAL KNOWLEDGE SKILLS**	**12.84**	**105**
6.1	High-Level Skills	17.27	93
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	23.94	56
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	0.42	89
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	41.74	78
6.1.7	Scientific journal articles	2.97	105
6.2	Talent Impact	8.42	110
6.2.1	Innovation output	12.75	103
6.2.2	High-value exports	2.11	109
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	11.27	84
6.2.4	New business density	7.54	59

ZIMBABWE

Key Indicators

Rank (out of 118)	**116**
Income group	**Low income**
Regional group	**Sub-Saharan Africa**
Population (millions)	**15.60**
GDP per capita (PPP US$)	**1,793.59**
GDP (US$ billions)	**13.89**
GTCI score	**27.45**
GTCI score (income group average)	**30.03**

GTCI 2017 Country Profile by Pillar

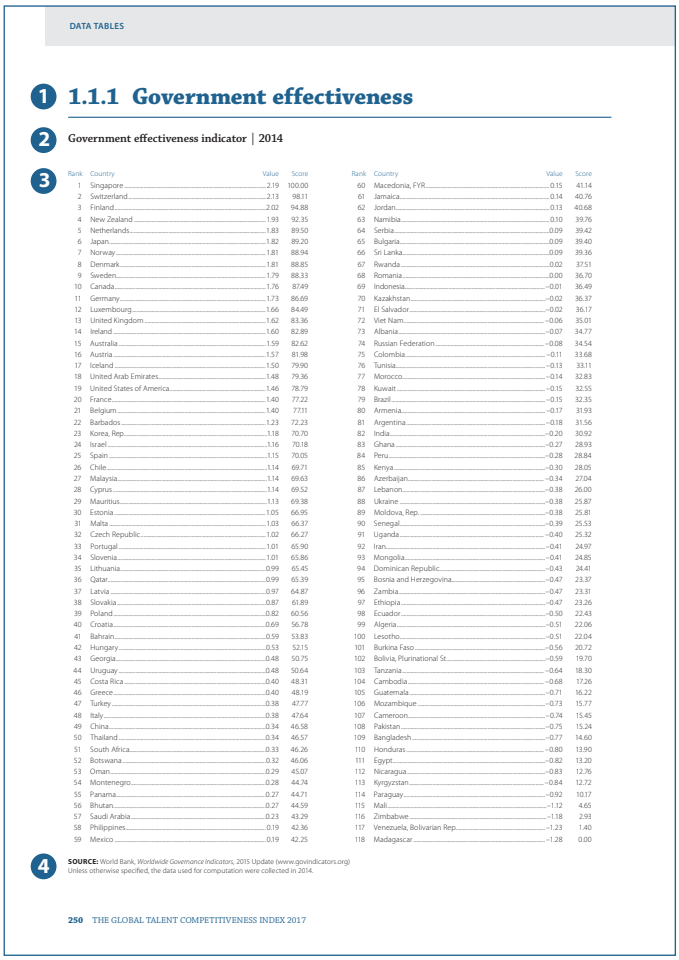


		Score	Rank
1	**ENABLE**	**34.38**	**114**
1.1	Regulatory Landscape	17.58	117
1.1.1	Government effectiveness	2.93	116
1.1.2	Business-government relations	34.07	109
1.1.3	Political stability	45.49	93
1.1.4	Regulatory quality	0.00	118
1.1.5	Corruption	5.41	115
1.2	Market Landscape	36.61	109
1.2.1	Competition intensity	62.67	81
1.2.2	Ease of doing business	24.43	112
1.2.3	Cluster development	28.94	116
1.2.4	R&D expenditure	n/a	n/a
1.2.5	ICT infrastructure	15.60	108
1.2.6	Technology utilisation	51.43	100
1.3	Business and Labour Landscape	48.94	100
	Labour Market Flexibility		
1.3.1	Ease of hiring	66.67	51
1.3.2	Ease of redundancy	40	104
	Management Practice		
1.3.3	Labour-employer cooperation	48.74	97
1.3.4	Professional management	60.19	39
1.3.5	Relationship of pay to productivity	29.09	117
2	**ATTRACT**	**36.03**	**109**
2.1	External Openness	22.36	116
	Attract Business		
2.1.1	FDI and technology transfer	30.20	117
2.1.2	Prevalence of foreign ownership	50.43	90
	Attract People		
2.1.3	Migrant stock	5.48	72
2.1.4	International students	1.74	83
2.1.5	Brain gain	23.92	103
2.2	Internal Openness	49.71	95
	Social Diversity		
2.2.1	Tolerance of minorities	21.11	101
2.2.2	Tolerance of immigrants	49.55	73
2.2.3	Social mobility	51.53	72
	Gender Equality		
2.2.4	Female graduates	46.79	85
2.2.5	Gender earnings gap	70.80	36
2.2.6	Business opportunities for women	58.49	61

		Score	Rank
3	**GROW**	**25.51**	**115**
3.1	Formal Education	3.07	117
	Enrolment		
3.1.1	Vocational enrolment	n/a	n/a
3.1.2	Tertiary enrolment	2.09	107
	Quality		
3.1.3	Tertiary education expenditure	7.12	90
3.1.4	Reading, maths, science	n/a	n/a
3.1.5	University ranking	0.00	76
3.2	Lifelong Learning	44.23	86
3.2.1	Quality of management schools	49.65	75
3.2.2	Prevalence of training in firms	36.68	56
3.2.3	Employee development	46.37	75
3.3	Access to Growth Opportunities	29.22	116
	Networks		
3.3.1	Use of virtual social networks	64.82	99
3.3.2	Use of virtual professional networks	4.46	93
	Empowerment		
3.3.3	Delegation of authority	42.77	80
3.3.4	Personal rights	4.83	114
4	**RETAIN**	**26.06**	**112**
4.1	Sustainability	29.40	111
4.1.1	Pension system	19.19	78
4.1.2	Taxation	45.93	57
4.1.3	Brain retention	23.07	110
4.2	Lifestyle	22.72	109
4.2.1	Environmental performance	41.34	101
4.2.2	Personal safety	20.58	107
4.2.3	Physician density	0.79	106
4.2.4	Sanitation	28.18	106
5	**VOCATIONAL AND TECHNICAL SKILLS**	**31.93**	**104**
5.1	Mid-Level Skills	1.98	116
5.1.1	Workforce with secondary education	n/a	n/a
5.1.2	Population with secondary education	3.28	101
5.1.3	Technicians and associate professionals	n/a	n/a
5.1.4	Labour productivity per employee	0.68	101
5.2	Employability	61.88	37
5.2.1	Ease of finding skilled employees	58.90	35
5.2.2	Relevance of education system to the economy	53.77	39
5.2.3	Availability of scientists and engineers	41.14	96
5.2.4	Skills gap as major constraint	93.70	7
6	**GLOBAL KNOWLEDGE SKILLS**	**10.80**	**112**
6.1	High-Level Skills	12.62	108
6.1.1	Workforce with tertiary education	n/a	n/a
6.1.2	Population with tertiary education	4.32	93
6.1.3	Professionals	n/a	n/a
6.1.4	Researchers	1.01	82
6.1.5	Senior officials and managers	n/a	n/a
6.1.6	Quality of scientific institutions	32.78	104
6.1.7	Scientific journal articles	12.38	70
6.2	Talent Impact	8.97	109
6.2.1	Innovation output	9.87	108
6.2.2	High-value exports	8.07	92
	Entrepreneurship		
6.2.3	New product entrepreneurial activity	n/a	n/a
6.2.4	New business density	n/a	n/a

Data Tables

How to Read the Data Tables



DATA TABLES

1 1.1.1 Government effectiveness

2 Government effectiveness indicator | 2014

3

Rank	Country	Value	Score	Rank	Country	Value	Score
1	Singapore	2.19	100.00	60	Macedonia, FYR	0.15	41.14
2	Switzerland	2.13	98.11	61	Jamaica	0.14	40.76
3	Finland	2.02	94.88	62	Jordan	0.13	40.68
4	New Zealand	1.93	92.35	63	Namibia	0.10	39.76
5	Netherlands	1.83	89.50	64	Serbia	0.09	39.42
6	Japan	1.82	89.20	65	Bulgaria	0.09	39.40
7	Norway	1.81	88.94	66	Sri Lanka	0.09	39.36
8	Denmark	1.81	88.85	67	Rwanda	0.02	37.51
9	Sweden	1.79	88.33	68	Romania	0.00	36.70
10	Canada	1.76	87.49	69	Indonesia	-0.01	36.49
11	Germany	1.73	86.69	70	Kazakhstan	-0.02	36.37
12	Luxembourg	1.66	84.49	71	El Salvador	-0.02	36.17
13	United Kingdom	1.62	83.36	72	Viet Nam	-0.06	35.01
14	Ireland	1.60	82.89	73	Albania	-0.07	34.77
15	Australia	1.59	82.62	74	Russian Federation	-0.08	34.54
16	Austria	1.57	81.98	75	Colombia	-0.11	33.68
17	Iceland	1.50	79.90	76	Tunisia	-0.13	33.11
18	United Arab Emirates	1.48	79.36	77	Morocco	-0.14	32.83
19	United States of America	1.46	78.79	78	Kuwait	-0.15	32.55
20	France	1.40	77.22	79	Brazil	-0.15	32.35
21	Belgium	1.40	77.11	80	Armenia	-0.17	31.93
22	Barbados	1.23	72.23	81	Argentina	-0.18	31.56
23	Korea, Rep.	1.18	70.70	82	India	-0.20	30.92
24	Israel	1.16	70.18	83	Ghana	-0.27	28.93
25	Spain	1.15	70.05	84	Peru	-0.28	28.84
26	Chile	1.14	69.71	85	Kenya	-0.30	28.05
27	Malaysia	1.14	69.63	86	Azerbaijan	-0.34	27.04
28	Cyprus	1.14	69.52	87	Lebanon	-0.38	26.00
29	Mauritius	1.13	69.38	88	Ukraine	-0.38	25.87
30	Estonia	1.05	66.95	89	Moldova, Rep.	-0.38	25.81
31	Malta	1.03	66.37	90	Senegal	-0.39	25.53
32	Czech Republic	1.02	66.27	91	Uganda	-0.40	25.32
33	Portugal	1.01	65.90	92	Iran	-0.41	24.97
34	Slovenia	1.01	65.86	93	Mongolia	-0.41	24.85
35	Lithuania	0.99	65.45	94	Dominican Republic	-0.43	24.41
36	Qatar	0.99	65.39	95	Bosnia and Herzegovina	-0.47	23.37
37	Latvia	0.97	64.87	96	Zambia	-0.47	23.31
38	Slovakia	0.87	61.89	97	Ethiopia	-0.47	23.26
39	Poland	0.82	60.56	98	Ecuador	-0.50	22.43
40	Croatia	0.69	56.78	99	Algeria	-0.51	22.06
41	Bahrain	0.59	53.83	100	Lesotho	-0.51	22.04
42	Hungary	0.53	52.15	101	Burkina Faso	-0.56	20.72
43	Georgia	0.48	50.75	102	Bolivia, Plurinational St	-0.59	19.70
44	Uruguay	0.48	50.64	103	Tanzania	-0.64	18.30
45	Costa Rica	0.40	48.31	104	Cambodia	-0.68	17.26
46	Greece	0.40	48.19	105	Guatemala	-0.71	16.22
47	Turkey	0.38	47.77	106	Mozambique	-0.73	15.77
48	Italy	0.38	47.64	107	Cameroon	-0.74	15.45
49	China	0.34	46.58	108	Pakistan	-0.75	15.24
50	Thailand	0.34	46.57	109	Bangladesh	-0.77	14.60
51	South Africa	0.33	46.26	110	Honduras	-0.80	13.90
52	Botswana	0.32	46.06	111	Egypt	-0.82	13.20
53	Oman	0.29	45.07	112	Nicaragua	-0.83	12.76
54	Montenegro	0.28	44.74	113	Kyrgyzstan	-0.84	12.72
55	Panama	0.27	44.71	114	Paraguay	-0.92	10.17
56	Bhutan	0.27	44.59	115	Mali	-1.12	4.65
57	Saudi Arabia	0.23	43.29	116	Zimbabwe	-1.18	2.93
58	Philippines	0.19	42.36	117	Venezuela, Bolivarian Rep.	-1.23	1.40
59	Mexico	0.19	42.25	118	Madagascar	-1.28	0.00

4 SOURCE: World Bank, *Worldwide Governance Indicators*, 2015 Update (www.govindicators.org)
Unless otherwise specified, the data used for computation were collected in 2014.

250 THE GLOBAL TALENT COMPETITIVENESS INDEX 2017

This appendix provides the rankings and scores for each of the 65 variables that make up the GTCI 2017.

Each data table consists of four parts:

1. the variable name,
2. the description or technical name and the latest year for which data are available,
3. the ranking, and
4. the source.

1 The first section provides the variable number that represents its position in the overall structure of the GTCI. The first digit refers to the pillar, the second digit refers to the sub-pillar within that pillar, and the third digit refers to the position of the variable in that sub-pillar. For instance, the variable *1.2.3 Cluster development* is positioned in the first pillar (*shown by the first digit, 1*); the second sub-pillar (*denoted by the second digit, 2*); and is the third variable within this sub-pillar (*shown by the third digit, 3*).

2 The second section spells out the description or technical name of the variable, along with the latest year for which the data are available. For qualitative variables derived from survey responses, the question asked in the survey is shown as the exact technical name. This applies to all variables taken from the World Economic Forum's Executive Opinion Survey, for instance.

3 The ranking of the countries within the data table follows their normalised scores. There are three parts to the information in the ranking: the rank of the country, the raw value, and the normalised score. Because of the way outliers are treated, in some variables several countries have the same score. For variables in which two or more countries happen to have the same raw value (and thus the same normalised score), there is a tie in ranking and then the relevant countries are sorted alphabetically. For more information about normalisation methods and variable names, please refer to the Technical Notes and Sources and Definitions sections in the Appendices.

4 The final section presents all sources and a link to the data source.

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Pillar 1

Enable

1.1.1 Government effectiveness

Government effectiveness indicator | 2014

Rank	Country	Value	Score
1	Singapore	2.19	100.00
2	Switzerland	2.13	98.11
3	Finland	2.02	94.88
4	New Zealand	1.93	92.35
5	Netherlands	1.83	89.50
6	Japan	1.82	89.20
7	Norway	1.81	88.94
8	Denmark	1.81	88.85
9	Sweden	1.79	88.33
10	Canada	1.76	87.49
11	Germany	1.73	86.69
12	Luxembourg	1.66	84.49
13	United Kingdom	1.62	83.36
14	Ireland	1.60	82.89
15	Australia	1.59	82.62
16	Austria	1.57	81.98
17	Iceland	1.50	79.90
18	United Arab Emirates	1.48	79.36
19	United States of America	1.46	78.79
20	France	1.40	77.22
21	Belgium	1.40	77.11
22	Barbados	1.23	72.23
23	Korea, Rep.	1.18	70.70
24	Israel	1.16	70.18
25	Spain	1.15	70.05
26	Chile	1.14	69.71
27	Malaysia	1.14	69.63
28	Cyprus	1.14	69.52
29	Mauritius	1.13	69.38
30	Estonia	1.05	66.95
31	Malta	1.03	66.37
32	Czech Republic	1.02	66.27
33	Portugal	1.01	65.90
34	Slovenia	1.01	65.86
35	Lithuania	0.99	65.45
36	Qatar	0.99	65.39
37	Latvia	0.97	64.87
38	Slovakia	0.87	61.89
39	Poland	0.82	60.56
40	Croatia	0.69	56.78
41	Bahrain	0.59	53.83
42	Hungary	0.53	52.15
43	Georgia	0.48	50.75
44	Uruguay	0.48	50.64
45	Costa Rica	0.40	48.31
46	Greece	0.40	48.19
47	Turkey	0.38	47.77
48	Italy	0.38	47.64
49	China	0.34	46.58
50	Thailand	0.34	46.57
51	South Africa	0.33	46.26
52	Botswana	0.32	46.06
53	Oman	0.29	45.07
54	Montenegro	0.28	44.74
55	Panama	0.27	44.71
56	Bhutan	0.27	44.59
57	Saudi Arabia	0.23	43.29
58	Philippines	0.19	42.36
59	Mexico	0.19	42.25
60	Macedonia, FYR	0.15	41.14
61	Jamaica	0.14	40.76
62	Jordan	0.13	40.68
63	Namibia	0.10	39.76
64	Serbia	0.09	39.42
65	Bulgaria	0.09	39.40
66	Sri Lanka	0.09	39.36
67	Rwanda	0.02	37.51
68	Romania	0.00	36.70
69	Indonesia	−0.01	36.49
70	Kazakhstan	−0.02	36.37
71	El Salvador	−0.02	36.17
72	Viet Nam	−0.06	35.01
73	Albania	−0.07	34.77
74	Russian Federation	−0.08	34.54
75	Colombia	−0.11	33.68
76	Tunisia	−0.13	33.11
77	Morocco	−0.14	32.83
78	Kuwait	−0.15	32.55
79	Brazil	−0.15	32.35
80	Armenia	−0.17	31.93
81	Argentina	−0.18	31.56
82	India	−0.20	30.92
83	Ghana	−0.27	28.93
84	Peru	−0.28	28.84
85	Kenya	−0.30	28.05
86	Azerbaijan	−0.34	27.04
87	Lebanon	−0.38	26.00
88	Ukraine	−0.38	25.87
89	Moldova, Rep.	−0.38	25.81
90	Senegal	−0.39	25.53
91	Uganda	−0.40	25.32
92	Iran	−0.41	24.97
93	Mongolia	−0.41	24.85
94	Dominican Republic	−0.43	24.41
95	Bosnia and Herzegovina	−0.47	23.37
96	Zambia	−0.47	23.31
97	Ethiopia	−0.47	23.26
98	Ecuador	−0.50	22.43
99	Algeria	−0.51	22.06
100	Lesotho	−0.51	22.04
101	Burkina Faso	−0.56	20.72
102	Bolivia, Plurinational St.	−0.59	19.70
103	Tanzania	−0.64	18.30
104	Cambodia	−0.68	17.26
105	Guatemala	−0.71	16.22
106	Mozambique	−0.73	15.77
107	Cameroon	−0.74	15.45
108	Pakistan	−0.75	15.24
109	Bangladesh	−0.77	14.60
110	Honduras	−0.80	13.90
111	Egypt	−0.82	13.20
112	Nicaragua	−0.83	12.76
113	Kyrgyzstan	−0.84	12.72
114	Paraguay	−0.92	10.17
115	Mali	−1.12	4.65
116	Zimbabwe	−1.18	2.93
117	Venezuela, Bolivarian Rep.	−1.23	1.40
118	Madagascar	−1.28	0.00

SOURCE: World Bank, *Worldwide Governance Indicators*, 2015 Update (www.govindicators.org)
Unless otherwise specified, the data used for computation were collected in 2014.

1.1.2 Business-government relations

Average answer to the question: In your country, how would you best characterise relations between business and government? [1 = highly confrontational; 7 = highly cooperative] | 2014

Rank	Country	Value	Score
1	Singapore	6.28	100.00
2	United Arab Emirates	6.17	97.74
3	Qatar	6.12	96.63
4	Luxembourg	6.01	94.21
5	Finland	5.90	91.67
6	Rwanda	5.89	91.45
7	Norway (2013)	5.85	90.52
8	Ireland	5.80	89.50
9	New Zealand	5.74	88.23
10	Bahrain	5.71	87.42
11	Switzerland	5.67	86.64
12	Malaysia	5.64	85.90
13	Oman	5.47	82.11
14	Japan	5.37	79.91
15	Canada	5.34	79.23
16	Netherlands	5.33	79.01
17	Sweden	5.30	78.53
18	Mauritius	5.22	76.67
19	Denmark	5.12	74.56
20	Chile	5.09	73.82
21	Philippines	5.07	73.28
22	United Kingdom	5.01	72.12
23	Germany	5.00	71.85
24	Saudi Arabia	4.99	71.56
25	Zambia	4.94	70.59
26	Botswana	4.93	70.22
27	Sri Lanka	4.93	70.20
28	Macedonia, FYR	4.92	70.14
29	Malta	4.90	69.53
30	Austria	4.89	69.33
31	China	4.88	69.11
32	Indonesia	4.84	68.26
33	Estonia	4.83	67.98
34	Senegal	4.78	67.06
35	Barbados	4.78	66.85
36	Mexico	4.75	66.36
37	Australia	4.68	64.71
38	Costa Rica	4.66	64.38
39	Dominican Republic	4.65	64.02
40	Burkina Faso	4.63	63.72
41	Kazakhstan	4.62	63.33
42	Portugal	4.61	63.11
43	Panama	4.59	62.69
44	Namibia	4.58	62.46
45	Spain	4.57	62.37
46	Guatemala	4.57	62.31
47	Korea, Rep.	4.56	62.18
48	Cyprus	4.56	62.09
49	Bosnia and Herzegovina	4.55	61.96
50	Morocco	4.55	61.83
51	Jordan	4.54	61.76
52	Montenegro	4.54	61.62
53	Nicaragua	4.54	61.58
54	Kenya	4.52	61.21
55	Turkey	4.48	60.44
56	Colombia	4.48	60.41
57	Mozambique	4.47	60.12
58	Bhutan	4.47	60.02
59	Azerbaijan	4.45	59.58
60	Uganda	4.44	59.36
61	Georgia	4.43	59.13
62	Viet Nam	4.37	57.93
63	Thailand	4.33	57.02
64	Lesotho	4.29	56.22
65	Iceland	4.27	55.61
66	Israel	4.25	55.37
67	Paraguay	4.24	54.99
68	Peru	4.22	54.58
69	United States of America	4.17	53.52
70	Jamaica	4.14	52.82
71	Mali	4.07	51.23
72	Honduras	4.07	51.21
73	Lithuania	4.06	51.15
74	Cameroon	4.05	50.95
75	Armenia	4.05	50.82
76	Uruguay	4.03	50.37
77	Ethiopia	4.01	49.86
78	El Salvador	3.99	49.46
79	Cambodia	3.98	49.38
80	Bangladesh	3.98	49.21
81	Albania	3.96	48.82
82	Belgium	3.92	47.89
83	Latvia	3.90	47.49
84	India	3.89	47.33
85	Russian Federation	3.88	47.01
86	Tunisia	3.86	46.55
87	Poland	3.83	46.08
88	Kyrgyzstan	3.83	46.05
89	Algeria	3.81	45.64
90	Brazil	3.79	45.19
91	Ecuador	3.79	45.17
92	Tanzania	3.77	44.72
93	Czech Republic	3.77	44.63
94	Romania	3.65	42.05
95	Ghana	3.65	42.00
96	Serbia	3.59	40.63
97	Moldova, Rep.	3.56	40.04
98	Egypt	3.56	39.94
99	Pakistan	3.54	39.68
100	Bolivia, Plurinational St	3.45	37.68
101	South Africa	3.44	37.27
102	Hungary	3.40	36.49
103	France	3.39	36.18
104	Kuwait	3.38	36.12
105	Ukraine	3.38	36.10
106	Greece	3.38	36.03
107	Madagascar	3.32	34.69
108	Iran	3.32	34.63
109	Zimbabwe	3.29	34.07
110	Bulgaria	3.25	33.25
111	Slovenia	3.20	32.04
112	Lebanon	3.18	31.69
113	Croatia	3.12	30.38
114	Mongolia	2.98	27.23
115	Slovakia	2.88	24.99
116	Italy	2.66	20.07
117	Argentina	2.33	12.87
118	Venezuela, Bolivarian Rep.	1.75	0.00

SOURCE: World Economic Forum, Executive Opinion Survey 2013–2014 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2014.

1.1.3 Political stability

Political stability and absence of violence indicator | 2014

Rank	Country	Value	Score
1	New Zealand	1.49	100.00
2	Luxembourg	1.39	97.38
3	Barbados	1.35	96.28
4	Austria	1.29	94.94
5	Finland	1.28	94.68
6	Switzerland	1.24	93.67
7	Iceland	1.24	93.59
8	Singapore	1.23	93.20
9	Canada	1.18	91.93
10	Norway	1.13	90.81
11	Malta	1.11	90.38
12	Australia	1.08	89.53
13	Sweden	1.07	89.34
14	Ireland	1.07	89.15
15	Netherlands	1.05	88.60
16	Botswana	1.02	88.01
17	Slovakia	1.02	87.98
18	Japan	1.02	87.97
19	Uruguay	1.00	87.45
20	Qatar	1.00	87.44
21	Bhutan	1.00	87.36
22	Czech Republic	0.97	86.61
23	Denmark	0.94	86.02
24	Germany	0.93	85.79
25	Mongolia	0.87	84.03
26	Poland	0.87	84.02
27	United Arab Emirates	0.81	82.74
28	Slovenia	0.79	82.18
29	Portugal	0.79	82.18
30	Lithuania	0.78	81.98
31	Estonia	0.76	81.35
32	Mauritius	0.74	80.77
33	Belgium	0.71	80.18
34	Hungary	0.70	79.83
35	Cyprus	0.69	79.47
36	Oman	0.66	78.77
37	Costa Rica	0.63	78.05
38	United States of America	0.62	77.79
39	Namibia	0.62	77.70
40	Croatia	0.60	77.30
41	Latvia	0.55	76.12
42	Italy	0.50	74.68
43	Chile	0.49	74.57
44	Albania	0.47	74.04
45	United Kingdom	0.44	73.20
46	France	0.36	71.06
47	Malaysia	0.34	70.64
48	Spain	0.32	70.05
49	Macedonia, FYR	0.25	68.34
50	Montenegro	0.24	67.98
51	Zambia	0.21	67.23
52	Dominican Republic	0.19	66.77
53	Korea, Rep.	0.19	66.74
54	Serbia	0.18	66.56
55	Kuwait	0.14	65.46
56	Panama	0.10	64.45
57	Jamaica	0.09	64.24
58	Bulgaria	0.08	64.08
59	Romania	0.08	63.97
60	Argentina	0.08	63.91
61	Kazakhstan	0.05	63.36
62	Greece	0.02	62.61
63	Viet Nam	0.00	61.92
64	Ecuador	–0.01	61.75
65	Brazil	–0.01	61.64
66	Cambodia	–0.04	60.98
67	Nicaragua	–0.05	60.80
68	Bosnia and Herzegovina	–0.06	60.39
69	South Africa	–0.08	60.07
70	Rwanda	–0.10	59.45
71	Moldova, Rep.	–0.10	59.42
72	Senegal	–0.13	58.76
73	Ghana	–0.13	58.69
74	El Salvador	–0.15	58.20
75	Paraguay	–0.20	56.88
76	Armenia	–0.21	56.77
77	Georgia	–0.23	56.05
78	Saudi Arabia	–0.24	55.94
79	Sri Lanka	–0.25	55.62
80	Lesotho	–0.27	55.00
81	Mozambique	–0.35	53.06
82	Bolivia, Plurinational St.	–0.36	52.83
83	Indonesia	–0.37	52.61
84	Morocco	–0.39	51.95
85	China	–0.46	50.21
86	Azerbaijan	–0.50	49.22
87	Honduras	–0.51	48.89
88	Peru	–0.52	48.70
89	Tanzania	–0.54	48.34
90	Madagascar	–0.54	48.14
91	Jordan	–0.56	47.76
92	Guatemala	–0.64	45.66
93	Zimbabwe	–0.65	45.49
94	Philippines	–0.70	44.11
95	Mexico	–0.76	42.70
96	Kyrgyzstan	–0.78	42.02
97	Burkina Faso	–0.79	41.95
98	Venezuela, Bolivarian Rep.	–0.83	40.99
99	Russian Federation	–0.84	40.61
100	Bangladesh	–0.88	39.69
101	Iran	–0.91	38.89
102	Thailand	–0.91	38.89
103	Uganda	–0.93	38.35
104	Tunisia	–0.93	38.24
105	Bahrain	–0.94	38.04
106	Cameroon	–0.94	37.95
107	India	–0.96	37.53
108	Israel	–0.99	36.70
109	Turkey	–1.06	35.04
110	Colombia	–1.12	33.47
111	Algeria	–1.17	32.18
112	Ethiopia	–1.24	30.44
113	Kenya	–1.27	29.71
114	Egypt	–1.58	21.72
115	Lebanon	–1.72	18.19
116	Mali	–1.74	17.76
117	Ukraine	–1.93	12.90
118	Pakistan	–2.44	0.00

SOURCE: World Bank, *Worldwide Governance Indicators*, 2015 Update (www.govindicators.org)
Unless otherwise specified, the data used for computation were collected in 2014.

1.1.4 Regulatory quality

Regulatory quality indicator | 2014

Rank	Country	Value	Score
1	Singapore	2.23	100.00
2	New Zealand	1.94	93.07
3	Finland	1.90	92.07
4	Australia	1.87	91.24
5	Canada	1.83	90.30
6	United Kingdom	1.83	90.28
7	Switzerland	1.82	89.99
8	Sweden	1.80	89.63
9	Netherlands	1.78	89.00
10	Ireland	1.75	88.45
11	Denmark	1.72	87.52
12	Germany	1.70	87.00
13	Estonia	1.67	86.51
14	Luxembourg	1.65	85.85
15	Norway	1.64	85.61
16	Chile	1.50	82.33
17	Austria	1.49	82.03
18	United States of America	1.27	76.73
19	Iceland	1.21	75.25
20	Israel	1.21	75.19
21	Lithuania	1.20	74.97
22	Belgium	1.17	74.33
23	Latvia	1.17	74.25
24	Japan	1.14	73.45
25	Korea, Rep.	1.11	72.77
26	Malta	1.10	72.66
27	Cyprus	1.09	72.43
28	France	1.09	72.20
29	Poland	1.06	71.57
30	Czech Republic	1.02	70.69
31	Mauritius	1.00	70.14
32	United Arab Emirates	0.98	69.58
33	Georgia	0.93	68.32
34	Slovakia	0.90	67.62
35	Malaysia	0.84	66.16
36	Spain	0.78	64.72
37	Portugal	0.77	64.53
38	Hungary	0.77	64.45
39	Bahrain	0.70	62.73
40	Oman	0.69	62.60
41	Slovenia	0.66	61.94
42	Italy	0.66	61.91
43	Botswana	0.64	61.41
44	Romania	0.60	60.34
45	Bulgaria	0.57	59.79
46	Qatar	0.57	59.61
47	Costa Rica	0.53	58.70
48	Uruguay	0.52	58.51
49	Peru	0.52	58.50
50	Colombia	0.50	58.08
51	Macedonia, FYR	0.47	57.29
52	Mexico	0.43	56.27
53	Turkey	0.41	55.76
54	Croatia	0.40	55.64
55	Panama	0.37	54.91
56	Greece	0.34	54.23
57	El Salvador	0.34	54.21
58	South Africa	0.32	53.67
59	Barbados	0.31	53.49
60	Thailand	0.27	52.30
61	Albania	0.23	51.32
62	Armenia	0.22	51.13
63	Rwanda	0.18	50.26
64	Jamaica	0.16	49.80
65	Serbia	0.14	49.36
66	Montenegro	0.12	48.78
67	Jordan	0.08	47.79
68	Namibia	0.03	46.64
69	Moldova, Rep.	0.02	46.45
70	Saudi Arabia	−0.01	45.69
71	Morocco	−0.01	45.58
72	Philippines	−0.01	45.50
73	Dominican Republic	−0.04	44.99
74	Ghana	−0.04	44.94
75	Brazil	−0.07	44.09
76	Sri Lanka	−0.08	43.83
77	Bosnia and Herzegovina	−0.09	43.65
78	Indonesia	−0.10	43.38
79	Kuwait	−0.13	42.68
80	Guatemala	−0.19	41.32
81	Lebanon	−0.22	40.50
82	Senegal	−0.22	40.48
83	Mongolia	−0.25	39.72
84	China	−0.27	39.38
85	Kazakhstan	−0.27	39.35
86	Paraguay	−0.28	39.10
87	Azerbaijan	−0.29	38.74
88	Burkina Faso	−0.33	37.72
89	Kenya	−0.34	37.69
90	Tanzania	−0.34	37.53
91	Tunisia	−0.35	37.39
92	Uganda	−0.36	36.99
93	Honduras	−0.38	36.70
94	Nicaragua	−0.38	36.67
95	Mozambique	−0.39	36.30
96	Cambodia	−0.40	36.06
97	Russian Federation	−0.40	36.03
98	Kyrgyzstan	−0.42	35.56
99	Lesotho	−0.43	35.37
100	India	−0.45	34.93
101	Zambia	−0.52	33.33
102	Mali	−0.56	32.33
103	Viet Nam	−0.59	31.50
104	Ukraine	−0.63	30.66
105	Pakistan	−0.69	29.21
106	Madagascar	−0.72	28.27
107	Egypt	−0.75	27.54
108	Bolivia, Plurinational St.	−0.86	24.91
109	Cameroon	−0.94	23.04
110	Bangladesh	−0.94	22.99
111	Ethiopia	−0.98	22.10
112	Bhutan	−1.01	21.32
113	Ecuador	−1.02	21.12
114	Argentina	−1.08	19.66
115	Algeria	−1.21	16.56
116	Iran	−1.46	10.35
117	Venezuela, Bolivarian Rep.	−1.81	2.01
118	Zimbabwe	−1.89	0.00

SOURCE: World Bank, *Worldwide Governance Indicators*, 2015 Update (www.govindicators.org)
Unless otherwise specified, the data used for computation were collected in 2014.

1.1.5 Corruption

Corruption Perceptions Index | 2015

Rank	Country	Value	Score
1	Denmark	91.00	100.00
2	Finland	90.00	98.65
3	Sweden	89.00	97.30
4	New Zealand	88.00	95.95
5	Netherlands	87.00	94.59
5	Norway	87.00	94.59
7	Switzerland	86.00	93.24
8	Singapore	85.00	91.89
9	Canada	83.00	89.19
10	Germany	81.00	86.49
10	United Kingdom	81.00	86.49
10	Luxembourg	81.00	86.49
13	Australia	79.00	83.78
13	Iceland	79.00	83.78
15	Belgium	77.00	81.08
16	Austria	76.00	79.73
16	United States of America	76.00	79.73
18	Ireland	75.00	78.38
18	Japan	75.00	78.38
20	Uruguay	74.00	77.03
21	Qatar	71.00	72.97
22	United Arab Emirates	70.00	71.62
22	Chile	70.00	71.62
22	Estonia	70.00	71.62
22	France	70.00	71.62
26	Bhutan	65.00	64.86
27	Botswana	63.00	62.16
27	Portugal	63.00	62.16
29	Poland	62.00	60.81
30	Cyprus	61.00	59.46
30	Israel	61.00	59.46
30	Lithuania	61.00	59.46
33	Slovenia	60.00	58.11
34	Spain	58.00	55.41
35	Czech Republic	56.00	52.70
35	Korea, Rep.	56.00	52.70
35	Malta	56.00	52.70
38	Costa Rica	55.00	51.35
38	Latvia	55.00	51.35
40	Rwanda	54.00	50.00
41	Jordan	53.00	48.65
41	Mauritius	53.00	48.65
41	Namibia	53.00	48.65
44	Georgia	52.00	47.30
44	Saudi Arabia	52.00	47.30
46	Bahrain	51.00	45.95
46	Croatia	51.00	45.95
46	Hungary	51.00	45.95
46	Slovakia	51.00	45.95
50	Malaysia	50.00	44.59
51	Kuwait	49.00	43.24
52	Ghana	47.00	40.54
53	Greece	46.00	39.19
53	Romania	46.00	39.19
55	Oman	45.00	37.84
56	Italy	44.00	36.49
56	Lesotho	44.00	36.49
56	Montenegro	44.00	36.49
56	Senegal	44.00	36.49
56	South Africa	44.00	36.49
61	Macedonia, FYR	42.00	33.78
61	Turkey	42.00	33.78
63	Bulgaria	41.00	32.43
63	Jamaica	41.00	32.43
65	Serbia	40.00	31.08
66	Mongolia	39.00	29.73
66	Panama	39.00	29.73
66	El Salvador	39.00	29.73
69	Burkina Faso	38.00	28.38
69	Bosnia and Herzegovina	38.00	28.38
69	Brazil	38.00	28.38
69	India	38.00	28.38
69	Thailand	38.00	28.38
69	Tunisia	38.00	28.38
69	Zambia	38.00	28.38
76	China	37.00	27.03
76	Colombia	37.00	27.03
76	Sri Lanka	37.00	27.03
79	Albania	36.00	25.68
79	Algeria	36.00	25.68
79	Egypt	36.00	25.68
79	Indonesia	36.00	25.68
79	Morocco	36.00	25.68
79	Peru	36.00	25.68
85	Armenia	35.00	24.32
85	Mexico	35.00	24.32
85	Mali	35.00	24.32
85	Philippines	35.00	24.32
89	Bolivia, Plurinational St	34.00	22.97
90	Dominican Republic	33.00	21.62
90	Ethiopia	33.00	21.62
90	Moldova, Rep.	33.00	21.62
93	Argentina	32.00	20.27
93	Ecuador	32.00	20.27
95	Honduras	31.00	18.92
95	Mozambique	31.00	18.92
95	Viet Nam	31.00	18.92
98	Pakistan	30.00	17.57
98	Tanzania	30.00	17.57
100	Azerbaijan	29.00	16.22
100	Russian Federation	29.00	16.22
102	Guatemala	28.00	14.86
102	Kazakhstan	28.00	14.86
102	Kyrgyzstan	28.00	14.86
102	Lebanon	28.00	14.86
102	Madagascar	28.00	14.86
107	Cameroon	27.00	13.51
107	Iran	27.00	13.51
107	Nicaragua	27.00	13.51
107	Paraguay	27.00	13.51
107	Ukraine	27.00	13.51
112	Bangladesh	25.00	10.81
112	Kenya	25.00	10.81
112	Uganda	25.00	10.81
115	Cambodia	21.00	5.41
115	Zimbabwe	21.00	5.41
117	Venezuela, Bolivarian Rep.	17.00	0.00
n/a	Barbados	n/a	n/a

SOURCE: Transparency International, *The Corruption Perceptions Index 2015* (http://www.transparency.org/research/cpi)
Unless otherwise specified, the data used for computation were collected in 2015.

1.2.1 Competition intensity

Average answer to the question: In your country, how intense is competition in the local markets? [1 = not intense at all; 7 = extremely intense] | 2015

Rank	Country	Value	Score
1	Japan	6.33	88.86
2	United Kingdom	6.02	83.69
3	United States of America	6.01	83.58
4	Belgium	5.97	82.92
5	Germany	5.97	82.83
6	United Arab Emirates (2014)	5.96	82.60
7	Australia	5.93	82.21
8	Turkey	5.87	81.17
9	Netherlands	5.86	80.99
10	Malta	5.84	80.74
11	Korea, Rep.	5.82	80.40
12	Czech Republic	5.75	79.12
13	Austria	5.73	78.88
14	New Zealand	5.68	77.94
15	Sri Lanka	5.67	77.76
16	Lithuania	5.64	77.41
17	Spain	5.61	76.86
18	Estonia	5.61	76.79
19	Barbados	5.58	76.41
20	Singapore	5.58	76.29
21	Chile	5.57	76.18
22	Kenya	5.56	75.96
23	Canada	5.55	75.89
24	Qatar	5.55	75.82
25	Zambia	5.54	75.71
26	Slovakia	5.54	75.62
27	Guatemala	5.53	75.54
28	France	5.52	75.35
29	Switzerland	5.52	75.34
30	Macedonia, FYR	5.47	74.53
31	Mauritius	5.46	74.34
32	Sweden	5.46	74.27
33	Lebanon	5.44	74.08
34	Colombia	5.44	73.92
35	China	5.41	73.46
36	Malaysia	5.41	73.44
37	Latvia	5.40	73.41
38	Jamaica	5.40	73.29
39	Saudi Arabia	5.39	73.13
40	Brazil	5.37	72.85
41	Thailand	5.36	72.72
42	South Africa	5.35	72.53
43	Dominican Republic	5.34	72.35
44	Denmark	5.30	71.69
45	Cyprus	5.29	71.50
46	Bahrain	5.29	71.47
47	Poland	5.29	71.45
48	Norway	5.28	71.41
49	Uganda	5.28	71.39
50	Panama	5.28	71.33
51	Italy	5.26	70.98
52	Portugal	5.26	70.98
53	Costa Rica	5.25	70.79
54	Philippines	5.23	70.45
55	Jordan	5.21	70.22
56	Peru	5.17	69.45
57	Mexico	5.16	69.36
58	Luxembourg	5.15	69.13
59	El Salvador	5.13	68.77
60	Hungary	5.12	68.73
61	Slovenia	5.12	68.69
62	Indonesia	5.11	68.54
63	Ireland	5.08	68.06
64	Greece	5.07	67.81
65	Kuwait	5.05	67.49
66	Rwanda (2014)	5.04	67.35
67	Viet Nam	5.04	67.29
68	Botswana	5.03	67.18
69	Morocco	5.03	67.10
70	Honduras	4.99	66.47
71	Bangladesh	4.98	66.31
72	Ecuador	4.97	66.23
73	Russian Federation (2014)	4.97	66.23
74	Mongolia	4.96	65.99
75	Paraguay	4.95	65.85
76	Senegal	4.95	65.80
77	Croatia	4.90	64.95
78	Iceland	4.83	63.77
79	Armenia	4.81	63.51
80	Ghana	4.79	63.13
81	Zimbabwe	4.76	62.67
82	Finland	4.76	62.65
83	Tunisia	4.75	62.50
84	Georgia	4.74	62.32
85	Uruguay	4.74	62.26
86	Kazakhstan	4.72	62.06
87	Oman	4.71	61.82
88	Nicaragua	4.70	61.59
89	Cambodia	4.69	61.51
90	Pakistan	4.69	61.48
91	Ukraine	4.66	60.94
92	Namibia	4.64	60.61
93	India	4.63	60.57
94	Bhutan	4.63	60.44
95	Moldova, Rep.	4.62	60.38
96	Bulgaria	4.61	60.19
97	Cameroon	4.59	59.80
98	Burkina Faso	4.57	59.42
99	Mozambique	4.56	59.39
100	Madagascar	4.56	59.38
101	Tanzania	4.53	58.82
102	Romania	4.51	58.58
103	Mali	4.46	57.74
104	Kyrgyzstan	4.44	57.34
105	Israel	4.43	57.19
106	Bosnia and Herzegovina	4.40	56.60
107	Lesotho	4.37	56.20
108	Azerbaijan (2014)	4.35	55.81
109	Iran	4.34	55.71
110	Argentina	4.30	54.93
111	Serbia	4.27	54.58
112	Ethiopia	4.27	54.58
113	Bolivia, Plurinational St.	4.27	54.44
114	Egypt	4.24	53.95
115	Montenegro	4.18	52.99
116	Albania	4.04	50.62
117	Algeria	3.74	45.70
118	Venezuela, Bolivarian Rep.	2.75	29.13

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

1.2.2 Ease of doing business

Ease of doing business index | 2016

Rank	Country	Value	Score
1	Singapore	87.34	100.00
2	New Zealand	86.79	98.94
3	Denmark	84.40	94.33
4	Korea, Rep.	83.88	93.32
5	United Kingdom	82.46	90.58
6	United States of America	82.15	89.99
7	Sweden	81.72	89.16
8	Norway	81.61	88.94
9	Finland	81.05	87.86
10	Macedonia, FYR	80.18	86.19
11	Australia	80.08	85.99
12	Canada	80.07	85.97
13	Germany	79.87	85.59
14	Estonia	79.49	84.85
15	Ireland	79.15	84.20
16	Malaysia	79.13	84.16
17	Iceland	78.93	83.77
18	Lithuania	78.88	83.68
19	Austria	78.38	82.71
20	Latvia	78.06	82.10
21	Portugal	77.57	81.15
22	Georgia	77.45	80.92
23	Poland	76.45	78.99
24	Switzerland	76.04	78.20
25	France	75.96	78.04
26	Netherlands	75.94	78.01
27	Slovakia	75.62	77.39
27	Slovenia	75.62	77.39
29	United Arab Emirates	75.10	76.38
30	Mauritius	75.05	76.29
31	Spain	74.86	75.92
32	Japan	74.72	75.65
33	Armenia	74.22	74.69
34	Czech Republic	73.95	74.17
35	Romania	73.78	73.84
36	Bulgaria	73.72	73.72
36	Mexico	73.72	73.72
38	Croatia	72.71	71.77
39	Kazakhstan	72.68	71.72
40	Hungary	72.57	71.50
41	Belgium	72.50	71.37
42	Italy	72.07	70.54
43	Montenegro	71.85	70.11
44	Cyprus	71.78	69.98
45	Chile	71.49	69.42
46	Thailand	71.42	69.28
47	Peru	71.33	69.11
48	Russian Federation	70.99	68.45
49	Moldova, Rep.	70.97	68.42
50	Israel	70.56	67.62
51	Colombia	70.43	67.37
52	Turkey	69.16	64.92
53	Mongolia	68.83	64.29
54	Costa Rica	68.55	63.75
55	Serbia	68.41	63.48
56	Greece	68.38	63.42
57	Luxembourg	68.31	63.28
58	Rwanda	68.12	62.92
59	Azerbaijan	67.80	62.30
60	Jamaica	67.27	61.28
61	Bahrain	66.81	60.39
62	Kyrgyzstan	66.01	58.85
63	Qatar	65.97	58.77
64	Panama	65.74	58.33
65	Oman	65.40	57.67
66	Bhutan	65.21	57.30
67	Botswana	64.98	56.86
68	South Africa	64.89	56.69
69	Tunisia	64.88	56.67
70	Morocco	64.51	55.95
71	Bosnia and Herzegovina	63.71	54.41
72	Malta	63.70	54.39
73	Guatemala	63.49	53.98
74	Saudi Arabia	63.17	53.37
75	Ukraine	63.04	53.12
76	China	62.93	52.90
77	El Salvador	62.76	52.58
78	Viet Nam	62.10	51.30
79	Uruguay	61.21	49.59
80	Dominican Republic	61.16	49.49
81	Albania	60.50	48.22
81	Zambia	60.50	48.22
83	Paraguay	60.19	47.62
84	Kuwait	60.17	47.58
84	Namibia	60.17	47.58
86	Philippines	60.07	47.39
87	Sri Lanka	58.96	45.24
88	Kenya	58.24	43.85
89	Indonesia	58.12	43.62
90	Honduras	58.06	43.51
91	Jordan	57.84	43.08
92	Ghana	57.69	42.79
92	Lesotho	57.69	42.79
94	Brazil	57.67	42.76
95	Ecuador	57.47	42.37
96	Iran	57.44	42.31
97	Barbados	56.85	41.17
98	Argentina	56.78	41.04
99	Uganda	56.64	40.77
100	Lebanon	56.39	40.29
101	Nicaragua	55.78	39.11
102	Cambodia	55.22	38.03
103	India	54.68	36.99
104	Egypt	54.43	36.50
105	Mozambique	53.98	35.64
106	Pakistan	51.69	31.22
107	Tanzania	51.62	31.08
108	Burkina Faso	50.81	29.52
108	Mali	50.81	29.52
110	Ethiopia	49.73	27.44
111	Senegal	48.57	25.20
112	Zimbabwe	48.17	24.43
113	Bolivia, Plurinational St.	47.47	23.08
114	Algeria	45.72	19.70
115	Madagascar	45.68	19.62
116	Cameroon	44.11	16.59
117	Bangladesh	43.10	14.64
118	Venezuela, Bolivarian Rep.	35.51	0.00

SOURCE: World Bank, *Doing Business 2016: Measuring Regulatory Quality and Efficiency* (http://www.doingbusiness.org/reports/global-reports/doing-business-2016)
Unless otherwise specified, the data used for computation were collected in 2016.

1.2.3 Cluster development

Average answer to the question: In your country, how widespread are well-developed and deep clusters (geographic concentrations of firms, suppliers, producers of related products and services, and specialized institutions in a particular field)? [1 = nonexistent; 7 = widespread in many fields] | 2015

Rank	Country	Value	Score
1	United Arab Emirates (2014)	5.49	74.83
2	United States of America	5.49	74.78
3	Germany	5.46	74.40
4	Italy	5.46	74.27
5	Malaysia	5.32	72.02
6	Switzerland	5.30	71.70
7	United Kingdom	5.30	71.69
8	Qatar	5.28	71.41
9	Japan	5.28	71.26
10	Netherlands	5.22	70.28
11	Norway	5.21	70.13
12	Singapore	5.13	68.81
13	Luxembourg	5.07	67.76
14	Austria	4.93	65.42
15	Finland	4.91	65.10
16	Ireland	4.89	64.81
17	Sweden	4.82	63.74
18	Canada	4.80	63.27
19	Saudi Arabia	4.60	60.03
20	Belgium	4.58	59.63
21	Korea, Rep.	4.53	58.77
22	China	4.53	58.77
23	Denmark	4.46	57.74
24	France	4.46	57.65
25	Bahrain	4.45	57.51
26	Indonesia	4.37	56.15
27	India	4.36	55.97
28	Israel	4.34	55.72
29	Jordan	4.27	54.55
30	Egypt	4.27	54.48
31	South Africa	4.21	53.58
32	Mexico	4.19	53.24
33	Portugal	4.16	52.64
34	Brazil	4.15	52.52
35	Kenya	4.08	51.29
36	Zambia	4.07	51.22
37	Thailand	4.07	51.16
38	Australia	4.06	51.04
39	Panama	4.04	50.61
40	Costa Rica	4.02	50.41
41	Rwanda	4.01	50.11
42	Mauritius	4.01	50.10
43	Philippines	3.98	49.64
44	New Zealand	3.98	49.59
45	Iceland	3.97	49.57
46	Honduras	3.97	49.51
47	Malta	3.96	49.33
48	Spain	3.92	48.72
49	Turkey	3.91	48.58
50	Cyprus	3.89	48.19
51	Czech Republic	3.88	48.05
52	Slovakia	3.88	48.00
53	Namibia	3.87	47.90
54	Guatemala	3.83	47.21
55	Viet Nam	3.82	47.00
56	Kuwait	3.78	46.26
57	Barbados	3.77	46.10
58	Bangladesh	3.76	45.98
59	Estonia	3.76	45.93
60	Sri Lanka	3.75	45.90
61	Cambodia	3.74	45.70
62	Colombia	3.70	44.94
63	Mali	3.69	44.75
64	Pakistan	3.68	44.68
65	Lebanon	3.68	44.66
66	Lesotho	3.68	44.60
67	El Salvador	3.67	44.47
68	Chile	3.66	44.38
69	Macedonia, FYR	3.66	44.27
70	Romania	3.65	44.14
71	Hungary	3.63	43.79
72	Ghana	3.62	43.68
73	Senegal	3.60	43.39
74	Latvia	3.60	43.25
75	Oman	3.59	43.14
76	Poland	3.58	43.02
77	Iran	3.56	42.69
78	Dominican Republic	3.54	42.33
79	Bhutan	3.52	41.97
80	Lithuania	3.52	41.93
81	Uganda	3.49	41.52
82	Tanzania	3.46	40.98
83	Mozambique	3.46	40.97
84	Jamaica	3.46	40.95
85	Slovenia	3.46	40.94
86	Morocco	3.43	40.45
87	Azerbaijan (2014)	3.40	40.08
88	Ecuador	3.40	40.06
89	Cameroon	3.34	38.94
90	Tunisia	3.33	38.77
91	Uruguay	3.31	38.56
92	Botswana	3.31	38.55
93	Ethiopia	3.29	38.18
94	Peru	3.19	36.50
95	Armenia	3.17	36.18
96	Algeria	3.16	36.05
97	Bulgaria	3.16	35.98
98	Russian Federation (2014)	3.13	35.56
99	Bolivia, Plurinational St.	3.13	35.44
100	Serbia	3.12	35.39
101	Nicaragua	3.11	35.24
102	Kazakhstan	3.11	35.22
103	Argentina	3.08	34.60
104	Croatia	3.05	34.15
105	Georgia	3.02	33.67
106	Bosnia and Herzegovina	2.96	32.67
107	Madagascar	2.95	32.57
108	Ukraine	2.95	32.50
109	Greece	2.95	32.47
110	Montenegro	2.94	32.36
111	Burkina Faso	2.90	31.62
112	Kyrgyzstan	2.87	31.24
113	Mongolia	2.86	30.98
114	Albania	2.85	30.87
115	Paraguay	2.78	29.63
116	Zimbabwe	2.74	28.94
117	Venezuela, Bolivarian Rep.	2.33	22.13
118	Moldova, Rep.	2.32	22.05

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

1.2.4 R&D expenditure

Gross expenditure on R&D (%) | 2014

Rank	Country	Value	Score
1	Israel (2013)	4.21	100.00
2	Korea, Rep. (2013)	4.15	98.57
3	Japan (2013)	3.47	82.38
4	Finland (2013)	3.31	78.57
5	Sweden (2013)	3.30	78.33
6	Denmark (2013)	3.06	72.62
7	Switzerland (2012)	2.96	70.24
8	Germany (2013)	2.85	67.62
9	Austria	2.83	67.14
10	United States of America (2012)	2.81	66.67
11	Slovenia (2013)	2.59	61.43
12	Iceland (2011)	2.49	59.05
13	Belgium (2013)	2.28	54.05
14	Australia (2011)	2.25	53.33
15	France (2013)	2.23	52.86
16	China (2013)	2.01	47.62
17	Singapore (2012)	2.00	47.38
18	Netherlands (2013)	1.98	46.90
19	Czech Republic (2013)	1.91	45.24
20	Estonia (2013)	1.74	41.19
21	Norway (2013)	1.66	39.29
22	United Kingdom (2013)	1.63	38.57
23	Canada (2013)	1.62	38.33
24	Ireland (2012)	1.58	37.38
25	Hungary (2012)	1.41	33.33
26	Portugal (2013)	1.37	32.38
27	Italy (2013)	1.26	29.76
28	New Zealand (2011)	1.25	29.52
29	Spain (2013)	1.24	29.29
30	Luxembourg (2013)	1.16	27.38
31	Brazil (2012)	1.15	27.14
32	Malaysia (2012)	1.13	26.67
32	Russian Federation (2013)	1.13	26.67
34	Lithuania (2013)	0.95	22.38
35	Turkey (2013)	0.94	22.14
36	Malta (2013)	0.89	20.95
37	Poland (2013)	0.87	20.48
38	Slovakia (2013)	0.83	19.52
39	India (2011)	0.82	19.29
40	Croatia (2013)	0.81	19.05
41	Greece (2013)	0.80	18.81
42	Kenya (2010)	0.79	18.57
43	Ukraine (2013)	0.76	17.86
44	Morocco (2010)	0.73	17.14
44	Serbia (2013)	0.73	17.14
44	South Africa (2012)	0.73	17.14
47	Egypt (2013)	0.68	15.95
47	Tunisia (2012)	0.68	15.95
49	Mali (2010)	0.66	15.48
50	Bulgaria (2013)	0.65	15.24
51	Ethiopia (2013)	0.61	14.29
52	Latvia (2013)	0.60	14.05
53	Argentina (2012)	0.58	13.57
54	Senegal (2010)	0.54	12.62
55	Mexico (2013)	0.50	11.67
56	United Arab Emirates (2011)	0.49	11.43
57	Cyprus (2013)	0.48	11.19
57	Uganda (2010)	0.48	11.19
59	Costa Rica (2011)	0.47	10.95
59	Qatar (2012)	0.47	10.95
61	Macedonia, FYR (2013)	0.44	10.24
62	Jordan (2008)	0.43	10.00
63	Mozambique (2010)	0.42	9.76
64	Romania (2013)	0.39	9.05
64	Thailand (2011)	0.39	9.05
66	Ghana (2010)	0.38	8.81
66	Montenegro (2013)	0.38	8.81
66	Tanzania (2010)	0.38	8.81
69	Chile (2012)	0.36	8.33
70	Moldova, Rep. (2013)	0.35	8.10
71	Ecuador (2011)	0.34	7.86
72	Bosnia and Herzegovina (2013)	0.33	7.62
73	Iran (2010)	0.31	7.14
74	Kuwait (2013)	0.30	6.90
75	Pakistan (2013)	0.29	6.67
76	Zambia (2008)	0.28	6.43
77	Botswana (2012)	0.25	5.71
78	Armenia (2013)	0.24	5.48
79	Colombia (2013)	0.23	5.24
79	Mongolia (2013)	0.23	5.24
79	Uruguay (2012)	0.23	5.24
82	Azerbaijan (2013)	0.21	4.76
83	Burkina Faso (2009)	0.20	4.52
84	Viet Nam (2011)	0.19	4.29
85	Mauritius (2012)	0.18	4.05
85	Panama (2011)	0.18	4.05
87	Kazakhstan (2013)	0.17	3.81
87	Oman (2013)	0.17	3.81
89	Bolivia, Plurinational St. (2009)	0.16	3.57
89	Georgia	0.16	3.57
89	Kyrgyzstan (2011)	0.16	3.57
89	Sri Lanka (2010)	0.16	3.57
93	Albania (2008)	0.15	3.33
94	Namibia (2010)	0.14	3.10
95	Madagascar (2011)	0.11	2.38
95	Philippines (2007)	0.11	2.38
97	Paraguay (2012)	0.09	1.90
98	Indonesia (2013)	0.08	1.67
99	Algeria (2005)	0.07	1.43
99	Saudi Arabia (2009)	0.07	1.43
101	Bahrain (2013)	0.04	0.71
101	Guatemala (2012)	0.04	0.71
103	El Salvador (2012)	0.03	0.48
104	Lesotho (2011)	0.01	0.00
n/a	Bangladesh	n/a	n/a
n/a	Barbados	n/a	n/a
n/a	Bhutan	n/a	n/a
n/a	Cameroon	n/a	n/a
n/a	Dominican Republic	n/a	n/a
n/a	Honduras	n/a	n/a
n/a	Jamaica	n/a	n/a
n/a	Cambodia	n/a	n/a
n/a	Lebanon	n/a	n/a
n/a	Nicaragua	n/a	n/a
n/a	Peru	n/a	n/a
n/a	Rwanda	n/a	n/a
n/a	Venezuela, Bolivarian Rep.	n/a	n/a
n/a	Zimbabwe	n/a	n/a

SOURCE: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)
Unless otherwise specified, the data used for computation were collected in 2014.

1.2.5 ICT infrastructure

ICT access index | 2015

Rank	Country	Value	Score
1	Luxembourg	9.49	100.00
2	Iceland	9.37	98.47
3	United Kingdom	9.24	96.80
4	Germany	9.22	96.55
5	Switzerland	9.20	96.29
6	Malta	9.04	94.25
6	Netherlands	9.04	94.25
8	Korea, Rep.	9.00	93.73
9	Sweden	8.90	92.46
10	Japan	8.85	91.82
11	France	8.77	90.79
12	Denmark	8.72	90.15
13	Singapore	8.64	89.13
14	Belgium	8.45	86.70
15	Australia	8.37	85.68
16	Ireland	8.24	84.02
16	Norway	8.24	84.02
18	Austria	8.21	83.63
19	Canada	8.13	82.61
19	Qatar	8.13	82.61
21	New Zealand	8.08	81.97
22	Barbados	8.04	81.46
23	Israel	7.98	80.69
24	Slovenia	7.94	80.18
25	United Arab Emirates	7.86	79.16
25	Estonia	7.86	79.16
27	United States of America	7.82	78.64
28	Finland	7.81	78.52
29	Spain	7.80	78.39
30	Bahrain	7.79	78.26
31	Portugal	7.77	78.01
32	Greece	7.71	77.24
32	Italy	7.71	77.24
34	Hungary	7.54	75.06
35	Saudi Arabia	7.42	73.53
36	Czech Republic	7.41	73.40
37	Croatia	7.33	72.38
38	Kuwait	7.31	72.12
39	Serbia	7.28	71.74
40	Oman	7.24	71.23
40	Russian Federation	7.24	71.23
42	Latvia	7.23	71.10
43	Poland	7.15	70.08
43	Uruguay	7.15	70.08
45	Cyprus	7.04	68.67
45	Lithuania	7.04	68.67
45	Slovakia	7.04	68.67
48	Kazakhstan	6.92	67.14
49	Bulgaria	6.85	66.24
50	Macedonia, FYR	6.75	64.96
51	Montenegro	6.74	64.83
52	Moldova, Rep.	6.70	64.32
53	Romania	6.69	64.19
54	Malaysia	6.61	63.17
55	Argentina	6.60	63.04
56	Lebanon	6.57	62.66
57	Chile	6.55	62.40
58	Mauritius	6.48	61.51
59	Costa Rica	6.30	59.21
60	Brazil	6.28	58.95
61	Ukraine	6.27	58.82
62	Georgia	6.20	57.93
63	Azerbaijan	6.11	56.78
64	Armenia	6.08	56.39
65	Turkey	6.00	55.37
66	Iran	5.97	54.99
67	Panama	5.72	51.79
68	Bosnia and Herzegovina	5.71	51.66
69	Jordan	5.69	51.41
70	Morocco	5.65	50.90
71	Colombia	5.54	49.49
72	Venezuela, Bolivarian Rep.	5.44	48.21
73	South Africa	5.31	46.55
74	China	5.25	45.78
75	Ecuador	5.21	45.27
76	Thailand	5.20	45.14
77	Egypt	5.12	44.12
78	El Salvador	5.04	43.09
79	Tunisia	5.00	42.58
80	Mongolia	4.97	42.20
81	Mexico	4.84	40.54
82	Peru	4.68	38.49
83	Indonesia	4.60	37.47
84	Jamaica	4.57	37.08
85	Ghana	4.51	36.32
86	Albania	4.50	36.19
87	Paraguay	4.44	35.42
88	Viet Nam	4.43	35.29
89	Philippines	4.39	34.78
90	Bolivia, Plurinational St.	4.31	33.76
91	Algeria	4.27	33.25
92	Botswana	4.22	32.61
93	Sri Lanka	4.17	31.97
94	Guatemala	4.16	31.84
94	Kyrgyzstan	4.16	31.84
96	Namibia	4.14	31.59
97	Dominican Republic	4.12	31.33
98	Honduras	4.05	30.43
99	Nicaragua	4.01	29.92
100	Cambodia	3.77	26.85
101	Bhutan	3.57	24.30
102	Senegal	3.51	23.53
103	Mali	3.43	22.51
104	Kenya	3.30	20.84
105	Lesotho	3.18	19.31
106	Pakistan	3.15	18.93
107	India	3.13	18.67
108	Zimbabwe	2.89	15.60
109	Cameroon	2.83	14.83
110	Bangladesh	2.82	14.71
111	Mozambique	2.74	13.68
112	Burkina Faso	2.63	12.28
112	Zambia	2.63	12.28
114	Rwanda	2.54	11.13
115	Tanzania	2.48	10.36
116	Uganda	2.35	8.70
117	Ethiopia	1.90	2.94
118	Madagascar	1.67	0.00

SOURCE: International Telecommunication Union, *Measuring the Information Society Report 2015,* ICT Development Index 2015 (www.itu.int/en/ITU-D/Statistics/Pages/publications/default.aspx)

Unless otherwise specified, the data used for computation were collected in 2015.

1.2.6 Technology utilisation

Average answer to the question: To what extent do businesses in your country absorb new technology? [1 = not at all; 7 = aggressively absorb] | 2014

Rank	Country	Value	Score
1	Iceland	6.17	86.21
2	Japan	6.08	84.71
3	United States of America	6.07	84.43
4	Norway	6.05	84.21
5	Israel	6.05	84.16
6	Switzerland	6.05	84.13
7	United Arab Emirates	6.04	84.05
8	Luxembourg	5.98	82.97
9	Sweden	5.96	82.73
10	Finland	5.84	80.63
11	New Zealand	5.80	80.01
12	Qatar	5.76	79.33
13	Germany	5.74	79.03
14	United Kingdom	5.72	78.70
15	Denmark	5.71	78.55
16	Singapore	5.71	78.54
17	Austria	5.68	78.02
18	Belgium	5.64	77.25
19	Netherlands	5.63	77.18
20	Portugal	5.62	76.94
21	Australia	5.61	76.85
22	Malaysia	5.58	76.31
23	Ireland	5.56	76.04
24	France	5.45	74.18
25	Korea, Rep.	5.45	74.09
26	South Africa	5.43	73.91
27	Canada	5.43	73.89
28	Saudi Arabia	5.43	73.82
29	Estonia	5.39	73.11
30	Lithuania	5.36	72.60
31	Bahrain	5.34	72.36
32	Panama	5.34	72.34
33	Jordan	5.32	71.92
34	Turkey	5.23	70.54
35	Malta	5.20	70.06
36	Chile	5.20	69.94
37	Cyprus	5.14	68.99
38	Philippines	5.07	67.89
39	Indonesia	5.06	67.62
40	Senegal	5.04	67.38
41	Mauritius	5.03	67.15
42	Costa Rica	5.03	67.10
43	Barbados	5.01	66.86
44	Guatemala	5.01	66.78
45	Latvia	4.99	66.52
46	Rwanda (2013)	4.97	66.12
47	Czech Republic	4.95	65.89
48	Slovenia	4.94	65.72
49	Spain	4.90	65.00
50	Sri Lanka	4.89	64.80
51	Namibia	4.87	64.48
52	Thailand	4.86	64.36
53	Kenya	4.84	64.00
54	Slovakia	4.81	63.44
55	Oman	4.79	63.20
56	Brazil	4.77	62.84
57	Honduras	4.77	62.80
58	Jamaica	4.75	62.49
59	Kuwait	4.74	62.34
60	Azerbaijan	4.73	62.21
61	Hungary	4.69	61.56
62	Mongolia	4.68	61.39
63	Zambia	4.68	61.31
64	China	4.66	60.97
65	Mexico	4.60	60.05
66	Croatia	4.55	59.21
67	Greece	4.53	58.89
68	Morocco	4.53	58.81
69	Dominican Republic	4.52	58.61
70	Ecuador	4.49	58.18
71	Peru	4.48	57.98
72	Tunisia	4.45	57.58
73	Romania	4.44	57.31
74	El Salvador	4.44	57.28
75	Pakistan	4.42	57.00
76	Bosnia and Herzegovina	4.42	56.96
77	Cameroon	4.41	56.79
78	Bulgaria	4.39	56.46
79	Madagascar	4.37	56.10
80	Montenegro	4.36	56.08
81	Colombia	4.36	56.07
82	Kazakhstan	4.36	56.04
83	Botswana	4.32	55.41
84	Uruguay	4.32	55.39
85	Lebanon	4.31	55.15
86	Ghana	4.31	55.11
87	Cambodia	4.27	54.57
88	Russian Federation	4.25	54.11
89	Mozambique	4.24	53.98
90	Ukraine	4.23	53.91
91	Poland	4.20	53.29
92	India	4.19	53.22
93	Georgia	4.19	53.12
94	Macedonia, FYR	4.17	52.87
95	Italy	4.15	52.54
96	Mali	4.13	52.23
97	Bangladesh	4.12	52.08
98	Moldova, Rep.	4.11	51.84
99	Uganda	4.09	51.50
100	Zimbabwe	4.09	51.43
101	Albania	4.07	51.22
102	Armenia	4.05	50.91
103	Paraguay	4.05	50.84
104	Argentina	4.03	50.47
105	Kyrgyzstan	3.95	49.11
106	Bhutan	3.91	48.53
107	Viet Nam	3.89	48.20
108	Venezuela, Bolivarian Rep.	3.87	47.90
109	Nicaragua	3.85	47.49
110	Egypt	3.84	47.37
111	Serbia	3.83	47.25
112	Ethiopia	3.81	46.89
113	Tanzania	3.80	46.59
114	Bolivia, Plurinational St.	3.73	45.56
115	Iran	3.73	45.52
116	Burkina Faso	3.71	45.12
117	Lesotho	3.54	42.27
118	Algeria	3.35	39.17

SOURCE: World Economic Forum, Executive Opinion Survey 2013–2014 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2014.

1.3.1 Ease of hiring

Hiring indicators | 2016

Rank	Country	Value	Score
1	United Arab Emirates	0.00	100.00
1	Azerbaijan	0.00	100.00
1	Bangladesh	0.00	100.00
1	Bahrain	0.00	100.00
1	Bhutan	0.00	100.00
1	Botswana	0.00	100.00
1	Switzerland	0.00	100.00
1	Denmark	0.00	100.00
1	Egypt	0.00	100.00
1	Kazakhstan	0.00	100.00
1	Kuwait	0.00	100.00
1	Sri Lanka	0.00	100.00
1	Lithuania	0.00	100.00
1	Mongolia	0.00	100.00
1	Malaysia	0.00	100.00
1	Namibia	0.00	100.00
1	Qatar	0.00	100.00
1	Rwanda	0.00	100.00
1	Saudi Arabia	0.00	100.00
1	Singapore	0.00	100.00
1	Uganda	0.00	100.00
1	United States of America	0.00	100.00
23	Australia	11.00	89.00
23	Austria	11.00	89.00
23	Belgium	11.00	89.00
23	Barbados	11.00	89.00
23	Canada	11.00	89.00
23	China	11.00	89.00
23	Colombia	11.00	89.00
23	Czech Republic	11.00	89.00
23	United Kingdom	11.00	89.00
23	Ghana	11.00	89.00
23	Hungary	11.00	89.00
23	Ireland	11.00	89.00
23	Iran	11.00	89.00
23	Israel	11.00	89.00
23	Jamaica	11.00	89.00
23	Jordan	11.00	89.00
23	Japan	11.00	89.00
23	New Zealand	11.00	89.00
23	Oman	11.00	89.00
23	Poland	11.00	89.00
43	Netherlands	16.67	83.33
44	Macedonia, FYR	22.33	77.67
44	Philippines	22.33	77.67
44	Viet Nam	22.33	77.67
47	Bulgaria	27.67	72.33
47	Cameroon	27.67	72.33
47	Italy	27.67	72.33
47	Malta	27.67	72.33
51	Burkina Faso	33.33	66.67
51	Chile	33.33	66.67
51	Estonia	33.33	66.67
51	Ethiopia	33.33	66.67
51	Georgia	33.33	66.67
51	India	33.33	66.67
51	Kenya	33.33	66.67
51	Kyrgyzstan	33.33	66.67
51	Cambodia	33.33	66.67
51	Lesotho	33.33	66.67
51	Latvia	33.33	66.67
51	Mexico	33.33	66.67
51	Nicaragua	33.33	66.67
51	Romania	33.33	66.67
51	Slovakia	33.33	66.67
51	Sweden	33.33	66.67
51	Zambia	33.33	66.67
51	Zimbabwe	33.33	66.67
69	Tunisia	39.00	61.00
70	Albania	44.33	55.67
70	Armenia	44.33	55.67
70	Cyprus	44.33	55.67
70	Germany	44.33	55.67
70	Dominican Republic	44.33	55.67
70	Algeria	44.33	55.67
70	Finland	44.33	55.67
70	Greece	44.33	55.67
70	Croatia	44.33	55.67
70	Iceland	44.33	55.67
70	Korea, Rep.	44.33	55.67
70	Lebanon	44.33	55.67
70	Moldova, Rep.	44.33	55.67
70	Montenegro	44.33	55.67
70	Mauritius	44.33	55.67
70	Peru	44.33	55.67
70	Portugal	44.33	55.67
70	Russian Federation	44.33	55.67
70	El Salvador	44.33	55.67
70	Thailand	44.33	55.67
70	Turkey	44.33	55.67
70	Tanzania	44.33	55.67
70	Ukraine	44.33	55.67
70	Uruguay	44.33	55.67
70	South Africa	44.33	55.67
95	Argentina	55.67	44.33
95	Bosnia and Herzegovina	55.67	44.33
95	Ecuador	55.67	44.33
95	Guatemala	55.67	44.33
95	Mali	55.67	44.33
95	Paraguay	55.67	44.33
101	Norway	61.00	39.00
102	Mozambique	66.67	33.33
103	Indonesia	72.33	27.67
104	Brazil	77.67	22.33
104	Costa Rica	77.67	22.33
104	Spain	77.67	22.33
104	France	77.67	22.33
104	Luxembourg	77.67	22.33
104	Panama	77.67	22.33
104	Serbia	77.67	22.33
104	Slovenia	77.67	22.33
104	Venezuela, Bolivarian Rep.	77.67	22.33
113	Bolivia, Plurinational St.	89.00	11.00
113	Pakistan	89.00	11.00
115	Honduras	100.00	0.00
115	Morocco	100.00	0.00
115	Madagascar	100.00	0.00
115	Senegal	100.00	0.00

SOURCE: World Bank, *Doing Business 2016: Measuring Regulatory Quality and Efficiency* (http://www.doingbusiness.org/reports/global-reports/doing-business-2016)
Unless otherwise specified, the data used for computation were collected in 2016.

1.3.2 Ease of redundancy

Redundancy indicators | 2016

Rank	Country	Value	Score
1	United Arab Emirates	0.00	100.00
1	Argentina	0.00	100.00
1	Belgium	0.00	100.00
1	Bulgaria	0.00	100.00
1	Brazil	0.00	100.00
1	Canada	0.00	100.00
1	Switzerland	0.00	100.00
1	Colombia	0.00	100.00
1	Costa Rica	0.00	100.00
1	Czech Republic	0.00	100.00
1	Denmark	0.00	100.00
1	Dominican Republic	0.00	100.00
1	United Kingdom	0.00	100.00
1	Georgia	0.00	100.00
1	Guatemala	0.00	100.00
1	Hungary	0.00	100.00
1	Iceland	0.00	100.00
1	Israel	0.00	100.00
1	Jamaica	0.00	100.00
1	Kyrgyzstan	0.00	100.00
1	Kuwait	0.00	100.00
1	Lesotho	0.00	100.00
1	Macedonia, FYR	0.00	100.00
1	Mongolia	0.00	100.00
1	Nicaragua	0.00	100.00
1	Oman	0.00	100.00
1	Qatar	0.00	100.00
1	Saudi Arabia	0.00	100.00
1	Singapore	0.00	100.00
1	El Salvador	0.00	100.00
1	Thailand	0.00	100.00
1	Uganda	0.00	100.00
1	Uruguay	0.00	100.00
1	United States of America	0.00	100.00
35	Albania	10.00	90.00
35	Armenia	10.00	90.00
35	Australia	10.00	90.00
35	Azerbaijan	10.00	90.00
35	Barbados	10.00	90.00
35	Ireland	10.00	90.00
35	Japan	10.00	90.00
35	Malaysia	10.00	90.00
35	New Zealand	10.00	90.00
35	Slovenia	10.00	90.00
35	Turkey	10.00	90.00
46	Bahrain	20.00	80.00
46	Bhutan	20.00	80.00
46	Chile	20.00	80.00
46	Ecuador	20.00	80.00
46	Spain	20.00	80.00
46	Estonia	20.00	80.00
46	Finland	20.00	80.00
46	Lithuania	20.00	80.00
46	Latvia	20.00	80.00
46	Malta	20.00	80.00
46	Montenegro	20.00	80.00
46	Mozambique	20.00	80.00
46	Mauritius	20.00	80.00
46	Namibia	20.00	80.00
46	Poland	20.00	80.00
46	Serbia	20.00	80.00
46	Zambia	20.00	80.00
63	Burkina Faso	30.00	70.00
63	Bosnia and Herzegovina	30.00	70.00
63	Ethiopia	30.00	70.00
63	Greece	30.00	70.00
63	Kazakhstan	30.00	70.00
63	Kenya	30.00	70.00
63	Cambodia	30.00	70.00
63	Korea, Rep.	30.00	70.00
63	Lebanon	30.00	70.00
63	Luxembourg	30.00	70.00
63	Norway	30.00	70.00
63	Pakistan	30.00	70.00
63	Philippines	30.00	70.00
63	Romania	30.00	70.00
63	Rwanda	30.00	70.00
63	Slovakia	30.00	70.00
63	Viet Nam	30.00	70.00
63	South Africa	30.00	70.00
81	Austria	40.00	60.00
81	Bangladesh	40.00	60.00
81	Botswana	40.00	60.00
81	Cyprus	40.00	60.00
81	Germany	40.00	60.00
81	Algeria	40.00	60.00
81	France	40.00	60.00
81	Croatia	40.00	60.00
81	India	40.00	60.00
81	Moldova, Rep.	40.00	60.00
81	Madagascar	40.00	60.00
81	Mali	40.00	60.00
81	Portugal	40.00	60.00
81	Russian Federation	40.00	60.00
81	Senegal	40.00	60.00
81	Sweden	40.00	60.00
97	China	50.00	50.00
97	Ghana	50.00	50.00
97	Iran	50.00	50.00
97	Italy	50.00	50.00
97	Morocco	50.00	50.00
97	Tanzania	50.00	50.00
97	Ukraine	50.00	50.00
104	Egypt	60.00	40.00
104	Honduras	60.00	40.00
104	Indonesia	60.00	40.00
104	Jordan	60.00	40.00
104	Sri Lanka	60.00	40.00
104	Panama	60.00	40.00
104	Peru	60.00	40.00
104	Paraguay	60.00	40.00
104	Zimbabwe	60.00	40.00
113	Cameroon	70.00	30.00
113	Mexico	70.00	30.00
113	Netherlands	70.00	30.00
116	Tunisia	80.00	20.00
117	Bolivia, Plurinational St.	100.00	0.00
117	Venezuela, Bolivarian Rep.	100.00	0.00

SOURCE: World Bank, *Doing Business 2016: Measuring Regulatory Quality and Efficiency* (http://www.doingbusiness.org/reports/global-reports/doing-business-2016)
Unless otherwise specified, the data used for computation were collected in 2016.

1.3.3 Labour-employer cooperation

Average answer to the question: In your country, how would you characterise labour-employer relations? [1 = generally confrontational; 7 = generally cooperative] | 2015

Rank	Country	Value	Score
1	Switzerland	6.11	85.20
2	Denmark	6.06	84.27
3	Singapore	6.05	84.12
4	Norway	6.01	83.56
5	Japan	5.67	77.86
6	Austria	5.66	77.71
7	Sweden	5.65	77.52
8	Netherlands	5.62	76.99
9	Qatar	5.58	76.30
10	Luxembourg	5.56	76.03
11	Malaysia	5.55	75.80
12	New Zealand	5.49	74.84
13	United Arab Emirates (2014)	5.48	74.74
14	Ireland	5.46	74.32
15	Iceland	5.42	73.71
16	Bahrain	5.38	73.04
17	Costa Rica	5.32	71.96
18	Germany	5.19	69.79
19	United Kingdom	5.18	69.65
20	Finland	5.14	68.98
21	Rwanda	5.11	68.55
22	Guatemala	5.11	68.49
23	Canada	5.09	68.09
24	Philippines	5.07	67.89
25	Albania	5.03	67.24
26	Estonia	4.97	66.16
27	Honduras	4.93	65.46
28	Latvia	4.87	64.42
29	Barbados	4.86	64.28
30	United States of America	4.82	63.73
31	Mauritius	4.81	63.51
32	Bhutan	4.80	63.39
33	Thailand	4.80	63.37
34	Sri Lanka	4.80	63.27
35	Saudi Arabia	4.77	62.78
36	Malta	4.76	62.74
37	Cyprus	4.70	61.68
38	Czech Republic	4.70	61.59
39	Belgium	4.69	61.48
40	Panama	4.63	60.56
41	Armenia	4.63	60.43
42	Colombia	4.62	60.34
43	Mexico	4.61	60.22
44	Kuwait	4.60	59.95
45	Indonesia	4.58	59.74
46	Portugal	4.53	58.91
47	Israel	4.53	58.91
48	Jordan	4.52	58.68
49	Kazakhstan	4.51	58.56
50	Chile	4.50	58.34
51	Ecuador	4.47	57.83
52	Macedonia, FYR	4.43	57.15
53	Paraguay	4.42	57.02
54	Oman	4.42	56.95
55	Zambia	4.40	56.70
56	China	4.40	56.60
57	Senegal	4.37	56.10
58	Georgia	4.36	56.06
59	Nicaragua	4.36	56.01
60	Mongolia	4.35	55.82
61	Peru	4.34	55.73
62	Australia	4.34	55.65
63	Viet Nam	4.32	55.39
64	Lithuania	4.32	55.33
65	Dominican Republic	4.32	55.26
66	Azerbaijan (2014)	4.31	55.18
67	Jamaica	4.29	54.90
68	Cambodia	4.29	54.89
69	Mali	4.29	54.87
70	Lebanon	4.26	54.40
71	Botswana	4.25	54.20
72	Uganda	4.25	54.09
73	Kyrgyzstan	4.24	54.05
74	Hungary	4.23	53.83
75	Spain	4.17	52.90
76	India	4.17	52.76
77	Ukraine	4.16	52.72
78	Madagascar	4.16	52.61
79	El Salvador	4.15	52.48
80	Romania	4.14	52.29
81	Ghana	4.13	52.23
82	Egypt	4.13	52.15
83	Moldova, Rep.	4.13	52.13
84	Namibia	4.11	51.89
85	Russian Federation (2014)	4.10	51.64
86	Burkina Faso	4.06	51.06
87	Poland	4.06	51.03
88	Slovakia	4.06	51.02
89	Cameroon	4.06	50.94
90	Kenya	4.05	50.76
91	Bangladesh	4.04	50.71
92	Ethiopia	4.04	50.66
93	Slovenia	4.00	50.01
94	Bulgaria	3.99	49.82
95	Greece	3.97	49.54
96	Tanzania	3.95	49.23
97	Zimbabwe	3.92	48.74
98	Turkey	3.88	48.03
99	Montenegro	3.87	47.89
100	Morocco	3.86	47.60
101	Lesotho	3.84	47.34
102	France	3.81	46.84
103	Iran	3.73	45.54
104	Mozambique	3.66	44.26
105	Bolivia, Plurinational St.	3.65	44.14
106	Tunisia	3.61	43.58
107	Argentina	3.61	43.45
108	Italy	3.61	43.44
109	Algeria	3.57	42.87
110	Brazil	3.57	42.78
111	Croatia	3.56	42.61
112	Pakistan	3.54	42.42
113	Korea, Rep.	3.53	42.09
114	Bosnia and Herzegovina	3.48	41.25
115	Serbia	3.35	39.17
116	Uruguay	3.26	37.66
117	Venezuela, Bolivarian Rep.	3.19	36.53
118	South Africa	2.47	24.51

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

1.3.4 Professional management

Average answer to the question: In your country, who holds senior management positions? [1 = usually relatives or friends without regard to merit; 7 = mostly professional managers chosen for merit and qualifications] | 2015

Rank	Country	Value	Score
1	New Zealand	6.39	89.81
2	Norway	6.27	87.77
3	Finland	6.19	86.44
4	Netherlands	6.13	85.44
5	Singapore	6.12	85.38
6	Switzerland	6.03	83.86
7	Ireland	6.01	83.57
8	Denmark	6.00	83.40
9	United States of America	5.93	82.16
10	Sweden	5.93	82.14
11	Belgium	5.88	81.30
12	United Kingdom	5.86	81.03
13	Canada	5.86	80.93
14	Australia	5.78	79.59
15	Germany	5.70	78.42
16	Malaysia	5.69	78.15
17	Luxembourg	5.64	77.32
18	Japan	5.63	77.10
19	Qatar	5.55	75.85
20	United Arab Emirates (2014)	5.47	74.45
21	Iceland	5.45	74.16
22	Austria	5.40	73.38
23	South Africa	5.38	72.95
24	Estonia	5.37	72.84
25	Czech Republic	5.08	67.95
26	Philippines	4.97	66.12
27	France	4.93	65.55
28	Bahrain	4.89	64.75
29	Barbados	4.75	62.52
30	Indonesia	4.75	62.44
31	Israel	4.72	62.00
32	Rwanda	4.71	61.76
33	Botswana	4.70	61.70
34	Korea, Rep.	4.67	61.15
35	Latvia	4.67	61.13
36	Sri Lanka	4.66	60.97
37	Saudi Arabia	4.66	60.95
38	Chile	4.64	60.61
39	Zimbabwe	4.61	60.19
40	Costa Rica	4.58	59.66
41	Jamaica	4.55	59.17
42	Thailand	4.55	59.14
43	Lithuania	4.52	58.70
44	Bhutan	4.49	58.16
45	Spain	4.46	57.63
46	Zambia	4.44	57.39
47	Ghana	4.44	57.38
48	Oman	4.44	57.26
49	Kenya	4.43	57.22
50	China	4.42	57.05
51	Brazil	4.41	56.81
52	Guatemala	4.38	56.25
53	Georgia	4.36	55.95
54	Argentina	4.34	55.73
55	Slovakia	4.33	55.44
56	Poland	4.32	55.30
57	Peru	4.31	55.15
58	Mauritius	4.29	54.87
59	Namibia	4.29	54.84
60	Colombia	4.29	54.81
61	Mexico	4.25	54.15
62	Turkey	4.24	53.95
63	Jordan	4.20	53.31
64	Senegal	4.19	53.14
65	Venezuela, Bolivarian Rep.	4.17	52.87
66	Honduras	4.14	52.35
67	Malta	4.14	52.28
68	Portugal	4.11	51.77
69	Uruguay	4.09	51.44
70	Morocco	4.07	51.17
71	Kazakhstan	4.06	51.08
72	Albania	4.06	50.97
73	Slovenia	4.04	50.59
74	Panama	4.01	50.22
75	Russian Federation (2014)	3.97	49.49
76	India	3.93	48.85
77	Uganda	3.91	48.46
78	Ecuador	3.87	47.84
79	Tanzania	3.86	47.68
80	Lebanon	3.84	47.28
81	Azerbaijan (2014)	3.81	46.88
82	Armenia	3.81	46.79
83	Madagascar	3.79	46.50
84	Cyprus	3.77	46.14
85	Romania	3.77	46.11
86	Tunisia	3.72	45.38
87	Cambodia	3.71	45.16
88	Mongolia	3.71	45.11
89	Greece	3.68	44.65
90	Macedonia, FYR	3.66	44.25
91	Ukraine	3.65	44.18
92	Croatia	3.65	44.09
93	El Salvador	3.64	44.02
94	Hungary	3.62	43.68
95	Viet Nam	3.61	43.57
96	Ethiopia	3.61	43.48
97	Moldova, Rep.	3.60	43.40
98	Montenegro	3.60	43.37
99	Bangladesh	3.53	42.19
100	Lesotho	3.52	42.02
101	Bolivia, Plurinational St.	3.48	41.36
102	Bulgaria	3.48	41.28
103	Italy	3.47	41.15
104	Dominican Republic	3.47	41.11
105	Cameroon	3.46	41.02
106	Pakistan	3.45	40.90
107	Kuwait	3.40	40.06
108	Mozambique	3.40	40.04
109	Paraguay	3.32	38.66
110	Nicaragua	3.24	37.35
111	Mali	3.23	37.15
112	Kyrgyzstan	3.22	37.05
113	Iran	3.22	37.03
114	Serbia	3.19	36.57
115	Egypt	3.13	35.49
116	Algeria	2.93	32.17
117	Burkina Faso	2.92	32.03
118	Bosnia and Herzegovina	2.92	32.01

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

1.3.5 Relationship of pay to productivity

Average answer to the question: In your country, to what extent is pay related to employee productivity? [1 = not at all; 7 = to a great extent] | 2015

Rank	Country	Value	Score
1	Qatar	5.53	75.45
2	Singapore	5.43	73.81
3	Switzerland	5.41	73.56
4	Malaysia	5.40	73.31
5	United Arab Emirates (2014)	5.22	70.39
6	Ireland	5.10	68.30
7	United States of America	5.06	67.64
8	Estonia	4.89	64.87
9	Bahrain	4.84	64.05
10	New Zealand	4.80	63.25
11	Germany	4.78	63.00
12	Japan	4.76	62.71
13	Canada	4.76	62.68
14	Ukraine	4.69	61.48
15	Czech Republic	4.68	61.32
16	Philippines	4.63	60.52
17	China	4.62	60.38
18	United Kingdom	4.61	60.17
19	Kazakhstan	4.59	59.85
20	Latvia	4.58	59.74
21	Korea, Rep.	4.58	59.73
22	Russian Federation (2014)	4.56	59.34
23	Luxembourg	4.55	59.14
24	Lithuania	4.54	59.07
25	Saudi Arabia	4.51	58.44
26	Sri Lanka	4.49	58.16
27	Denmark	4.49	58.13
28	Iceland	4.46	57.71
29	Indonesia	4.46	57.69
30	Macedonia, FYR	4.44	57.36
31	Kyrgyzstan	4.44	57.28
32	Albania	4.44	57.25
33	Azerbaijan (2014)	4.41	56.91
34	Slovakia	4.40	56.60
35	Mongolia	4.38	56.40
36	Jordan	4.35	55.89
37	Norway	4.35	55.83
38	Finland	4.33	55.58
39	Costa Rica	4.31	55.14
40	Sweden	4.27	54.54
41	Viet Nam	4.26	54.35
42	Netherlands	4.26	54.27
43	India	4.25	54.16
44	Guatemala	4.25	54.10
45	Austria	4.24	54.07
46	Mauritius	4.24	53.94
47	Belgium	4.23	53.90
48	Bhutan	4.23	53.83
49	Thailand	4.21	53.52
50	Chile	4.20	53.29
51	Malta	4.18	53.04
52	Cambodia	4.18	52.97
53	Moldova, Rep.	4.17	52.86
54	France	4.16	52.69
55	Rwanda	4.16	52.65
56	Armenia	4.14	52.34
57	Honduras	4.13	52.18
58	Georgia	4.07	51.17
59	Ecuador	4.07	51.16
60	Poland	4.06	50.92
61	Australia	4.05	50.90
62	Romania	4.05	50.89
63	Israel	4.05	50.83
64	Lebanon	4.00	49.93
65	Cyprus	3.98	49.73
66	Croatia	3.97	49.57
67	Lesotho	3.96	49.35
68	Senegal	3.90	48.41
69	Bulgaria	3.88	48.02
70	Kenya	3.86	47.74
71	Montenegro	3.83	47.15
72	Ethiopia	3.83	47.11
73	Slovenia	3.82	47.06
74	Peru	3.80	46.68
75	Mexico	3.80	46.64
76	Turkey	3.78	46.38
77	Hungary	3.78	46.37
78	Panama	3.78	46.33
79	Portugal	3.78	46.28
80	Ghana	3.75	45.78
81	Botswana	3.74	45.71
82	Madagascar	3.68	44.74
83	Colombia	3.66	44.35
84	Pakistan	3.66	44.32
85	Zambia	3.62	43.69
86	Namibia	3.60	43.32
87	Cameroon	3.58	43.07
88	Kuwait	3.57	42.89
89	Oman	3.56	42.67
90	Greece	3.53	42.14
91	Morocco	3.50	41.67
92	Bangladesh	3.50	41.62
93	Bolivia, Plurinational St.	3.48	41.27
94	Barbados	3.46	40.95
95	Brazil	3.45	40.88
96	Jamaica	3.43	40.52
97	Dominican Republic	3.43	40.43
98	Nicaragua	3.42	40.41
99	Spain	3.40	40.01
100	Uganda	3.38	39.73
101	Serbia	3.37	39.56
102	Iran	3.33	38.91
103	Tanzania	3.33	38.91
104	Tunisia	3.30	38.33
105	Algeria	3.29	38.09
106	El Salvador	3.27	37.82
107	Paraguay	3.26	37.63
108	Egypt	3.20	36.62
109	South Africa	3.19	36.50
110	Mali	3.16	36.08
111	Burkina Faso	3.09	34.88
112	Mozambique	3.01	33.57
113	Argentina	3.00	33.30
114	Italy	2.93	32.22
115	Bosnia and Herzegovina	2.88	31.37
116	Uruguay	2.75	29.23
117	Zimbabwe	2.75	29.09
118	Venezuela, Bolivarian Rep.	2.68	27.92

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

Pillar 2

Attract

2.1.1 FDI and technology transfer

Average answer to the question: To what extent does foreign direct investment (FDI) bring new technology into your country? [1 = not at all; 7 = to a great extent] | 2015

Rank	Country	Value	Score
1	Ireland	6.32	88.59
2	Singapore	5.97	82.87
3	United Arab Emirates (2014)	5.84	80.65
4	Qatar	5.72	78.66
5	Malaysia	5.52	75.36
6	Panama	5.51	75.08
7	Luxembourg	5.47	74.49
8	Israel	5.44	73.96
9	Lithuania	5.33	72.09
10	Slovakia	5.31	71.78
11	Switzerland	5.29	71.57
12	Costa Rica	5.28	71.27
13	Chile	5.23	70.46
14	Portugal	5.21	70.22
15	Netherlands	5.17	69.56
16	United Kingdom	5.17	69.50
17	Saudi Arabia	5.12	68.70
18	Barbados	5.11	68.58
19	Malta	5.10	68.30
20	Mexico	5.08	67.95
21	Belgium	5.06	67.71
22	Czech Republic	5.04	67.32
23	Uruguay	5.01	66.88
24	Germany	4.97	66.10
25	France	4.94	65.67
26	New Zealand	4.92	65.38
27	Canada	4.92	65.27
28	Thailand	4.91	65.14
29	Denmark	4.90	65.00
30	Bahrain	4.90	64.98
31	Rwanda	4.87	64.47
32	Hungary	4.87	64.42
33	Peru	4.86	64.39
34	United States of America	4.86	64.30
35	Estonia	4.85	64.10
36	Honduras	4.83	63.90
37	Spain	4.81	63.43
38	Norway	4.80	63.35
39	Latvia	4.80	63.26
40	Japan	4.79	63.21
41	Philippines	4.78	63.00
42	Australia	4.78	62.96
43	Romania	4.75	62.45
44	Dominican Republic	4.73	62.09
45	Guatemala	4.72	62.06
46	Zambia	4.71	61.86
47	Sweden	4.71	61.81
48	Jordan	4.69	61.49
49	Azerbaijan (2014)	4.69	61.48
50	Austria	4.68	61.29
51	Turkey	4.67	61.20
52	Sri Lanka	4.66	61.00
53	Indonesia	4.64	60.74
54	Morocco	4.63	60.42
55	Kenya	4.61	60.18
56	Colombia	4.60	59.93
57	Brazil	4.59	59.91
58	Cambodia	4.56	59.35
59	Uganda	4.53	58.86
60	Namibia	4.53	58.81
61	Poland	4.51	58.55
62	South Africa	4.50	58.39
63	Jamaica	4.50	58.35
64	Albania	4.50	58.31
65	Korea, Rep.	4.50	58.26
66	Mauritius	4.45	57.50
67	China	4.42	56.95
68	Bulgaria	4.41	56.83
69	Montenegro	4.41	56.79
70	Finland	4.39	56.55
71	Egypt	4.37	56.21
72	Macedonia, FYR	4.36	56.04
73	Pakistan	4.34	55.64
74	Mongolia	4.32	55.29
75	Armenia	4.30	55.02
76	Burkina Faso	4.25	54.09
77	Viet Nam	4.24	54.00
78	Mozambique	4.23	53.91
79	Cyprus	4.22	53.69
80	Oman	4.21	53.45
81	Tunisia	4.20	53.29
82	Paraguay	4.11	51.77
83	Ghana	4.10	51.73
84	Nicaragua	4.09	51.44
85	Slovenia	4.07	51.23
86	Senegal	4.06	51.02
87	India	4.06	51.00
88	Greece	4.06	50.93
89	Ethiopia	4.05	50.78
90	Botswana	4.03	50.58
91	Moldova, Rep.	4.02	50.31
92	Mali	4.00	50.06
93	Iran	4.00	50.05
94	Kazakhstan	3.99	49.81
95	Cameroon	3.99	49.80
96	El Salvador	3.99	49.75
97	Iceland	3.97	49.55
98	Tanzania	3.88	48.05
99	Georgia	3.84	47.27
100	Serbia	3.81	46.76
101	Madagascar	3.80	46.68
102	Croatia	3.77	46.19
103	Russian Federation (2014)	3.77	46.18
104	Algeria	3.77	46.09
105	Ukraine	3.76	46.04
106	Bangladesh	3.74	45.67
107	Italy	3.70	45.01
108	Ecuador	3.68	44.64
109	Kyrgyzstan	3.62	43.74
110	Bhutan	3.57	42.78
111	Lebanon	3.53	42.11
112	Lesotho	3.52	41.95
113	Bolivia, Plurinational St.	3.50	41.74
114	Kuwait	3.42	40.40
115	Bosnia and Herzegovina	3.25	37.50
116	Argentina	2.99	33.25
117	Zimbabwe	2.81	30.20
118	Venezuela, Bolivarian Rep.	2.69	28.08

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

2.1.2 Prevalence of foreign ownership

Average answer to the question: In your country, how prevalent is foreign ownership of companies? [1 = extremely rare; 7 = extremely prevalent] | 2015

Rank	Country	Value	Score
1	Ireland	6.26	87.71
2	Luxembourg	6.26	87.63
3	United Kingdom	6.17	86.17
4	Singapore	6.07	84.50
5	Slovakia	6.05	84.14
6	Czech Republic	6.02	83.64
7	Estonia	5.76	79.28
8	Zambia	5.74	79.08
9	United Arab Emirates (2014)	5.66	77.63
10	Panama	5.61	76.90
11	Canada	5.58	76.37
12	New Zealand	5.57	76.14
13	Australia	5.53	75.58
14	Netherlands	5.50	74.96
15	Barbados	5.46	74.41
16	Chile	5.44	74.03
17	Belgium	5.43	73.85
18	Bahrain	5.40	73.32
19	France	5.40	73.28
20	Denmark	5.39	73.15
21	Norway	5.27	71.17
22	Japan	5.27	71.16
23	Switzerland	5.27	71.14
24	Uganda	5.27	71.11
25	Hungary	5.26	70.99
26	Mexico	5.26	70.96
27	Latvia	5.25	70.82
28	Botswana	5.20	70.04
29	Malaysia	5.20	69.92
30	Uruguay	5.16	69.33
31	Sweden	5.10	68.34
32	Costa Rica	5.07	67.87
33	Namibia	5.07	67.82
34	Dominican Republic	5.05	67.54
35	Austria	5.04	67.39
36	Poland	5.02	67.07
37	United States of America	5.01	66.77
38	Israel	5.00	66.75
39	Qatar	5.00	66.67
40	Spain	4.99	66.56
41	Jamaica	4.98	66.33
42	Peru	4.97	66.19
43	South Africa	4.97	66.15
44	Germany	4.94	65.64
45	Finland	4.89	64.86
46	Philippines	4.78	62.93
47	Malta	4.77	62.87
48	Morocco	4.77	62.87
49	Guatemala	4.76	62.74
50	Honduras	4.66	61.05
51	Cambodia	4.66	61.04
52	Thailand	4.65	60.84
53	Sri Lanka	4.60	60.07
54	Senegal	4.59	59.90
55	Mozambique	4.59	59.85
56	Mauritius	4.58	59.68
57	Portugal	4.58	59.63
58	Ghana	4.55	59.14
59	Indonesia	4.54	59.05
60	Colombia	4.51	58.44
61	Jordan	4.50	58.32
62	Cameroon	4.49	58.11
63	China	4.44	57.37
64	Nicaragua	4.43	57.24
65	Kenya	4.42	56.95
66	Lithuania	4.37	56.23
67	Mongolia	4.36	56.00
68	Rwanda	4.34	55.72
69	El Salvador	4.31	55.23
70	Argentina	4.30	54.96
71	Paraguay	4.29	54.77
72	Romania	4.27	54.47
73	Montenegro	4.25	54.24
74	Greece	4.25	54.21
75	Tunisia	4.25	54.12
76	Cyprus	4.24	53.98
77	Brazil	4.19	53.18
78	Korea, Rep.	4.19	53.11
79	Viet Nam	4.19	53.11
80	Turkey	4.16	52.73
81	Tanzania	4.15	52.45
82	India	4.14	52.36
83	Kazakhstan	4.09	51.54
84	Madagascar	4.09	51.46
85	Serbia	4.08	51.25
86	Burkina Faso	4.06	51.06
87	Macedonia, FYR	4.06	50.95
88	Armenia	4.05	50.82
89	Bulgaria	4.04	50.68
90	Zimbabwe	4.03	50.43
91	Croatia	4.01	50.15
92	Oman	4.01	50.11
93	Georgia	3.99	49.81
94	Saudi Arabia	3.86	47.73
95	Kyrgyzstan	3.81	46.78
96	Lebanon	3.80	46.65
97	Azerbaijan (2014)	3.78	46.31
98	Lesotho	3.77	46.17
99	Bangladesh	3.75	45.90
100	Mali	3.70	44.98
101	Italy	3.69	44.75
102	Pakistan	3.65	44.10
103	Moldova, Rep.	3.60	43.35
104	Ecuador	3.54	42.40
105	Ethiopia	3.49	41.56
106	Albania	3.42	40.41
107	Russian Federation (2014)	3.39	39.86
108	Iceland	3.39	39.79
109	Egypt	3.36	39.33
110	Ukraine	3.32	38.66
111	Bosnia and Herzegovina	3.32	38.59
112	Bolivia, Plurinational St.	3.28	38.06
113	Slovenia	3.27	37.91
114	Algeria	3.27	37.81
115	Venezuela, Bolivarian Rep.	3.18	36.28
116	Kuwait	2.77	29.46
117	Bhutan	2.56	25.98
118	Iran	2.14	18.97

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

2.1.3 Migrant stock

Adult migrant stock (%) | 2015

Rank	Country	Value	Score
1	United Arab Emirates	88.40	100.00
1	Bahrain	51.13	100.00
1	Kuwait	73.64	100.00
1	Qatar	75.50	100.00
1	Singapore	45.39	100.00
6	Luxembourg	43.96	96.85
7	Oman	41.09	90.50
8	Jordan	40.98	90.26
9	Lebanon	34.15	75.19
10	Saudi Arabia	32.29	71.10
11	Switzerland	29.39	64.68
12	Australia	28.22	62.11
13	Israel	24.95	54.89
14	New Zealand	22.96	50.50
15	Canada	21.80	47.95
16	Kazakhstan	20.12	44.25
17	Austria	17.47	38.38
18	Cyprus	16.83	36.99
19	Sweden	16.77	36.84
20	Ireland	15.92	34.96
21	Estonia	15.42	33.86
22	Germany	14.88	32.67
23	United States of America	14.49	31.82
24	Norway	14.24	31.25
25	Croatia	13.60	29.86
26	Latvia	13.35	29.31
27	United Kingdom	13.20	28.97
28	Montenegro	13.19	28.95
29	Spain	12.69	27.84
30	Belgium	12.28	26.95
31	Barbados	12.13	26.61
32	France	12.09	26.52
33	Netherlands	11.70	25.65
34	Slovenia	11.41	25.03
35	Iceland	11.39	24.98
36	Greece	11.34	24.87
37	Ukraine	10.79	23.64
38	Denmark	10.10	22.13
39	Malta	9.90	21.68
40	Italy	9.68	21.20
41	Serbia	9.12	19.97
42	Costa Rica	8.77	19.20
43	Malaysia	8.29	18.13
44	Russian Federation	8.12	17.75
45	Portugal	8.09	17.69
46	Botswana	7.10	15.51
47	Bhutan	6.60	14.40
48	Armenia	6.34	13.82
49	Macedonia, FYR	6.29	13.72
50	South Africa	5.77	12.57
51	Thailand	5.76	12.55
52	Finland	5.74	12.51
53	Argentina	4.81	10.45
54	Lithuania	4.73	10.27
55	Panama	4.70	10.22
56	Hungary	4.56	9.91
57	Venezuela, Bolivarian Rep.	4.51	9.80
58	Georgia	4.22	9.16
59	Dominican Republic	3.95	8.55
60	Burkina Faso	3.89	8.43
61	Czech Republic	3.84	8.32
62	Namibia	3.82	8.27
63	Rwanda	3.80	8.23
64	Turkey	3.77	8.16
65	Moldova, Rep.	3.51	7.59
66	Iran	3.45	7.45
67	Kyrgyzstan	3.44	7.44
68	Slovakia	3.27	7.05
69	Azerbaijan	2.71	5.82
70	Korea, Rep.	2.64	5.67
71	Chile	2.62	5.61
72	Zimbabwe	2.56	5.48
73	Ecuador	2.40	5.14
74	Paraguay	2.36	5.04
75	Kenya	2.35	5.04
76	Mauritius	2.25	4.80
77	Uruguay	2.09	4.46
78	Mali	2.06	4.40
79	Albania	1.99	4.23
80	Pakistan	1.92	4.08
81	Uganda	1.92	4.08
82	Senegal	1.74	3.68
83	Cameroon	1.64	3.45
84	Japan	1.61	3.41
85	Poland	1.60	3.38
86	Ghana	1.46	3.06
87	Bulgaria	1.43	2.99
88	Bolivia, Plurinational St	1.33	2.79
89	Romania	1.16	2.41
90	Ethiopia	1.08	2.23
91	Mexico	0.94	1.92
92	Bosnia and Herzegovina	0.91	1.86
93	Bangladesh	0.88	1.79
94	Jamaica	0.83	1.67
95	Mozambique	0.80	1.60
96	Zambia	0.79	1.58
97	El Salvador	0.69	1.36
98	Nicaragua	0.66	1.30
99	Algeria	0.61	1.19
100	Mongolia	0.60	1.16
101	Egypt	0.54	1.03
102	Tunisia	0.50	0.95
103	Tanzania	0.49	0.92
104	Cambodia	0.47	0.89
105	Guatemala	0.47	0.87
106	India	0.40	0.73
107	Honduras	0.35	0.61
108	Brazil	0.34	0.60
109	Lesotho	0.31	0.52
110	Peru	0.29	0.48
111	Colombia	0.28	0.45
112	Morocco	0.26	0.41
113	Philippines	0.21	0.31
114	Sri Lanka	0.19	0.26
115	Madagascar	0.13	0.14
116	Indonesia	0.13	0.12
117	Viet Nam	0.08	0.02
118	China	0.07	0.00

SOURCE: United Nations Population Division, Trends in International Migrant Stock: Migrants by Age and Sex (www.un.org/en/development/desa/population/migration/data/estimates2/estimates15.shtml)

Unless otherwise specified, the data used for computation were collected in 2015.

2.1.4 International students

Tertiary inbound mobility ratio (%) | 2015

Rank	Country	Value	Score
1	United Arab Emirates (2014)	44.82	100.00
1	Luxembourg (2012)	40.56	100.00
1	Qatar (2014)	39.90	100.00
1	Singapore (2013)	19.17	100.00
5	Australia (2013)	17.97	93.75
6	United Kingdom (2013)	17.46	91.10
7	Switzerland (2013)	16.86	87.94
8	New Zealand (2013)	16.12	84.05
9	Austria (2014)	15.47	80.68
10	Cyprus (2014)	14.35	74.82
11	Barbados (2011)	13.80	71.94
12	Bahrain (2014)	13.21	68.88
13	Uganda (2011)	10.73	55.91
14	France (2013)	10.24	53.31
15	Namibia (2008)	10.17	52.96
16	Denmark (2013)	10.13	52.73
17	Belgium (2013)	9.98	51.97
18	Czech Republic (2013)	9.39	48.89
19	Jordan (2012)	9.11	47.42
20	Lebanon (2014)	7.64	39.74
21	Bosnia and Herzegovina (2014)	7.28	37.83
22	Netherlands (2012)	7.25	37.67
23	Finland (2013)	7.07	36.78
24	Germany (2013)	7.07	36.77
25	Ireland (2013)	6.45	33.51
26	Iceland (2012)	6.21	32.26
27	Malta (2014)	5.86	30.43
28	Sweden (2013)	5.83	30.25
29	Hungary (2013)	5.76	29.92
30	Slovakia (2013)	4.86	25.20
31	Saudi Arabia (2014)	4.80	24.86
32	Italy (2013)	4.40	22.81
33	Greece (2013)	4.19	21.68
34	South Africa (2013)	4.09	21.17
35	Bulgaria (2014)	3.98	20.61
36	Kyrgyzstan (2013)	3.96	20.48
37	Armenia (2014)	3.95	20.44
38	United States of America (2013)	3.93	20.32
39	Portugal (2013)	3.92	20.28
40	Ghana (2014)	3.90	20.18
41	Mauritius (2014)	3.82	19.77
42	Latvia (2013)	3.71	19.19
43	Serbia (2014)	3.67	18.98
44	Malaysia (2013)	3.62	18.74
45	Norway (2013)	3.62	18.69
46	Japan (2013)	3.52	18.17
47	Romania (2013)	3.49	18.03
48	Oman (2014)	3.04	15.66
49	Burkina Faso (2013)	2.90	14.95
50	Estonia (2013)	2.89	14.92
51	Spain (2013)	2.86	14.75
52	Georgia (2014)	2.83	14.58
53	Ukraine (2014)	2.80	14.42
54	Slovenia (2013)	2.62	13.50
55	Lithuania (2013)	2.45	12.61
56	Dominican Republic (2014)	2.34	12.03
57	Azerbaijan (2014)	2.25	11.58
58	Macedonia, FYR (2013)	2.16	11.08
59	Albania (2014)	2.11	10.82
60	Morocco (2010)	1.92	9.85
61	Moldova, Rep. (2013)	1.88	9.63
62	Tunisia (2013)	1.85	9.45
63	Russian Federation (2013)	1.84	9.41
64	Egypt (2013)	1.78	9.07
65	Madagascar (2013)	1.75	8.91
66	Korea, Rep. (2014)	1.66	8.48
67	Botswana (2014)	1.63	8.31
68	Kazakhstan (2015)	1.52	7.71
69	Poland (2013)	1.46	7.42
70	Cameroon (2011)	1.39	7.03
71	Israel (2012)	1.19	6.00
72	Turkey (2013)	1.09	5.50
73	Rwanda (2013)	0.96	4.78
74	Thailand (2012)	0.84	4.16
75	Honduras (2014)	0.69	3.41
76	Mongolia (2014)	0.64	3.16
77	Algeria (2014)	0.64	3.13
78	Ecuador (2012)	0.59	2.87
79	Croatia (2012)	0.54	2.59
80	Mali (2011)	0.53	2.54
81	El Salvador (2013)	0.43	2.03
82	Lesotho (2014)	0.39	1.85
83	Zimbabwe (2012)	0.37	1.74
84	Mozambique (2014)	0.37	1.72
85	China (2013)	0.28	1.27
86	Sri Lanka (2014)	0.28	1.23
87	Chile (2013)	0.26	1.12
88	Mexico (2013)	0.24	1.06
89	Iran (2014)	0.24	1.05
90	Brazil (2012)	0.21	0.89
91	India (2013)	0.12	0.43
92	Indonesia (2012)	0.12	0.39
93	Philippines (2008)	0.10	0.31
94	Bangladesh (2009)	0.10	0.31
95	Viet Nam (2014)	0.09	0.28
96	Venezuela, Bolivarian Rep. (2008)	0.09	0.26
97	Cambodia (2006)	0.07	0.16
98	Colombia (2014)	0.04	0.00
n/a	Argentina	n/a	n/a
n/a	Bolivia, Plurinational St	n/a	n/a
n/a	Bhutan	n/a	n/a
n/a	Canada	n/a	n/a
n/a	Costa Rica	n/a	n/a
n/a	Ethiopia	n/a	n/a
n/a	Guatemala	n/a	n/a
n/a	Jamaica	n/a	n/a
n/a	Kenya	n/a	n/a
n/a	Kuwait	n/a	n/a
n/a	Montenegro	n/a	n/a
n/a	Nicaragua	n/a	n/a
n/a	Pakistan	n/a	n/a
n/a	Panama	n/a	n/a
n/a	Peru	n/a	n/a
n/a	Paraguay	n/a	n/a
n/a	Senegal	n/a	n/a
n/a	Tanzania	n/a	n/a
n/a	Uruguay	n/a	n/a
n/a	Zambia	n/a	n/a

SOURCE: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)
Unless otherwise specified, the data used for computation were collected in 2015.

2.1.5 Brain gain

Average answer to the question: Does your country attract talented people from abroad? [1 = not at all; 7 = to a great extent—attracts the best and brightest from around the world] | 2015

Rank	Country	Value	Score
1	Switzerland	6.12	85.26
2	Singapore	5.97	82.86
3	United Arab Emirates (2014)	5.95	82.47
4	United Kingdom	5.94	82.29
5	Qatar	5.90	81.69
6	United States of America	5.80	80.06
7	Luxembourg	5.47	74.58
8	Ireland	5.35	72.49
9	Canada	5.31	71.88
10	Malaysia	5.30	71.73
11	Bahrain	4.97	66.17
12	Netherlands	4.97	66.17
13	Panama	4.96	65.94
14	Rwanda	4.80	63.38
15	Australia	4.75	62.58
16	New Zealand	4.74	62.31
17	Saudi Arabia	4.73	62.18
18	Germany	4.68	61.31
19	Norway	4.62	60.28
20	Barbados	4.47	57.78
21	Malta	4.26	54.36
22	Chile	4.24	53.97
23	Belgium	4.23	53.88
24	Oman	4.22	53.72
25	Sweden	4.22	53.68
26	Zambia	4.20	53.29
27	China	4.18	52.94
28	Indonesia	4.15	52.48
29	Austria	4.00	50.00
30	Azerbaijan (2014)	3.99	49.90
31	Mauritius	3.96	49.27
32	Korea, Rep.	3.94	49.04
33	Denmark	3.91	48.57
34	Botswana	3.85	47.55
35	India	3.85	47.47
36	Thailand	3.85	47.42
37	France	3.81	46.80
38	Kazakhstan	3.80	46.68
39	Lesotho	3.80	46.63
40	Costa Rica	3.78	46.35
41	South Africa	3.77	46.21
42	Peru	3.74	45.69
43	Jordan	3.73	45.58
44	Kenya	3.72	45.25
45	Mozambique	3.68	44.59
46	Iceland	3.65	44.23
47	Namibia	3.64	44.02
48	Israel	3.57	42.76
49	Bhutan	3.55	42.53
50	Morocco	3.55	42.52
51	Tanzania	3.54	42.37
52	Finland	3.53	42.24
53	Honduras	3.52	41.96
54	Cambodia	3.49	41.58
55	Senegal	3.46	40.95
56	Ethiopia	3.43	40.51
57	Dominican Republic	3.43	40.48
58	Mexico	3.37	39.57
59	Ecuador	3.37	39.57
60	Philippines	3.35	39.15
61	Guatemala	3.34	39.03
62	Kuwait	3.34	38.97
63	Ghana	3.33	38.84
64	Portugal	3.30	38.26
65	Viet Nam	3.27	37.90
66	Japan	3.26	37.72
67	Mali	3.26	37.60
68	Madagascar	3.19	36.49
69	Jamaica	3.18	36.37
70	Cyprus	3.17	36.17
71	Czech Republic	3.16	35.98
72	Estonia	3.16	35.93
73	Colombia	3.15	35.86
74	Russian Federation (2014)	3.10	35.05
75	Bolivia, Plurinational St.	3.07	34.43
76	Uganda	3.01	33.46
77	Brazil	2.98	33.00
78	Paraguay	2.89	31.43
79	Pakistan	2.86	31.03
80	Ukraine	2.85	30.83
81	Spain	2.84	30.68
82	Uruguay	2.80	30.07
83	Nicaragua	2.80	29.98
84	El Salvador	2.78	29.74
85	Cameroon	2.78	29.69
86	Montenegro	2.78	29.66
87	Mongolia	2.75	29.20
88	Turkey	2.75	29.12
89	Egypt	2.70	28.36
90	Latvia	2.64	27.32
91	Armenia	2.59	26.56
92	Romania	2.57	26.12
93	Sri Lanka	2.56	25.95
94	Italy	2.55	25.89
95	Lithuania	2.55	25.87
96	Georgia	2.55	25.83
97	Slovenia	2.54	25.69
98	Argentina	2.50	25.02
99	Hungary	2.49	24.84
100	Bangladesh	2.49	24.78
101	Albania	2.47	24.53
102	Tunisia	2.45	24.23
103	Zimbabwe	2.44	23.92
104	Burkina Faso	2.43	23.90
105	Poland	2.43	23.80
106	Lebanon	2.43	23.80
107	Algeria	2.42	23.75
108	Slovakia	2.30	21.72
109	Kyrgyzstan	2.27	21.19
110	Greece	2.21	20.24
111	Bulgaria	2.21	20.10
112	Macedonia, FYR	2.10	18.35
113	Iran	1.94	15.66
114	Croatia	1.90	15.01
115	Bosnia and Herzegovina	1.80	13.30
116	Moldova, Rep.	1.75	12.44
117	Serbia	1.64	10.67
118	Venezuela, Bolivarian Rep.	1.36	5.98

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

2.2.1 Tolerance of minorities

Discrimination and violence against minorities | 2015

Rank	Country	Value	Score
1	Iceland	1.00	100.00
1	Sweden	1.00	100.00
3	Finland	1.30	96.67
4	Ireland	1.60	93.33
5	Portugal	2.30	85.56
6	Oman	2.70	81.11
6	Uruguay	2.70	81.11
8	Luxembourg	2.80	80.00
8	Singapore	2.80	80.00
10	Korea, Rep.	3.10	76.67
11	Canada	3.40	73.33
11	Denmark	3.40	73.33
13	Switzerland	3.50	72.22
13	Mauritius	3.50	72.22
15	Slovenia	3.60	71.11
16	Norway	3.70	70.00
17	Chile	3.80	68.89
17	Czech Republic	3.80	68.89
17	New Zealand	3.80	68.89
20	Australia	3.90	67.78
21	United Arab Emirates	4.00	66.67
21	Jamaica	4.00	66.67
21	Lithuania	4.00	66.67
21	Malta	4.00	66.67
21	Mongolia	4.00	66.67
26	Japan	4.10	65.56
26	Netherlands	4.10	65.56
26	Poland	4.10	65.56
29	Belgium	4.20	64.44
30	Germany	4.30	63.33
31	Costa Rica	4.40	62.22
31	Hungary	4.40	62.22
33	United States of America	4.50	61.11
34	Austria	4.60	60.00
34	Italy	4.60	60.00
36	Albania	4.70	58.89
36	Lesotho	4.70	58.89
38	Bulgaria	4.90	56.67
38	Ghana	4.90	56.67
38	Kuwait	4.90	56.67
38	Madagascar	4.90	56.67
38	Qatar	4.90	56.67
43	Botswana	5.10	54.44
43	Greece	5.10	54.44
45	Argentina	5.30	52.22
45	Burkina Faso	5.30	52.22
45	United Kingdom	5.30	52.22
45	Panama	5.30	52.22
49	Mozambique	5.40	51.11
50	Brazil	5.60	48.89
50	Croatia	5.60	48.89
50	Namibia	5.60	48.89
50	Slovakia	5.60	48.89
54	Armenia	5.70	47.78
55	Latvia	5.80	46.67
55	South Africa	5.80	46.67
57	Tanzania	5.90	45.56
58	El Salvador	6.00	44.44
58	Viet Nam	6.00	44.44
58	Zambia	6.00	44.44
61	Dominican Republic	6.10	43.33
61	Spain	6.10	43.33
61	Honduras	6.10	43.33
61	Mexico	6.10	43.33
65	Estonia	6.20	42.22
65	Moldova, Rep.	6.20	42.22
65	Malaysia	6.20	42.22
65	Nicaragua	6.20	42.22
65	Paraguay	6.20	42.22
70	France	6.40	40.00
70	Ukraine	6.40	40.00
72	Kazakhstan	6.50	38.89
73	Romania	6.60	37.78
73	Senegal	6.60	37.78
75	Azerbaijan	6.70	36.67
76	Bolivia, Plurinational St.	6.80	35.56
76	Morocco	6.80	35.56
76	Venezuela, Bolivarian Rep.	6.80	35.56
79	Montenegro	7.00	33.33
80	Cyprus	7.30	30.00
80	Cambodia	7.30	30.00
80	Macedonia, FYR	7.30	30.00
80	Peru	7.30	30.00
84	Bosnia and Herzegovina	7.40	28.89
84	Jordan	7.40	28.89
86	Ecuador	7.50	27.78
86	Mali	7.50	27.78
88	Bahrain	7.60	26.67
88	Bhutan	7.60	26.67
88	Guatemala	7.60	26.67
88	Indonesia	7.60	26.67
92	Colombia	7.70	25.56
92	Saudi Arabia	7.70	25.56
94	Cameroon	7.80	24.44
94	India	7.80	24.44
94	Tunisia	7.80	24.44
97	Algeria	7.90	23.33
98	Georgia	8.00	22.22
98	Serbia	8.00	22.22
98	Thailand	8.00	22.22
101	Zimbabwe	8.10	21.11
102	Kyrgyzstan	8.20	20.00
103	Philippines	8.30	18.89
103	Uganda	8.30	18.89
105	Russian Federation	8.50	16.67
105	Rwanda	8.50	16.67
107	China	8.60	15.56
107	Egypt	8.60	15.56
109	Bangladesh	8.70	14.44
110	Iran	8.80	13.33
111	Ethiopia	8.90	12.22
111	Lebanon	8.90	12.22
113	Turkey	9.00	11.11
114	Kenya	9.30	7.78
114	Sri Lanka	9.30	7.78
116	Israel	9.70	3.33
117	Pakistan	10.00	0.00
n/a	Barbados	n/a	n/a

SOURCE: The Social Progress Index 2015 (http://www.socialprogressimperative.org/data/spi) based on the Fund for Peace Fragile States Index
Unless otherwise specified, the data used for computation were collected in 2015.

2.2.2 Tolerance of immigrants

The percentage of respondents answering yes to the question: Is the city or area where you live a good place or not a good place to live for immigrants from other countries? | 2015

Rank	Country	Value	Score
1	United Arab Emirates	0.88	100.00
2	Australia	0.87	98.17
3	Canada	0.87	98.06
4	New Zealand	0.87	97.71
5	Mali	0.86	97.34
6	Spain	0.86	96.89
7	Ireland	0.86	96.76
8	Portugal	0.85	96.00
9	Luxembourg	0.84	94.33
10	Uruguay	0.83	92.65
11	Norway	0.82	90.47
12	United States of America	0.81	90.34
13	Denmark	0.80	88.78
14	Netherlands	0.80	88.24
15	Burkina Faso	0.80	88.13
16	Qatar	0.80	87.60
17	United Kingdom	0.79	87.10
18	Sweden	0.79	86.83
19	Mauritius	0.79	86.19
20	Iceland	0.78	85.77
21	Mozambique	0.77	84.07
22	Paraguay	0.77	83.49
23	Senegal	0.76	81.93
24	Argentina	0.75	81.49
25	Costa Rica	0.75	81.38
26	Germany	0.75	80.54
27	Switzerland	0.75	80.36
28	Ecuador	0.74	79.97
29	Belgium	0.74	79.02
30	Austria	0.73	78.48
31	France	0.72	77.01
32	Finland	0.72	76.76
33	Kenya	0.72	76.34
34	Montenegro	0.71	75.46
35	Colombia	0.71	74.96
36	Jamaica	0.70	73.79
37	Kuwait	0.69	72.36
38	Bahrain	0.68	71.16
39	Saudi Arabia	0.68	70.51
40	Venezuela, Bolivarian Rep.	0.68	70.34
41	Italy	0.68	70.07
42	Bangladesh	0.67	69.81
43	Botswana	0.67	69.46
44	Greece	0.67	69.30
45	Brazil	0.67	68.60
46	Cameroon	0.66	68.35
47	Chile	0.66	68.20
48	Serbia	0.66	67.92
49	Zambia	0.65	66.92
50	Peru	0.65	66.64
51	Ethiopia	0.64	64.27
52	Macedonia, FYR	0.62	61.57
53	Ghana	0.62	61.50
54	Philippines	0.62	61.43
55	Singapore	0.61	60.83
56	Bolivia, Plurinational St.	0.61	60.65
57	Dominican Republic	0.60	59.44
58	Nicaragua	0.60	59.41
59	Rwanda	0.60	59.36
60	Bhutan	0.60	58.52
61	El Salvador	0.59	57.85
62	Mexico	0.58	56.10
63	Hungary	0.57	55.34
64	Uganda	0.57	54.97
65	Azerbaijan	0.57	54.43
66	Turkey	0.57	54.42
67	Slovenia	0.56	53.90
68	Malta	0.56	53.77
69	Panama	0.56	53.43
70	Namibia	0.56	52.88
71	Sri Lanka	0.55	51.87
72	Korea, Rep.	0.55	51.14
73	Zimbabwe	0.54	49.55
74	Japan	0.53	49.31
75	Lebanon	0.53	48.40
76	South Africa	0.53	48.19
77	Bosnia and Herzegovina	0.52	47.94
78	Cyprus	0.52	47.88
79	Morocco	0.52	47.56
80	Madagascar	0.52	47.47
81	Armenia	0.52	47.33
82	Tunisia	0.52	46.91
83	Poland	0.51	46.07
84	Albania	0.50	45.10
85	Iran	0.50	44.68
86	Czech Republic	0.50	44.47
87	Tanzania	0.50	44.37
88	Kyrgyzstan	0.49	43.23
89	Algeria	0.49	42.46
90	Georgia	0.48	42.00
91	Slovakia	0.48	41.89
92	Israel	0.48	41.76
93	Guatemala	0.48	41.57
94	Ukraine	0.48	41.02
95	Moldova, Rep.	0.47	40.01
96	Croatia	0.46	39.04
97	Lesotho	0.44	36.37
98	Honduras	0.42	33.42
99	Kazakhstan	0.42	32.86
100	Pakistan	0.42	32.77
101	Romania	0.42	32.63
102	Viet Nam	0.42	32.49
103	Russian Federation	0.41	31.85
104	Latvia	0.41	31.85
105	China	0.40	29.94
106	Bulgaria	0.39	28.16
107	Lithuania	0.39	28.12
108	Estonia	0.37	25.38
109	Thailand	0.36	24.33
110	Jordan	0.35	22.83
111	Egypt	0.35	22.37
112	India	0.34	21.18
113	Mongolia	0.31	17.43
114	Malaysia	0.28	12.46
115	Indonesia	0.26	8.92
116	Cambodia	0.20	0.00
n/a	Barbados	n/a	n/a
n/a	Oman	n/a	n/a

SOURCE: The Social Progress Index 2015 (http://www.socialprogressimperative.org/data/spi) based on the Gallup World Poll
Unless otherwise specified, the data used for computation were collected in 2015.

2.2.3 Social mobility

Average answer to the question: To what extent do individuals in your country have the opportunity to improve their economic situation through their personal efforts regardless of the socioeconomic status of their parents? [1 = not at all; 7 = to a great extent] | 2015

Rank	Country	Value	Score
1	Finland	6.40	89.98
2	Switzerland	6.28	87.99
3	Norway	6.25	87.46
4	New Zealand	6.17	86.08
5	Australia	6.07	84.55
6	Singapore	6.06	84.28
7	Netherlands	6.00	83.33
8	United Arab Emirates (2014)	5.97	82.89
9	Iceland	5.97	82.87
10	Luxembourg	5.96	82.70
11	Denmark	5.86	81.08
12	Qatar	5.84	80.62
13	Canada	5.77	79.43
14	United States of America	5.68	78.03
15	Austria	5.68	77.95
16	Belgium	5.62	77.06
17	Sweden	5.62	77.00
18	Japan	5.54	75.67
19	Estonia	5.52	75.39
20	Barbados	5.49	74.85
21	Ireland	5.46	74.35
22	Malaysia	5.46	74.26
23	Germany	5.42	73.62
24	Bahrain	5.36	72.68
25	United Kingdom	5.29	71.51
26	Rwanda	5.23	70.45
27	Latvia	5.22	70.35
28	Sri Lanka	5.18	69.61
29	Saudi Arabia	5.17	69.43
30	Malta	5.04	67.32
31	Costa Rica	4.96	66.00
32	Czech Republic	4.96	65.92
33	Bhutan	4.90	65.07
34	Panama	4.88	64.66
35	Mauritius	4.82	63.65
36	Mongolia	4.76	62.63
37	Chile	4.76	62.61
38	France	4.71	61.91
39	Uruguay	4.70	61.69
40	Lithuania	4.67	61.25
41	Guatemala	4.60	59.98
42	Lesotho	4.59	59.87
43	Spain	4.59	59.81
44	Oman	4.57	59.45
45	Botswana	4.57	59.42
46	Peru	4.55	59.09
47	South Africa	4.50	58.37
48	Zambia	4.50	58.33
49	Indonesia	4.48	57.94
50	Namibia	4.45	57.53
51	Jordan	4.45	57.51
52	Uganda	4.43	57.12
53	Honduras	4.39	56.51
54	Georgia	4.39	56.49
55	Portugal	4.35	55.85
56	India	4.34	55.62
57	Morocco	4.33	55.54
58	Philippines	4.32	55.37
59	Mali	4.29	54.85
60	Slovakia	4.28	54.72
61	Senegal	4.26	54.37
62	Kazakhstan	4.26	54.34
63	Thailand	4.25	54.10
64	Ghana	4.23	53.84
65	Jamaica	4.21	53.45
66	Cyprus	4.20	53.41
67	China	4.20	53.36
68	Ecuador	4.20	53.30
69	Slovenia	4.17	52.84
70	Macedonia, FYR	4.17	52.76
71	Kenya	4.10	51.68
72	Zimbabwe	4.09	51.53
73	Poland	4.08	51.38
74	Israel	4.08	51.32
75	Brazil	4.07	51.16
76	Cameroon	4.04	50.64
77	Paraguay	4.02	50.29
78	Tunisia	4.01	50.11
79	Colombia	3.98	49.61
80	Russian Federation (2014)	3.97	49.48
81	Montenegro	3.97	49.43
82	Tanzania	3.95	49.12
83	Ethiopia	3.93	48.88
84	Lebanon	3.91	48.54
85	Viet Nam	3.91	48.52
86	Mexico	3.91	48.49
87	Bangladesh	3.88	47.97
88	Kyrgyzstan	3.85	47.57
89	Kuwait	3.85	47.52
90	Korea, Rep.	3.83	47.20
91	Greece	3.82	47.03
92	Bolivia, Plurinational St.	3.81	46.79
93	Italy	3.79	46.43
94	Cambodia	3.75	45.76
95	Azerbaijan (2014)	3.73	45.57
96	Turkey	3.73	45.50
97	Madagascar	3.69	44.89
98	Dominican Republic	3.68	44.71
99	Argentina	3.68	44.66
100	Armenia	3.67	44.45
101	Pakistan	3.64	43.93
102	Nicaragua	3.62	43.73
103	El Salvador	3.60	43.26
104	Croatia	3.58	42.94
105	Iran	3.55	42.43
106	Algeria	3.54	42.35
107	Romania	3.54	42.30
108	Burkina Faso	3.54	42.26
109	Mozambique	3.53	42.16
110	Hungary	3.46	41.07
111	Ukraine	3.36	39.38
112	Bulgaria	3.36	39.28
113	Moldova, Rep.	3.33	38.79
114	Albania	3.22	37.07
115	Bosnia and Herzegovina	3.09	34.80
116	Serbia	3.06	34.39
117	Egypt	3.06	34.36
118	Venezuela, Bolivarian Rep.	2.59	26.42

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

2.2.4 Female graduates

Female tertiary graduates (%) | 2015

Rank	Country	Value	Score
1	Latvia (2013)	69.00	100.00
2	Barbados (2011)	68.40	98.51
3	Estonia (2012)	67.47	96.20
4	Poland (2013)	66.36	93.46
5	Albania (2014)	65.77	92.00
6	Tunisia (2014)	65.51	91.34
7	Argentina (2013)	65.36	90.97
8	Honduras (2014)	64.84	89.68
9	Panama (2013)	64.71	89.37
10	Iceland (2012)	64.45	88.73
11	Uruguay (2010)	64.12	87.91
12	Mongolia (2014)	63.99	87.59
13	Hungary (2012)	63.95	87.48
14	Slovakia (2013)	63.58	86.56
15	Lithuania (2013)	63.34	85.95
16	Algeria (2014)	63.27	85.79
17	Costa Rica (2014)	63.22	85.67
18	Dominican Republic (2014)	63.02	85.17
19	Lesotho (2014)	62.99	85.09
20	Qatar (2014)	62.83	84.69
21	Italy (2012)	62.26	83.29
22	Georgia (2014)	62.25	83.26
23	Czech Republic (2013)	61.77	82.05
24	Sweden (2013)	61.69	81.87
25	Cyprus (2013)	61.06	80.31
26	Brazil (2012)	60.82	79.71
27	Bulgaria (2013)	60.70	79.41
28	Bahrain (2014)	60.49	78.89
29	South Africa (2013)	60.47	78.84
30	Sri Lanka (2014)	60.30	78.42
31	Slovenia (2012)	60.27	78.34
32	Kyrgyzstan (2013)	60.13	78.01
33	Finland (2013)	60.13	78.00
34	Bosnia and Herzegovina (2014)	60.05	77.80
35	Portugal (2013)	59.78	77.14
36	Romania (2013)	59.72	76.97
37	Moldova, Rep. (2013)	59.62	76.72
38	New Zealand (2012)	59.38	76.13
39	Belgium (2012)	59.31	75.95
40	Croatia (2012)	59.28	75.88
41	Malaysia (2013)	59.27	75.86
42	Greece (2012)	59.06	75.33
43	Mauritius (2014)	58.82	74.73
44	Norway (2013)	58.67	74.38
45	United States of America (2013)	58.57	74.12
46	Namibia (2008)	58.35	73.59
47	Guatemala (2013)	58.32	73.50
48	Kuwait (2013)	58.28	73.41
49	Serbia (2014)	57.84	72.31
50	Ecuador (2013)	57.76	72.12
51	Armenia (2014)	57.74	72.07
52	Philippines (2014)	57.52	71.52
53	Denmark (2013)	57.49	71.45
54	Malta (2012)	57.44	71.31
55	Australia (2011)	57.28	70.93
56	Thailand (2012)	57.08	70.44
57	United Kingdom (2013)	57.05	70.35
58	El Salvador (2013)	56.58	69.19
59	Netherlands (2012)	56.53	69.07
60	Jamaica (2009)	56.38	68.68
61	Macedonia, FYR (2013)	56.28	68.44
62	Lebanon (2011)	56.20	68.24
63	Spain (2012)	56.15	68.13
64	France (2013)	56.12	68.04
65	Chile (2012)	56.04	67.86
66	Austria (2013)	55.99	67.72
67	Colombia (2014)	55.51	66.52
68	Oman (2014)	55.19	65.75
69	Ireland (2012)	54.55	64.14
70	Kazakhstan	54.54	64.12
71	Ukraine (2014)	54.30	63.53
72	Luxembourg (2013)	53.60	61.79
73	Mexico (2012)	53.47	61.47
74	Azerbaijan (2014)	52.46	58.96
75	Egypt (2013)	52.08	58.03
76	United Arab Emirates (2014)	51.52	56.63
77	China (2013)	50.73	54.67
78	Korea, Rep. (2013)	50.54	54.20
79	Viet Nam (2014)	49.73	52.18
80	Saudi Arabia (2014)	49.55	51.73
81	India (2013)	49.11	50.66
82	Japan (2013)	48.79	49.85
83	Switzerland (2013)	48.25	48.52
84	Madagascar (2013)	47.91	47.66
85	Zimbabwe (2013)	47.55	46.79
86	Morocco (2010)	47.31	46.19
87	Turkey (2012)	47.14	45.77
88	Jordan (2012)	46.80	44.90
89	Iran (2014)	45.08	40.64
90	Mozambique (2014)	43.01	35.52
91	Rwanda (2012)	42.70	34.75
92	Bangladesh (2012)	41.76	32.41
93	Cambodia (2011)	41.50	31.77
94	Ghana (2014)	39.27	26.22
95	Bhutan (2013)	34.19	13.63
96	Burkina Faso (2013)	31.77	7.61
97	Ethiopia (2012)	28.70	0.00
n/a	Bolivia, Plurinational St	n/a	n/a
n/a	Botswana	n/a	n/a
n/a	Canada	n/a	n/a
n/a	Cameroon	n/a	n/a
n/a	Germany	n/a	n/a
n/a	Indonesia	n/a	n/a
n/a	Israel	n/a	n/a
n/a	Kenya	n/a	n/a
n/a	Mali	n/a	n/a
n/a	Montenegro	n/a	n/a
n/a	Nicaragua	n/a	n/a
n/a	Pakistan	n/a	n/a
n/a	Peru	n/a	n/a
n/a	Paraguay	n/a	n/a
n/a	Russian Federation	n/a	n/a
n/a	Senegal	n/a	n/a
n/a	Singapore	n/a	n/a
n/a	Tanzania	n/a	n/a
n/a	Uganda	n/a	n/a
n/a	Venezuela, Bolivarian Rep.	n/a	n/a
n/a	Zambia	n/a	n/a

SOURCE: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)
Unless otherwise specified, the data used for computation were collected in 2015.

2.2.5 Gender earnings gap

Estimated earned income ratio | 2015

Rank	Country	Value	Score
1	Switzerland	1.00	100.00
1	Luxembourg	1.00	100.00
1	Norway	1.00	100.00
1	Qatar	1.00	100.00
1	Singapore	1.00	100.00
1	United States of America	1.00	100.00
7	Sweden	1.00	99.99
8	Kuwait	0.97	97.47
9	Tanzania	0.93	92.99
10	Kenya	0.93	92.70
11	Germany	0.91	91.10
12	Denmark	0.90	89.97
13	Iceland	0.89	89.39
14	Ireland	0.89	89.20
15	Canada	0.88	87.53
16	Botswana	0.85	85.40
17	Australia	0.84	84.37
18	Viet Nam	0.83	82.91
19	Belgium	0.82	82.47
20	Finland	0.81	81.27
21	France	0.81	80.78
22	Slovenia	0.80	80.30
23	Mozambique	0.80	79.97
24	Bahrain	0.79	79.49
25	Thailand	0.79	79.23
26	Austria	0.78	78.37
27	Rwanda	0.78	78.28
28	Netherlands	0.77	77.11
29	Moldova, Rep.	0.76	76.15
30	Lithuania	0.74	74.47
31	Namibia	0.74	74.30
32	Ghana	0.73	72.83
33	Madagascar	0.72	71.86
34	Cambodia	0.71	71.03
35	Romania	0.71	70.93
36	Zimbabwe	0.71	70.80
37	Mongolia	0.71	70.56
38	Croatia	0.70	70.39
39	Latvia	0.70	70.03
40	Portugal	0.69	69.12
41	Philippines	0.69	68.95
42	United Kingdom	0.68	67.78
43	Burkina Faso	0.66	66.50
44	Colombia	0.66	66.49
45	Ecuador	0.66	66.11
46	New Zealand	0.66	65.84
47	Serbia	0.66	65.82
48	Bulgaria	0.66	65.58
49	Barbados	0.65	64.93
50	Cyprus	0.65	64.88
51	Spain	0.65	64.65
52	Zambia	0.64	64.50
53	Ukraine	0.64	64.10
54	Dominican Republic	0.64	63.99
55	Estonia	0.63	63.48
56	Cameroon	0.63	63.15
57	China	0.62	62.07
58	Bhutan	0.62	61.97
59	Russian Federation	0.61	61.46
60	Lesotho	0.61	61.25
61	Ethiopia	0.61	61.17
62	Venezuela, Bolivarian Rep.	0.61	60.99
63	Japan	0.61	60.97
64	Macedonia, FYR	0.61	60.73
65	Jamaica	0.61	60.70
66	Bolivia, Plurinational St	0.61	60.52
67	Hungary	0.60	60.27
68	Israel	0.60	60.24
69	South Africa	0.59	59.48
70	Czech Republic	0.59	59.45
71	Panama	0.59	59.33
72	Italy	0.59	59.29
73	United Arab Emirates	0.59	59.17
74	Senegal	0.59	58.89
75	Brazil	0.59	58.82
76	Kazakhstan	0.58	58.06
77	Poland	0.58	57.73
78	Malaysia	0.58	57.66
79	El Salvador	0.58	57.65
80	Montenegro	0.58	57.58
81	Peru	0.57	57.42
82	Slovakia	0.57	57.41
83	Uruguay	0.56	56.21
84	Costa Rica	0.56	56.00
85	Guatemala	0.56	55.93
86	Korea, Rep.	0.56	55.66
87	Greece	0.55	54.96
88	Kyrgyzstan	0.53	53.14
89	Albania	0.52	52.27
90	Bangladesh	0.52	52.21
91	Paraguay	0.52	51.87
92	Georgia	0.50	50.46
93	Chile	0.50	50.19
94	Indonesia	0.49	48.84
95	Mexico	0.49	48.64
96	Armenia	0.49	48.62
97	Mali	0.48	48.03
98	Nicaragua	0.46	46.18
99	Malta	0.44	44.47
100	Saudi Arabia	0.44	44.36
101	Azerbaijan	0.44	44.24
102	Mauritius	0.42	42.23
103	Uganda	0.40	40.13
104	Honduras	0.40	40.02
105	Turkey	0.39	39.40
106	Sri Lanka	0.39	38.86
107	Oman	0.32	32.04
108	Egypt	0.30	30.07
109	Morocco	0.27	27.27
110	Tunisia	0.27	27.11
111	Lebanon	0.25	25.09
112	India	0.25	24.60
113	Pakistan	0.19	18.79
114	Jordan	0.18	17.88
115	Iran	0.17	17.25
116	Algeria	0.16	16.19
117	Argentina	0.00	0.00
n/a	Bosnia and Herzegovina	n/a	n/a

SOURCE: World Economic Forum, *The Global Gender Gap Report 2015* (http://reports.weforum.org/global-gender-gap-report-2015)
Unless otherwise specified, the data used for computation were collected in 2015.

2.2.6 Business opportunities for women

Average answer to the question: In your country, to what extent do companies provide women the same opportunities as men to rise to positions of leadership? [1 = not at all; 7 = to a great extent] | 2015

Rank	Country	Value	Score
1	Rwanda	6.07	84.48
2	Norway	5.96	82.67
3	Iceland	5.83	80.50
4	Finland	5.71	78.44
5	Singapore	5.70	78.41
6	Philippines	5.64	77.35
7	Malaysia	5.61	76.90
8	Denmark	5.60	76.60
9	Qatar	5.52	75.27
10	United Arab Emirates (2014)	5.45	74.23
11	Latvia	5.44	74.03
12	New Zealand	5.42	73.75
13	Luxembourg	5.42	73.66
14	Albania	5.42	73.63
15	Belgium	5.39	73.11
16	Barbados	5.37	72.75
17	Sri Lanka	5.34	72.30
18	Bhutan	5.33	72.23
19	Thailand	5.31	71.83
20	Estonia	5.31	71.77
21	Mongolia	5.31	71.76
22	Sweden	5.30	71.70
23	Zambia	5.26	70.96
24	Netherlands	5.21	70.10
25	Switzerland	5.16	69.36
26	Kazakhstan	5.15	69.18
27	Ireland	5.10	68.31
28	Bahrain	5.09	68.12
29	Azerbaijan (2014)	5.06	67.74
30	Canada	5.05	67.55
31	Australia	5.05	67.51
32	United States of America	4.99	66.58
33	Uganda	4.94	65.66
34	Macedonia, FYR	4.94	65.61
35	Lithuania	4.92	65.27
36	Georgia	4.91	65.12
37	Indonesia	4.87	64.49
38	Botswana	4.85	64.12
39	Honduras	4.79	63.25
40	United Kingdom	4.79	63.23
41	Oman	4.79	63.14
42	Slovenia	4.77	62.80
43	Algeria	4.77	62.78
44	Burkina Faso	4.76	62.65
45	Panama	4.73	62.13
46	Russian Federation (2014)	4.72	62.01
47	South Africa	4.72	61.94
48	Senegal	4.71	61.90
49	Jamaica	4.71	61.85
50	Kyrgyzstan	4.70	61.66
51	Germany	4.66	61.03
52	Cambodia	4.64	60.75
53	Moldova, Rep.	4.64	60.65
54	Armenia	4.61	60.19
55	Ukraine	4.60	59.92
56	Montenegro	4.59	59.90
57	Malta	4.56	59.38
58	Jordan	4.56	59.37
59	Bulgaria	4.54	59.00
60	Czech Republic	4.51	58.51
61	Zimbabwe	4.51	58.49
62	China	4.49	58.20
63	Romania	4.48	57.97
64	Ghana	4.48	57.96
65	Namibia	4.48	57.94
66	Tunisia	4.47	57.87
67	Cameroon	4.46	57.69
68	Austria	4.45	57.51
69	Cyprus	4.45	57.44
70	Ethiopia	4.37	56.10
71	Egypt	4.35	55.88
72	Kenya	4.35	55.86
73	Kuwait	4.34	55.70
74	Tanzania	4.27	54.46
75	Slovakia	4.26	54.27
76	Mozambique	4.26	54.26
77	Mauritius	4.25	54.20
78	Costa Rica	4.23	53.85
79	Venezuela, Bolivarian Rep.	4.23	53.76
80	Guatemala	4.22	53.60
81	Israel	4.21	53.43
82	Greece	4.20	53.30
83	Portugal	4.18	53.02
84	Madagascar	4.18	53.00
85	Colombia	4.18	52.98
86	Ecuador	4.16	52.73
87	Poland	4.15	52.46
88	Viet Nam	4.14	52.26
89	Mali	4.12	51.98
90	Japan	4.12	51.94
91	Serbia	4.07	51.20
92	Croatia	4.04	50.69
93	Morocco	4.04	50.63
94	Spain	3.99	49.85
95	Lesotho	3.99	49.78
96	France	3.95	49.12
97	Lebanon	3.94	49.02
98	Dominican Republic	3.91	48.52
99	Nicaragua	3.89	48.20
100	Uruguay	3.88	48.07
101	Bangladesh	3.83	47.25
102	Paraguay	3.77	46.19
103	Turkey	3.74	45.71
104	Peru	3.72	45.31
105	Hungary	3.64	43.99
106	Mexico	3.63	43.90
107	Chile	3.62	43.69
108	Saudi Arabia	3.62	43.61
109	Korea, Rep.	3.61	43.43
110	Iran	3.60	43.36
111	Brazil	3.59	43.20
112	Argentina	3.58	43.06
113	Bolivia, Plurinational St.	3.55	42.57
114	El Salvador	3.55	42.45
115	India	3.54	42.40
116	Pakistan	3.46	41.05
117	Italy	3.43	40.47
118	Bosnia and Herzegovina	3.25	37.50

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

Pillar 3

Grow

3.1.1 Vocational enrolment

Vocational enrolment (%) | 2015

Rank	Country	Value	Score
1	Finland (2013)	46.61	100.00
2	Belgium (2013)	45.92	98.50
3	Slovenia (2013)	41.50	89.03
4	Czech Republic (2013)	40.39	86.65
5	Bosnia and Herzegovina (2014)	39.09	83.86
6	Croatia (2012)	38.07	81.65
7	Serbia (2014)	37.09	79.56
8	Netherlands (2013)	36.36	78.00
9	Austria (2014)	36.35	77.97
10	Italy (2013)	35.97	77.16
11	Switzerland (2012)	34.65	74.33
12	Australia (2013)	34.31	73.59
13	Montenegro	32.60	69.93
14	Ecuador (2013)	32.34	69.36
15	Bulgaria (2014)	32.30	69.29
16	Slovakia (2013)	32.25	69.18
17	United Kingdom (2013)	32.06	68.77
18	Honduras (2014)	31.82	68.24
19	Luxembourg (2013)	31.59	67.76
20	Romania (2013)	30.63	65.70
21	Macedonia, FYR (2012)	30.05	64.46
22	Norway (2013)	29.55	63.38
23	Sweden (2013)	29.32	62.89
24	Poland (2013)	28.28	60.65
25	Portugal (2013)	27.49	58.96
26	Guatemala (2014)	26.80	57.48
27	Denmark (2013)	24.26	52.02
28	China (2013)	22.41	48.06
29	Latvia (2013)	22.40	48.04
30	Cameroon (2014)	22.21	47.62
31	Costa Rica (2014)	22.11	47.42
32	Iceland (2012)	22.03	47.23
33	Egypt (2012)	21.92	47.00
34	Turkey (2013)	21.49	46.08
35	Chile (2013)	21.35	45.78
36	Azerbaijan (2014)	19.73	42.30
37	Israel (2013)	19.43	41.65
38	Estonia (2013)	19.22	41.21
39	Indonesia (2013)	18.77	40.24
40	France (2013)	18.76	40.23
41	El Salvador (2013)	18.73	40.15
42	Germany (2013)	18.36	39.37
43	Greece (2013)	17.98	38.55
44	Russian Federation (2013)	17.03	36.50
45	New Zealand (2013)	16.96	36.35
46	Mexico (2012)	16.63	35.66
47	Spain (2013)	16.60	35.58
48	Thailand (2013)	15.68	33.61
49	Paraguay (2012)	15.56	33.36
50	Iran (2014)	15.44	33.10
51	Uruguay (2010)	15.29	32.78
52	Hungary (2013)	15.02	32.19
53	Lebanon (2013)	14.82	31.76
54	Mauritius (2014)	14.11	30.23
55	Panama (2012)	14.01	30.03
56	Rwanda (2013)	13.83	29.63
57	Argentina (2012)	13.70	29.36
58	Mali (2014)	13.43	28.79
59	Moldova, Rep. (2014)	12.69	27.20
60	Tanzania (2013)	12.10	25.92
61	Japan (2013)	11.64	24.93
62	Singapore (2009)	11.57	24.78
63	Kazakhstan	11.33	24.27
64	Armenia (2014)	10.88	23.32
65	Kyrgyzstan (2014)	10.21	21.86
66	Lithuania (2013)	9.79	20.98
67	Mongolia (2014)	9.76	20.90
68	Tunisia (2013)	9.27	19.85
69	Malaysia (2013)	9.17	19.65
70	Korea, Rep. (2014)	9.06	19.41
71	Ukraine (2014)	8.96	19.19
72	Algeria (2011)	8.33	17.84
73	Malta (2014)	8.11	17.37
74	Albania (2014)	8.01	17.14
75	Cyprus (2014)	7.93	16.99
76	Bahrain (2014)	7.87	16.85
77	Colombia (2014)	7.20	15.42
78	South Africa (2013)	6.91	14.78
79	Morocco (2012)	6.09	13.02
80	Saudi Arabia (2014)	5.39	11.54
81	Botswana (2013)	5.22	11.16
82	Venezuela, Bolivarian Rep. (2014)	5.20	11.11
83	Mozambique (2014)	5.02	10.73
84	Georgia (2014)	4.99	10.66
85	Dominican Republic (2014)	4.76	10.18
86	Senegal (2011)	4.50	9.61
87	Canada (2012)	4.25	9.09
88	Ethiopia (2012)	4.25	9.07
89	Uganda (2013)	4.14	8.84
90	Brazil (2013)	3.52	7.51
91	Jordan (2011)	3.49	7.44
92	Burkina Faso (2014)	3.35	7.16
93	Pakistan (2014)	3.25	6.94
94	Bangladesh (2013)	3.23	6.88
95	Cambodia (2008)	2.28	4.84
96	Kuwait (2013)	2.23	4.74
97	Bhutan (2014)	1.89	4.02
98	United Arab Emirates (2014)	1.82	3.87
99	Lesotho (2014)	1.81	3.84
100	Madagascar (2014)	1.80	3.83
101	Ghana	1.77	3.76
102	Nicaragua (2010)	1.48	3.13
103	Sri Lanka (2013)	1.46	3.09
104	Peru (2014)	1.41	2.99
105	India (2013)	1.26	2.66
106	Qatar (2014)	0.66	1.39
107	Ireland (2013)	0.66	1.37
108	Kenya (2009)	0.49	1.01
109	Barbados (2005)	0.34	0.69
110	Oman (2014)	0.02	0.00
n/a	Bolivia, Plurinational St	n/a	n/a
n/a	Jamaica	n/a	n/a
n/a	Namibia	n/a	n/a
n/a	Philippines	n/a	n/a
n/a	United States of America	n/a	n/a
n/a	Viet Nam	n/a	n/a
n/a	Zambia	n/a	n/a
n/a	Zimbabwe	n/a	n/a

SOURCE: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)
Unless otherwise specified, the data used for computation were collected in 2015.

3.1.2 Tertiary enrolment

Tertiary enrolment (%) | 2015

Rank	Country	Value	Score
1	Greece (2013)	110.16	100.00
2	Korea, Rep. (2014)	95.35	86.09
3	Finland (2013)	91.07	82.07
4	United States of America (2013)	88.81	79.95
5	Spain (2013)	87.07	78.32
6	Australia (2013)	86.55	77.84
7	Slovenia (2013)	85.22	76.58
8	Chile (2013)	83.82	75.27
9	Ukraine (2014)	82.31	73.85
10	Iceland (2012)	82.23	73.77
11	Denmark (2013)	81.24	72.84
12	Austria (2014)	80.00	71.68
13	Argentina (2013)	79.99	71.67
14	New Zealand (2013)	79.71	71.41
15	Turkey (2013)	78.98	70.73
16	Netherlands (2012)	78.50	70.28
17	Russian Federation (2013)	78.00	69.80
18	Venezuela, Bolivarian Rep. (2009)	76.98	68.85
19	Norway (2013)	76.12	68.04
20	Ireland (2013)	73.17	65.27
21	Estonia (2013)	72.92	65.04
22	Belgium (2013)	72.31	64.46
23	Lithuania (2013)	71.97	64.14
24	Poland (2013)	71.16	63.38
25	Bulgaria (2014)	70.79	63.03
26	Latvia (2013)	66.95	59.44
27	Israel (2013)	66.28	58.80
28	Portugal (2013)	66.22	58.75
29	Iran (2014)	65.96	58.50
30	Barbados (2011)	65.43	58.01
31	Czech Republic (2013)	65.38	57.95
32	Mongolia (2014)	64.27	56.92
33	Italy (2013)	63.46	56.15
34	Sweden (2013)	63.39	56.09
35	Uruguay (2010)	63.13	55.85
36	Albania (2014)	62.71	55.45
37	Japan (2013)	62.41	55.17
38	France (2013)	62.15	54.92
39	Croatia (2012)	61.67	54.47
40	Saudi Arabia (2014)	61.11	53.95
41	Germany (2013)	61.06	53.90
42	Serbia (2014)	58.05	51.08
43	Hungary (2013)	57.02	50.10
44	United Kingdom (2013)	56.87	49.97
45	Switzerland (2013)	56.27	49.40
46	Montenegro (2010)	55.34	48.54
47	Slovakia (2013)	54.43	47.68
48	Cyprus (2014)	53.10	46.43
49	Costa Rica (2014)	53.04	46.37
50	Romania (2013)	52.17	45.55
51	Thailand (2013)	51.38	44.81
52	Colombia (2014)	51.29	44.73
53	Jordan (2012)	47.59	41.25
54	Dominican Republic (2014)	47.52	41.19
55	Kyrgyzstan (2013)	47.33	41.01
56	Armenia (2014)	46.64	40.36
57	Kazakhstan	46.04	39.80
58	Malta (2014)	45.08	38.90
59	Lebanon (2014)	42.77	36.73
60	Moldova, Rep. (2013)	41.28	35.33
61	Peru (2010)	40.51	34.61
62	Ecuador (2013)	40.48	34.58
63	Macedonia, FYR (2013)	39.35	33.52
64	Georgia (2014)	39.18	33.36
65	Panama (2013)	38.74	32.95
66	Mauritius (2014)	38.67	32.88
67	Malaysia (2013)	38.53	32.75
68	Bolivia, Plurinational St. (2007)	38.39	32.62
69	Bahrain (2014)	36.84	31.16
70	Philippines (2014)	35.75	30.14
71	Paraguay (2010)	35.08	29.51
72	Algeria (2014)	34.59	29.05
73	Tunisia (2014)	34.58	29.04
74	Indonesia (2013)	31.29	25.95
75	Viet Nam (2014)	30.48	25.19
76	Egypt (2013)	30.32	25.04
77	China (2013)	30.16	24.89
78	Mexico (2013)	29.21	24.00
79	El Salvador (2013)	29.17	23.96
80	Oman (2011)	28.58	23.40
81	Botswana (2014)	27.51	22.41
82	Jamaica (2013)	27.44	22.34
83	Kuwait (2013)	27.03	21.95
84	Morocco (2014)	24.57	19.64
85	India (2013)	23.89	19.00
86	Azerbaijan (2014)	23.16	18.32
87	United Arab Emirates (2014)	22.04	17.27
88	Honduras (2014)	21.18	16.46
89	Sri Lanka (2014)	20.71	16.02
90	South Africa (2013)	19.66	15.04
91	Luxembourg (2012)	19.41	14.80
92	Guatemala (2013)	18.33	13.78
93	Cambodia (2011)	15.90	11.50
94	Qatar (2014)	15.83	11.44
95	Ghana (2014)	15.57	11.19
96	Bangladesh (2012)	13.39	9.14
97	Cameroon (2011)	11.93	7.77
98	Bhutan (2013)	10.93	6.83
99	Pakistan (2014)	10.36	6.30
100	Lesotho (2014)	9.84	5.82
101	Namibia (2008)	9.33	5.34
102	Rwanda (2013)	7.53	3.64
103	Senegal (2010)	7.39	3.51
104	Mali (2012)	6.87	3.03
105	Ethiopia (2014)	6.30	2.49
106	Mozambique (2014)	5.97	2.19
107	Zimbabwe (2013)	5.87	2.09
108	Burkina Faso (2013)	4.78	1.06
109	Uganda (2011)	4.48	0.78
110	Madagascar (2013)	4.25	0.56
111	Kenya (2009)	4.05	0.38
112	Tanzania (2013)	3.65	0.00
n/a	Bosnia and Herzegovina	n/a	n/a
n/a	Brazil	n/a	n/a
n/a	Canada	n/a	n/a
n/a	Nicaragua	n/a	n/a
n/a	Singapore	n/a	n/a
n/a	Zambia	n/a	n/a

SOURCE: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)
Unless otherwise specified, the data used for computation were collected in 2015.

3.1.3 Tertiary education expenditure

Government expenditure on tertiary education (%) | 2015

Rank	Country	Value	Score
1	Botswana (2009)	4.00	100.00
1	Lesotho (2008)	4.72	100.00
1	Lithuania (2011)	5.04	100.00
4	Barbados	2.64	64.35
5	Denmark (2011)	2.39	57.78
6	Malaysia (2013)	2.14	51.37
7	Ukraine (2013)	2.13	51.01
8	Germany (2013)	2.05	49.14
8	Finland (2012)	2.05	49.14
10	Sweden (2012)	1.94	46.03
11	Norway (2011)	1.93	45.88
12	Namibia (2010)	1.93	45.82
13	Ethiopia (2013)	1.92	45.65
14	Bolivia, Plurinational St.	1.84	43.64
15	New Zealand (2012)	1.84	43.45
16	Austria (2012)	1.82	43.01
17	Tunisia (2013)	1.75	41.27
18	Canada (2012)	1.73	40.66
19	Netherlands (2012)	1.59	36.92
20	Venezuela, Bolivarian Rep. (2009)	1.55	36.03
21	Malta (2012)	1.50	34.60
22	Greece (2005)	1.43	32.84
23	Belgium (2012)	1.43	32.82
24	Senegal (2010)	1.38	31.39
25	United Kingdom (2013)	1.37	31.24
26	Iceland (2011)	1.37	31.14
27	United States of America (2011)	1.36	31.07
28	Cyprus (2011)	1.36	30.93
29	Switzerland (2012)	1.33	30.13
30	Moldova, Rep.	1.29	29.13
31	Serbia (2012)	1.29	29.11
32	Ireland (2012)	1.25	28.10
33	France (2012)	1.24	27.73
33	Georgia (2013)	1.24	27.73
33	Ghana (2013)	1.24	27.73
36	India (2012)	1.23	27.58
37	Kuwait (2006)	1.23	27.45
38	Slovenia (2012)	1.20	26.83
39	Nicaragua (2010)	1.17	26.01
40	Algeria (2008)	1.17	25.99
41	Uruguay (2011)	1.17	25.96
42	Chile (2013)	1.17	25.93
43	Australia (2012)	1.16	25.78
44	Oman (2009)	1.13	24.84
45	Ecuador (2012)	1.11	24.54
46	Paraguay (2012)	1.11	24.47
47	Poland (2011)	1.11	24.41
48	Kenya (2006)	1.09	23.82
49	Morocco (2009)	1.09	23.77
50	Argentina (2013)	1.08	23.68
51	Viet Nam (2012)	1.05	22.87
52	Jamaica	1.05	22.77
53	Estonia (2012)	1.05	22.75
54	Singapore (2013)	1.03	22.20
55	Portugal (2011)	1.01	21.78
56	Czech Republic (2012)	1.00	21.51
57	Honduras	0.99	21.16
58	Burkina Faso (2013)	0.98	21.10
59	Spain (2012)	0.97	20.87
60	Brazil (2012)	0.97	20.71
61	Slovakia (2012)	0.94	20.09
62	Mali	0.94	19.87
63	Israel (2012)	0.93	19.80
64	Mexico (2011)	0.93	19.79
65	Croatia (2011)	0.92	19.49
66	Mozambique (2013)	0.92	19.44
67	Turkey (2006)	0.91	19.27
68	Russian Federation (2012)	0.88	18.38
69	Colombia (2013)	0.87	18.13
70	Iran	0.87	18.06
71	Kyrgyzstan (2013)	0.87	18.05
72	Korea, Rep. (2013)	0.86	17.99
73	Hungary (2012)	0.80	16.40
74	Italy (2011)	0.80	16.35
75	Romania (2012)	0.78	15.82
76	Albania (2013)	0.77	15.47
77	Japan (2013)	0.76	15.36
78	Tanzania	0.75	14.88
79	Panama (2012)	0.74	14.80
80	Lebanon (2013)	0.74	14.73
81	South Africa	0.74	14.69
82	Thailand (2012)	0.71	13.97
83	Rwanda (2013)	0.71	13.83
84	Latvia (2012)	0.66	12.76
85	Bulgaria (2012)	0.64	12.11
86	Bhutan	0.62	11.49
87	Indonesia (2013)	0.55	9.83
88	Pakistan	0.55	9.72
89	Peru	0.52	8.99
90	Zimbabwe (2010)	0.45	7.18
91	Zambia (2005)	0.45	7.08
92	Madagascar (2012)	0.42	6.25
93	Kazakhstan	0.41	5.99
94	Cambodia (2010)	0.38	5.29
95	Azerbaijan (2011)	0.36	4.70
96	Mauritius	0.35	4.60
97	Guatemala (2013)	0.35	4.53
98	Armenia	0.33	3.93
99	Sri Lanka (2012)	0.32	3.83
100	Philippines (2009)	0.32	3.68
101	Cameroon (2013)	0.31	3.47
102	Uganda (2013)	0.30	3.30
103	Dominican Republic (2007)	0.30	3.18
104	El Salvador (2011)	0.29	2.88
105	Bangladesh (2011)	0.23	1.45
106	Mongolia (2011)	0.18	0.00
n/a	United Arab Emirates	n/a	n/a
n/a	Bahrain	n/a	n/a
n/a	Bosnia and Herzegovina	n/a	n/a
n/a	China	n/a	n/a
n/a	Costa Rica	n/a	n/a
n/a	Egypt	n/a	n/a
n/a	Jordan	n/a	n/a
n/a	Luxembourg	n/a	n/a
n/a	Macedonia, FYR	n/a	n/a
n/a	Montenegro	n/a	n/a
n/a	Qatar	n/a	n/a
n/a	Saudi Arabia	n/a	n/a

SOURCE: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)
Unless otherwise specified, the data used for computation were collected in 2015.

3.1.4 Reading, maths, and science

PISA average scores in reading, mathematics, and science | 2014

Rank	Country	Value	Score
1	Singapore	555.73	100.00
2	Korea, Rep.	542.45	92.65
3	Japan	540.40	91.51
4	Finland	529.40	85.43
5	Estonia	526.08	83.59
6	Canada	522.21	81.44
7	Poland	520.50	80.50
8	Netherlands	518.75	79.53
9	Switzerland	518.42	79.35
10	Viet Nam	515.99	78.00
11	Ireland	515.56	77.76
12	Germany	515.11	77.51
13	Australia	512.48	76.06
14	Belgium	509.34	74.32
15	New Zealand	509.19	74.23
16	United Kingdom	502.46	70.51
17	Austria	500.31	69.32
18	Czech Republic	500.05	69.17
19	France	499.81	69.04
20	Slovenia	498.86	68.51
21	Denmark	498.21	68.15
22	Norway	495.94	66.90
23	Latvia	493.82	65.72
24	United States of America	492.12	64.78
25	Luxembourg	489.62	63.40
26	Spain	489.57	63.37
27	Italy	489.54	63.35
28	Portugal	488.03	62.52
29	Hungary	486.60	61.73
30	Iceland	484.49	60.56
31	Lithuania	483.94	60.25
32	Croatia	482.35	59.37
33	Sweden	482.13	59.25
34	Russian Federation	481.20	58.74
35	Israel	474.12	54.81
36	Slovakia	471.87	53.57
37	Greece	465.63	50.11
38	Turkey	462.30	48.27
39	Serbia	446.60	39.58
40	Cyprus	442.11	37.09
41	United Arab Emirates	441.36	36.68
42	Bulgaria	440.44	36.17
43	Romania	440.31	36.09
44	Thailand	437.32	34.44
45	Chile	436.32	33.89
46	Costa Rica	425.63	27.97
47	Mexico	417.25	23.33
48	Kazakhstan	416.41	22.86
49	Montenegro	413.95	21.50
50	Malaysia	412.74	20.83
51	Uruguay	412.16	20.51
52	Brazil	402.10	14.94
53	Jordan	398.00	12.67
54	Argentina	396.68	11.94
55	Tunisia	396.65	11.92
56	Albania	395.22	11.13
57	Colombia	392.86	9.82
58	Indonesia	384.38	5.13
59	Qatar	382.53	4.10
60	Peru	375.12	0.00
n/a	Armenia	n/a	n/a
n/a	Azerbaijan	n/a	n/a
n/a	Burkina Faso	n/a	n/a
n/a	Bangladesh	n/a	n/a
n/a	Bahrain	n/a	n/a
n/a	Bosnia and Herzegovina	n/a	n/a
n/a	Bolivia, Plurinational St	n/a	n/a
n/a	Barbados	n/a	n/a
n/a	Bhutan	n/a	n/a
n/a	Botswana	n/a	n/a
n/a	China	n/a	n/a
n/a	Cameroon	n/a	n/a
n/a	Dominican Republic	n/a	n/a
n/a	Algeria	n/a	n/a
n/a	Ecuador	n/a	n/a
n/a	Egypt	n/a	n/a
n/a	Ethiopia	n/a	n/a
n/a	Georgia	n/a	n/a
n/a	Ghana	n/a	n/a
n/a	Guatemala	n/a	n/a
n/a	Honduras	n/a	n/a
n/a	India	n/a	n/a
n/a	Iran	n/a	n/a
n/a	Jamaica	n/a	n/a
n/a	Kenya	n/a	n/a
n/a	Kyrgyzstan	n/a	n/a
n/a	Cambodia	n/a	n/a
n/a	Kuwait	n/a	n/a
n/a	Lebanon	n/a	n/a
n/a	Sri Lanka	n/a	n/a
n/a	Lesotho	n/a	n/a
n/a	Morocco	n/a	n/a
n/a	Moldova, Rep.	n/a	n/a
n/a	Madagascar	n/a	n/a
n/a	Macedonia, FYR	n/a	n/a
n/a	Mali	n/a	n/a
n/a	Malta	n/a	n/a
n/a	Mongolia	n/a	n/a
n/a	Mozambique	n/a	n/a
n/a	Mauritius	n/a	n/a
n/a	Namibia	n/a	n/a
n/a	Nicaragua	n/a	n/a
n/a	Oman	n/a	n/a
n/a	Pakistan	n/a	n/a
n/a	Panama	n/a	n/a
n/a	Philippines	n/a	n/a
n/a	Paraguay	n/a	n/a
n/a	Rwanda	n/a	n/a
n/a	Saudi Arabia	n/a	n/a
n/a	Senegal	n/a	n/a
n/a	El Salvador	n/a	n/a
n/a	Tanzania	n/a	n/a
n/a	Uganda	n/a	n/a
n/a	Ukraine	n/a	n/a
n/a	Venezuela, Bolivarian Rep.	n/a	n/a
n/a	South Africa	n/a	n/a
n/a	Zambia	n/a	n/a
n/a	Zimbabwe	n/a	n/a

SOURCE: OECD Programme for International Student Assessment (PISA) (www.oecd.org/pisa)
Unless otherwise specified, the data used for computation were collected in 2014.

3.1.5 University ranking

QS World University Ranking | 2016

Rank	Country	Value	Score
1	United States of America	99.10	100.00
2	United Kingdom	97.83	98.72
3	Singapore	94.05	94.90
4	Switzerland	87.17	87.96
5	Canada	85.63	86.41
6	Australia	85.33	86.11
7	China	84.43	85.20
8	Japan	83.03	83.79
9	Korea, Rep.	79.97	80.69
10	France	78.73	79.45
11	Germany	76.03	76.72
12	Netherlands	75.80	76.49
13	Sweden	71.57	72.22
14	Denmark	69.97	70.60
15	Belgium	66.17	66.77
16	Ireland	61.30	61.86
17	Finland	60.77	61.32
18	New Zealand	60.20	60.75
19	India	57.07	57.58
20	Spain	56.30	56.81
21	Israel	56.10	56.61
22	Norway	55.30	55.80
23	Italy	52.90	53.38
24	Austria	52.43	52.91
25	Brazil	52.27	52.74
26	Russian Federation	51.53	52.00
27	Malaysia	49.13	49.58
28	Argentina	48.13	48.57
29	Saudi Arabia	48.03	48.47
30	Chile	47.20	47.63
31	South Africa	46.60	47.02
32	Mexico	44.43	44.84
33	Colombia	40.60	40.97
34	Portugal	38.97	39.32
35	Thailand	38.17	38.51
36	Kazakhstan	36.07	36.39
37	Czech Republic	33.97	34.28
38	Turkey	33.53	33.84
39	United Arab Emirates	32.47	32.76
40	Indonesia	32.33	32.63
41	Poland	31.73	32.02
42	Greece	31.47	31.75
43	Lebanon	30.80	31.08
44	Qatar	29.70	29.97
45	Estonia	29.55	29.82
46	Ukraine	29.17	29.43
47	Iran	28.65	28.91
48	Egypt	28.50	28.76
49	Philippines	27.57	27.82
50	Oman	27.40	27.65
51	Slovenia	25.50	25.73
52	Hungary	24.77	24.99
53	Jordan	23.80	24.02
54	Bahrain	23.10	23.31
55	Pakistan	22.70	22.91
56	Uruguay	22.50	22.70
57	Slovakia	22.40	22.60
58	Venezuela, Bolivarian Rep.	22.10	22.30
59	Lithuania	22.07	22.27
60	Costa Rica	21.70	21.90
61	Peru	21.07	21.26
62	Croatia	20.40	20.59
63	Bulgaria	20.00	20.18
64	Latvia	19.10	19.27
65	Azerbaijan	18.63	18.80
66	Ecuador	18.60	18.77
67	Bangladesh	18.00	18.16
68	Sri Lanka	17.20	17.36
69	Romania	16.40	16.55
70	Kuwait	15.70	15.84
71	Kenya	13.80	13.93
72	Serbia	12.80	12.92
73	Uganda	8.00	8.07
74	Tanzania	7.60	7.67
75	Ghana	7.00	7.06
76	Albania	0.00	0.00
76	Armenia	0.00	0.00
76	Burkina Faso	0.00	0.00
76	Bosnia and Herzegovina	0.00	0.00
76	Bolivia, Plurinational St.	0.00	0.00
76	Barbados	0.00	0.00
76	Bhutan	0.00	0.00
76	Botswana	0.00	0.00
76	Cameroon	0.00	0.00
76	Cyprus	0.00	0.00
76	Dominican Republic	0.00	0.00
76	Algeria	0.00	0.00
76	Ethiopia	0.00	0.00
76	Georgia	0.00	0.00
76	Guatemala	0.00	0.00
76	Honduras	0.00	0.00
76	Iceland	0.00	0.00
76	Jamaica	0.00	0.00
76	Kyrgyzstan	0.00	0.00
76	Cambodia	0.00	0.00
76	Lesotho	0.00	0.00
76	Luxembourg	0.00	0.00
76	Morocco	0.00	0.00
76	Moldova, Rep.	0.00	0.00
76	Madagascar	0.00	0.00
76	Macedonia, FYR	0.00	0.00
76	Mali	0.00	0.00
76	Malta	0.00	0.00
76	Montenegro	0.00	0.00
76	Mongolia	0.00	0.00
76	Mozambique	0.00	0.00
76	Mauritius	0.00	0.00
76	Namibia	0.00	0.00
76	Nicaragua	0.00	0.00
76	Panama	0.00	0.00
76	Paraguay	0.00	0.00
76	Rwanda	0.00	0.00
76	Senegal	0.00	0.00
76	El Salvador	0.00	0.00
76	Tunisia	0.00	0.00
76	Viet Nam	0.00	0.00
76	Zambia	0.00	0.00
76	Zimbabwe	0.00	0.00

SOURCE: Quacquarelli Symonds Ltd (QS), QS World University Ranking 2014/2015, Top Universities (www.topuniversities.com/university-rankings/world-university-rankings)
Unless otherwise specified, the data used for computation were collected in 2016.

3.2.1 Quality of management schools

Average answer to the question: In your country, how do you assess the following: Quality of business schools [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world] | 2015

Rank	Country	Value	Score
1	Switzerland	6.26	87.61
2	Belgium	6.05	84.13
3	United Kingdom	5.93	82.18
4	Singapore	5.89	81.51
5	Canada	5.76	79.31
6	Spain	5.75	79.18
7	Qatar	5.75	79.16
8	Netherlands	5.70	78.37
9	United States of America	5.70	78.32
10	France	5.54	75.73
11	Lebanon	5.47	74.56
12	Finland	5.44	74.02
13	Ireland	5.41	73.51
14	Norway	5.41	73.44
15	Sweden	5.36	72.65
16	Denmark	5.35	72.51
17	Iceland	5.35	72.43
18	Australia	5.29	71.53
19	United Arab Emirates (2014)	5.26	71.04
20	Chile	5.26	70.97
21	Malaysia	5.25	70.82
22	New Zealand	5.23	70.56
23	South Africa	5.23	70.52
24	Germany	5.21	70.12
25	Portugal	5.19	69.81
26	Costa Rica	5.13	68.82
27	Italy	5.11	68.48
28	Barbados	5.02	66.97
29	Israel	4.95	65.90
30	Sri Lanka	4.91	65.14
31	Austria	4.88	64.75
32	Luxembourg	4.86	64.30
33	Argentina	4.78	63.05
34	Cyprus	4.75	62.43
35	Estonia	4.74	62.41
36	Senegal	4.72	61.95
37	Malta	4.70	61.67
38	Philippines	4.69	61.56
39	Guatemala	4.63	60.44
40	Bahrain	4.57	59.55
41	Latvia	4.55	59.14
42	Jamaica	4.53	58.86
43	Slovenia	4.50	58.25
44	Ghana	4.49	58.18
45	Indonesia	4.44	57.33
46	Jordan	4.41	56.77
47	Japan	4.39	56.49
48	Uruguay	4.37	56.18
49	Lithuania	4.36	55.99
50	Montenegro	4.35	55.87
51	India	4.35	55.87
52	Kenya	4.35	55.84
53	Cameroon	4.34	55.70
54	Zambia	4.33	55.57
55	Korea, Rep.	4.32	55.41
56	Albania	4.31	55.23
57	Saudi Arabia	4.30	54.95
58	Czech Republic	4.29	54.91
59	Ecuador	4.28	54.60
60	Mauritius	4.27	54.48
61	Venezuela, Bolivarian Rep.	4.25	54.22
62	Mexico	4.22	53.68
63	Tunisia	4.19	53.24
64	Pakistan	4.13	52.09
65	Peru	4.10	51.68
66	Morocco	4.07	51.17
67	Hungary	4.07	51.14
68	Rwanda	4.06	51.06
69	Poland	4.06	50.92
70	Thailand	4.05	50.80
71	Colombia	4.03	50.54
72	Croatia	4.02	50.30
73	Macedonia, FYR	4.01	50.13
74	Honduras	4.00	49.96
75	Zimbabwe	3.98	49.65
76	Brazil	3.95	49.21
77	China	3.94	48.97
78	Kuwait	3.93	48.75
79	Ukraine	3.92	48.71
80	Greece	3.92	48.65
81	Panama	3.91	48.49
82	El Salvador	3.89	48.25
83	Iran	3.89	48.16
84	Uganda	3.86	47.65
85	Romania	3.86	47.61
86	Slovakia	3.83	47.16
87	Madagascar	3.83	47.14
88	Burkina Faso	3.81	46.90
89	Georgia	3.81	46.87
90	Bhutan	3.78	46.33
91	Ethiopia	3.75	45.82
92	Russian Federation (2014)	3.75	45.78
93	Kazakhstan	3.75	45.76
94	Dominican Republic	3.72	45.40
95	Nicaragua	3.70	44.94
96	Bangladesh	3.69	44.80
97	Turkey	3.66	44.40
98	Lesotho	3.63	43.90
99	Mali	3.60	43.39
100	Bulgaria	3.56	42.59
101	Botswana	3.52	42.07
102	Viet Nam	3.51	41.84
103	Namibia	3.45	40.91
104	Armenia	3.44	40.73
105	Serbia	3.36	39.41
106	Algeria	3.36	39.39
107	Moldova, Rep.	3.35	39.12
108	Bosnia and Herzegovina	3.28	38.07
109	Azerbaijan (2014)	3.27	37.89
110	Tanzania	3.23	37.21
111	Cambodia	3.20	36.73
112	Oman	3.11	35.17
113	Bolivia, Plurinational St.	3.09	34.75
114	Kyrgyzstan	3.05	34.25
115	Mongolia	3.03	33.87
116	Paraguay	3.02	33.59
117	Mozambique	2.84	30.61
118	Egypt	2.53	25.51

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

3.2.2 Prevalence of training in firms

Proportion of firms offering formal training (%) | 2015

Rank	Country	Value	Score
1	China (2012)	79.20	100.00
2	Thailand (2006)	75.30	94.85
3	Ireland (2005)	73.20	92.08
4	Sweden (2014)	70.30	88.26
5	Cambodia (2013)	67.90	85.09
6	Ecuador (2010)	65.90	82.45
7	Colombia (2010)	65.10	81.40
8	Argentina (2010)	63.60	79.42
9	Kyrgyzstan (2013)	62.70	78.23
10	El Salvador (2010)	61.00	75.99
11	Mongolia (2013)	60.90	75.86
12	Peru (2010)	60.10	74.80
13	Chile (2010)	57.50	71.37
14	Bolivia, Plurinational St. (2010)	57.10	70.84
15	Dominican Republic (2010)	57.00	70.71
16	Venezuela, Bolivarian Rep. (2010)	56.00	69.39
17	Rwanda (2011)	55.40	68.60
18	Czech Republic (2013)	55.10	68.21
19	Paraguay (2010)	54.90	67.94
20	Costa Rica (2010)	54.70	67.68
21	Bosnia and Herzegovina (2013)	52.40	64.64
22	Botswana (2010)	51.90	63.98
22	Guatemala (2010)	51.90	63.98
24	Spain (2005)	51.30	63.19
25	Mexico (2010)	50.80	62.53
26	Malaysia (2007)	50.10	61.61
27	Croatia (2013)	49.30	60.55
28	Uruguay (2010)	48.60	59.63
29	Nicaragua (2010)	47.20	57.78
30	Macedonia, FYR (2013)	46.90	57.39
31	Russian Federation (2012)	46.20	56.46
32	Slovakia (2013)	43.50	52.90
32	Viet Nam (2009)	43.50	52.90
34	Bulgaria (2013)	42.70	51.85
35	Lesotho (2009)	42.50	51.58
36	Brazil (2009)	42.20	51.19
37	Lithuania (2013)	42.00	50.92
38	Slovenia (2013)	41.50	50.26
39	Romania (2013)	40.70	49.21
40	Kenya (2013)	40.60	49.08
41	Ghana (2013)	40.10	48.42
42	Korea, Rep. (2005)	39.50	47.63
43	Serbia (2013)	37.80	45.38
44	South Africa (2007)	36.80	44.06
45	India (2014)	35.90	42.88
46	Honduras (2010)	35.80	42.74
47	Barbados (2010)	35.50	42.35
48	Germany (2005)	35.40	42.22
49	Estonia (2013)	35.20	41.95
50	Uganda (2013)	34.70	41.29
51	Poland (2013)	34.60	41.16
52	Moldova, Rep. (2013)	32.40	38.26
53	Mali (2010)	32.10	37.86
54	Pakistan (2013)	32.00	37.73
55	Portugal (2005)	31.90	37.60
56	Zimbabwe (2011)	31.20	36.68
57	Philippines (2009)	31.10	36.54
58	Tanzania (2013)	30.70	36.02
59	Ethiopia (2011)	30.00	35.09
60	Tunisia (2013)	28.90	33.64
61	Turkey (2013)	28.40	32.98
62	Kazakhstan (2013)	28.30	32.85
63	Zambia (2013)	28.20	32.72
64	Lebanon (2013)	26.60	30.61
65	Morocco (2013)	26.30	30.21
66	Bhutan	26.00	29.82
67	Jamaica (2010)	25.90	29.68
68	Mauritius (2009)	25.60	29.29
69	Cameroon (2009)	25.50	29.16
70	Namibia (2014)	25.40	29.02
71	Latvia (2013)	25.20	28.76
72	Burkina Faso (2009)	24.80	28.23
73	Albania (2013)	23.80	26.91
74	Montenegro (2013)	23.70	26.78
75	Ukraine (2013)	22.60	25.33
76	Mozambique (2007)	22.10	24.67
77	Bangladesh (2013)	21.90	24.41
78	Azerbaijan (2013)	20.20	22.16
79	Greece (2005)	20.00	21.90
80	Israel (2013)	18.60	20.05
81	Sri Lanka (2011)	18.40	19.79
82	Senegal (2014)	17.40	18.47
83	Algeria (2007)	17.30	18.34
84	Armenia (2013)	16.20	16.89
85	Hungary (2013)	15.80	16.36
86	Madagascar (2013)	12.70	12.27
87	Panama (2010)	11.00	10.03
88	Georgia (2013)	10.50	9.37
89	Egypt (2013)	5.20	2.37
90	Indonesia (2009)	4.70	1.72
91	Jordan (2013)	3.40	0.00
n/a	United Arab Emirates	n/a	n/a
n/a	Australia	n/a	n/a
n/a	Austria	n/a	n/a
n/a	Belgium	n/a	n/a
n/a	Bahrain	n/a	n/a
n/a	Canada	n/a	n/a
n/a	Switzerland	n/a	n/a
n/a	Cyprus	n/a	n/a
n/a	Denmark	n/a	n/a
n/a	Finland	n/a	n/a
n/a	France	n/a	n/a
n/a	United Kingdom	n/a	n/a
n/a	Iran	n/a	n/a
n/a	Iceland	n/a	n/a
n/a	Italy	n/a	n/a
n/a	Japan	n/a	n/a
n/a	Kuwait	n/a	n/a
n/a	Luxembourg	n/a	n/a
n/a	Malta	n/a	n/a
n/a	Netherlands	n/a	n/a
n/a	Norway	n/a	n/a
n/a	New Zealand	n/a	n/a
n/a	Oman	n/a	n/a
n/a	Qatar	n/a	n/a
n/a	Saudi Arabia	n/a	n/a
n/a	Singapore	n/a	n/a
n/a	United States of America	n/a	n/a

SOURCE: World Bank, Enterprise Surveys (www.enterprisesurveys.org)
Unless otherwise specified, the data used for computation were collected in 2015.

3.2.3 Employee development

Average answer to the question: In your country, to what extent do companies invest in training and employee development? [1 = not at all; 7 = to a great extent] | 2015

Rank	Country	Value	Score
1	Switzerland	5.74	78.97
2	Luxembourg	5.46	74.40
3	Malaysia	5.45	74.21
4	Singapore	5.42	73.74
5	Qatar	5.41	73.49
6	Japan	5.39	73.24
7	Norway	5.32	72.08
8	Sweden	5.27	71.09
9	Netherlands	5.22	70.36
10	Finland	5.21	70.24
11	Belgium	5.16	69.27
12	United Arab Emirates (2014)	5.10	68.26
13	Germany	5.09	68.21
14	United States of America	5.07	67.89
15	Austria	5.06	67.68
16	Denmark	5.05	67.57
17	Iceland	4.91	65.14
18	New Zealand	4.88	64.72
19	South Africa	4.86	64.29
20	Ireland	4.82	63.60
21	United Kingdom	4.79	63.14
22	Bahrain	4.79	63.11
23	Australia	4.73	62.20
24	Canada	4.73	62.15
25	Philippines	4.67	61.11
26	France	4.59	59.85
27	Honduras	4.51	58.53
28	Mauritius	4.51	58.45
29	Costa Rica	4.46	57.73
30	Estonia	4.46	57.70
31	Indonesia	4.45	57.46
32	Guatemala	4.43	57.22
33	Barbados	4.39	56.44
34	Lithuania	4.36	55.92
35	Korea, Rep.	4.34	55.61
36	Albania	4.33	55.56
37	Jordan	4.32	55.28
38	Czech Republic	4.31	55.25
39	Namibia	4.31	55.24
40	Thailand	4.30	55.04
41	Latvia	4.29	54.77
42	Israel	4.25	54.10
43	Malta	4.24	54.04
44	Panama	4.24	53.94
45	Kenya	4.23	53.82
46	India	4.18	53.08
47	China	4.17	52.77
48	Botswana	4.14	52.34
49	Chile	4.11	51.87
50	Saudi Arabia	4.11	51.78
51	Portugal	4.10	51.62
52	Cyprus	4.07	51.14
53	Rwanda	4.05	50.91
54	Slovenia	4.04	50.61
55	Brazil	4.02	50.31
56	Sri Lanka	4.00	49.94
57	Ghana	3.99	49.82
58	Poland	3.99	49.77
59	Jamaica	3.99	49.76
60	Oman	3.98	49.70
61	Cameroon	3.96	49.38
62	Zambia	3.95	49.17
63	Viet Nam	3.94	49.05
64	Ukraine	3.92	48.67
65	Lesotho	3.91	48.56
66	Kazakhstan	3.91	48.56
67	Senegal	3.90	48.36
68	Mexico	3.89	48.21
69	Mongolia	3.87	47.91
70	Slovakia	3.86	47.71
71	Russian Federation (2014)	3.84	47.29
72	Kuwait	3.83	47.14
73	Uruguay	3.80	46.70
74	Bhutan	3.78	46.38
75	Zimbabwe	3.78	46.37
76	Argentina	3.78	46.34
77	Romania	3.75	45.87
78	Azerbaijan (2014)	3.73	45.56
79	Greece	3.72	45.39
80	Peru	3.72	45.27
81	Colombia	3.69	44.88
82	Ecuador	3.68	44.68
83	Cambodia	3.67	44.53
84	Macedonia, FYR	3.65	44.19
85	El Salvador	3.65	44.17
86	Montenegro	3.63	43.90
87	Kyrgyzstan	3.61	43.46
88	Turkey	3.60	43.36
89	Dominican Republic	3.60	43.34
90	Spain	3.59	43.21
91	Madagascar	3.59	43.15
92	Tunisia	3.58	43.07
93	Uganda	3.58	43.03
94	Lebanon	3.58	43.00
95	Nicaragua	3.51	41.83
96	Venezuela, Bolivarian Rep.	3.44	40.74
97	Ethiopia	3.44	40.67
98	Hungary	3.41	40.12
99	Paraguay	3.39	39.85
100	Tanzania	3.39	39.75
101	Armenia	3.37	39.46
102	Bulgaria	3.36	39.35
103	Georgia	3.35	39.22
104	Morocco	3.35	39.20
105	Moldova, Rep.	3.34	39.04
106	Pakistan	3.33	38.87
107	Croatia	3.29	38.24
108	Bolivia, Plurinational St.	3.29	38.23
109	Mozambique	3.29	38.12
110	Algeria	3.27	37.76
111	Iran	3.21	36.85
112	Bangladesh	3.21	36.77
113	Mali	3.20	36.61
114	Italy	3.19	36.48
115	Serbia	3.01	33.46
116	Bosnia and Herzegovina	2.91	31.89
117	Burkina Faso	2.82	30.26
118	Egypt	2.74	28.99

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

3.3.1 Use of virtual social networks

Average answer to the question: In your country, how widely are virtual social networks used (e.g., Facebook, Twitter, LinkedIn)? [1 = not at all used; 7 = used extensively] | 2015

Rank	Country	Value	Score
1	Iceland	6.68	94.69
2	Norway	6.57	92.91
3	United States of America	6.57	92.91
4	Netherlands	6.57	92.81
5	United Kingdom	6.53	92.15
6	United Arab Emirates (2014)	6.49	91.57
7	Sweden	6.47	91.10
8	Singapore	6.39	89.79
9	Lithuania	6.37	89.47
10	Finland	6.36	89.41
11	Israel	6.35	89.17
12	Qatar	6.34	88.92
13	Barbados	6.30	88.40
14	Thailand	6.30	88.33
15	Estonia	6.28	88.07
16	Bahrain	6.27	87.83
17	Ireland	6.23	87.21
18	Canada	6.23	87.19
19	Luxembourg	6.23	87.09
20	New Zealand	6.18	86.34
21	Denmark	6.17	86.22
22	Malaysia	6.17	86.17
23	Macedonia, FYR	6.17	86.13
24	Belgium	6.13	85.51
25	Azerbaijan (2014)	6.13	85.43
26	Philippines	6.11	85.11
27	Latvia	6.09	84.84
28	Malta	6.08	84.70
29	Switzerland	6.05	84.20
30	Saudi Arabia	6.04	84.02
31	Australia	6.03	83.92
32	Georgia	5.97	82.84
33	Italy	5.97	82.78
34	Indonesia	5.95	82.50
35	Chile	5.92	82.03
36	Cyprus	5.92	81.99
37	Panama	5.90	81.75
38	Korea, Rep.	5.90	81.69
39	Czech Republic	5.90	81.60
40	Kuwait	5.89	81.44
41	Japan	5.88	81.25
42	Portugal	5.87	81.18
43	France	5.87	81.16
44	Brazil	5.85	80.86
45	Austria	5.82	80.29
46	Slovenia	5.81	80.17
47	Turkey	5.80	79.94
48	Albania	5.79	79.88
49	Montenegro	5.77	79.57
50	Egypt	5.77	79.52
51	Argentina	5.77	79.48
52	Germany	5.77	79.47
53	Costa Rica	5.76	79.37
54	Mongolia	5.74	78.93
55	Jordan	5.72	78.74
56	Slovakia	5.71	78.47
57	Armenia	5.71	78.47
58	Kenya	5.70	78.40
59	Venezuela, Bolivarian Rep.	5.69	78.13
60	Bulgaria	5.69	78.10
61	Lebanon	5.68	78.05
62	Uruguay	5.66	77.72
63	Honduras	5.63	77.19
64	Russian Federation (2014)	5.63	77.18
65	Romania	5.62	76.95
66	Serbia	5.62	76.92
67	Spain	5.59	76.50
68	Mauritius	5.58	76.34
69	Guatemala	5.56	76.08
70	Tunisia	5.56	76.04
71	South Africa	5.54	75.68
72	Sri Lanka	5.53	75.52
73	Jamaica	5.53	75.47
74	Morocco	5.50	75.06
75	Ukraine	5.49	74.86
76	El Salvador	5.49	74.75
77	Moldova, Rep.	5.48	74.59
78	Namibia	5.46	74.25
79	Dominican Republic	5.43	73.84
80	Croatia	5.42	73.65
81	Viet Nam	5.40	73.36
82	Cambodia	5.39	73.22
83	Oman	5.39	73.16
84	Colombia	5.39	73.15
85	Hungary	5.37	72.87
86	Mexico	5.36	72.61
87	Greece	5.31	71.89
88	Kazakhstan	5.30	71.63
89	Botswana	5.22	70.28
90	Poland	5.20	70.06
91	Senegal	5.19	69.88
92	Bosnia and Herzegovina	5.17	69.55
93	Rwanda	5.17	69.44
94	Bhutan	5.16	69.38
95	Paraguay	5.05	67.48
96	Peru	5.04	67.25
97	Zambia	5.01	66.86
98	Kyrgyzstan	4.95	65.85
99	Zimbabwe	4.89	64.82
100	Madagascar	4.86	64.30
101	Uganda	4.84	63.95
102	Mozambique	4.80	63.38
103	Ecuador	4.80	63.36
104	Cameroon	4.77	62.86
105	Bangladesh	4.77	62.84
106	Ghana	4.74	62.33
107	China	4.72	61.94
108	Algeria	4.68	61.41
109	Nicaragua	4.53	58.88
110	Mali	4.42	56.99
111	Ethiopia	4.39	56.56
112	India	4.31	55.19
113	Pakistan	4.28	54.75
114	Bolivia, Plurinational St.	4.27	54.52
115	Tanzania	4.25	54.11
116	Burkina Faso	4.21	53.50
117	Iran	4.05	50.79
118	Lesotho	3.67	44.42

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

3.3.2 Use of virtual professional networks

LinkedIn users (per 1,000 labour force) | 2015

Rank	Country	Value	Score
1	United States of America	693.18	100.00
2	Iceland	642.66	92.67
3	Netherlands	610.45	87.99
4	Denmark	594.96	85.74
5	Malta	568.69	81.93
6	Ireland	560.75	80.78
7	Canada	553.15	79.67
8	Luxembourg	532.06	76.61
9	Australia	530.70	76.41
10	United Kingdom	529.16	76.19
11	New Zealand	521.20	75.04
12	Singapore	472.48	67.96
13	Norway	461.27	66.33
14	Belgium	459.02	66.01
15	Sweden	421.78	60.60
16	Barbados	358.76	51.45
17	Portugal	353.67	50.71
18	Chile	329.40	47.19
19	Israel	328.19	47.02
20	Switzerland	325.83	46.67
21	United Arab Emirates	311.24	44.56
22	France	307.29	43.98
23	Italy	301.16	43.09
24	Spain	290.48	41.54
25	Cyprus	259.67	37.07
26	Finland	256.77	36.65
27	Uruguay	239.88	34.20
28	Qatar	230.78	32.88
29	Argentina	216.56	30.81
30	Bahrain	215.28	30.63
31	Costa Rica	215.02	30.59
32	Mauritius	208.28	29.61
33	Slovenia	198.42	28.18
34	Jamaica	194.18	27.56
35	Brazil	189.47	26.88
36	Croatia	188.98	26.81
37	South Africa	187.34	26.57
38	Lebanon	186.09	26.39
39	Latvia	184.67	26.18
40	Estonia	184.08	26.10
41	Panama	180.82	25.62
42	Greece	180.18	25.53
43	Colombia	171.63	24.29
44	Jordan	167.37	23.67
45	Kuwait	161.09	22.76
46	Czech Republic	155.29	21.92
47	Malaysia	149.17	21.03
48	Romania	147.51	20.79
49	Ecuador	144.61	20.37
50	Lithuania	139.38	19.61
51	Austria	137.01	19.26
52	Montenegro	134.99	18.97
53	Turkey	133.88	18.81
54	Venezuela, Bolivarian Rep.	132.67	18.63
55	Mexico	128.64	18.05
56	Bulgaria	127.62	17.90
57	Saudi Arabia	127.40	17.87
58	Botswana	122.14	17.11
59	Oman	120.71	16.90
60	Hungary	119.99	16.79
61	Namibia	117.25	16.40
62	Tunisia	110.90	15.47
63	Slovakia	109.86	15.32
64	Albania	107.81	15.02
65	Serbia	99.39	13.80
66	Germany	95.47	13.23
67	Dominican Republic	91.98	12.73
68	El Salvador	89.06	12.30
69	Poland	83.13	11.44
70	Bosnia and Herzegovina	75.22	10.29
71	Morocco	73.55	10.05
72	Bhutan	68.95	9.38
73	Nicaragua	68.73	9.35
74	Guatemala	68.63	9.34
75	Georgia	64.20	8.69
76	Bolivia, Plurinational St	62.48	8.44
77	Russian Federation	61.90	8.36
78	Philippines	59.95	8.08
79	Sri Lanka	59.83	8.06
80	Paraguay	59.09	7.95
81	Honduras	59.04	7.94
82	Armenia	58.29	7.84
83	Ukraine	57.65	7.74
84	India	57.22	7.68
85	Kenya	56.10	7.52
86	Algeria	52.63	7.01
87	Mongolia	51.85	6.90
88	Ghana	50.07	6.64
89	Egypt	49.35	6.54
90	Kazakhstan	45.81	6.02
91	Senegal	37.68	4.84
92	Pakistan	35.04	4.46
93	Zimbabwe	35.02	4.46
94	Indonesia	32.02	4.02
95	Azerbaijan	28.56	3.52
96	Cameroon	28.55	3.52
97	Lesotho	28.46	3.51
98	Zambia	27.81	3.41
99	Thailand	24.80	2.97
100	Uganda	21.64	2.52
101	Japan	20.91	2.41
102	Cambodia	17.96	1.98
103	Kyrgyzstan	17.23	1.87
104	Viet Nam	16.03	1.70
105	Rwanda	15.48	1.62
106	Peru	14.78	1.52
107	Mali	13.05	1.27
108	Mozambique	11.95	1.11
109	Burkina Faso	11.15	0.99
110	Bangladesh	10.40	0.88
111	China	9.05	0.69
112	Madagascar	6.56	0.33
113	Ethiopia	4.31	0.00
n/a	Iran	n/a	n/a
n/a	Korea, Rep.	n/a	n/a
n/a	Moldova, Rep.	n/a	n/a
n/a	Macedonia, FYR	n/a	n/a
n/a	Tanzania	n/a	n/a

SOURCE: LinkedIn, LinkedIn Campaign Manager and International Labour Organization, *Key Indicators of the Labour Market,* 8th edition (http://key-indicators-of-the-labour-market-8th.software.informer.com/download)

Unless otherwise specified, the data used for computation were collected in 2015.

3.3.3 Delegation of authority

Average answer to the question: In your country, how do you assess the willingness to delegate authority to subordinates? [1 = not willing at all—senior management takes all important decisions; 7 = very willing—authority is mostly delegated to business unit heads and other lower-level managers] | 2015

Rank	Country	Value	Score
1	Denmark	6.10	84.94
2	Norway	5.96	82.71
3	Netherlands	5.66	77.70
4	Sweden	5.63	77.15
5	Finland	5.62	76.99
6	New Zealand	5.52	75.32
7	Qatar	5.35	72.45
8	Switzerland	5.33	72.23
9	United States of America	5.21	70.19
10	Malaysia	5.19	69.81
11	Canada	5.06	67.75
12	Belgium	5.06	67.68
13	United Arab Emirates (2014)	5.00	66.72
14	Luxembourg	5.00	66.60
15	Iceland	5.00	66.60
16	United Kingdom	4.96	66.04
17	Australia	4.92	65.37
18	Ireland	4.89	64.90
19	Germany	4.89	64.80
20	Japan	4.73	62.09
21	Singapore	4.70	61.71
22	Austria	4.66	61.06
23	Philippines	4.65	60.89
24	Estonia	4.55	59.13
25	South Africa	4.46	57.74
26	Indonesia	4.45	57.51
27	Costa Rica	4.40	56.65
28	Saudi Arabia	4.39	56.54
29	Jordan	4.35	55.90
30	Israel	4.20	53.40
31	Egypt	4.17	52.77
32	Thailand	4.16	52.68
33	Oman	4.15	52.57
34	Kenya	4.14	52.37
35	Kuwait	4.14	52.26
36	Brazil	4.13	52.12
37	El Salvador	4.12	51.93
38	Czech Republic	4.06	51.02
39	Mauritius	4.05	50.84
40	Guatemala	4.03	50.55
41	Latvia	4.01	50.15
42	Cyprus	3.99	49.78
43	Bahrain	3.97	49.57
44	Zambia	3.95	49.24
45	China	3.93	48.89
46	France	3.91	48.44
47	Slovenia	3.90	48.36
48	Colombia	3.90	48.32
49	Kazakhstan	3.89	48.18
50	Malta	3.88	48.02
51	India	3.88	47.94
52	Ghana	3.87	47.77
53	Barbados	3.85	47.42
54	Sri Lanka	3.83	47.22
55	Poland	3.83	47.18
56	Ecuador	3.82	47.04
57	Korea, Rep.	3.80	46.60
58	Rwanda	3.78	46.35
59	Peru	3.77	46.18
60	Lithuania	3.76	46.07
61	Mexico	3.76	46.04
62	Albania	3.75	45.86
63	Honduras	3.72	45.33
64	Chile	3.71	45.23
65	Panama	3.69	44.89
66	Montenegro	3.68	44.70
67	Dominican Republic	3.67	44.49
68	Jamaica	3.65	44.14
69	Namibia	3.65	44.12
70	Azerbaijan (2014)	3.65	44.12
71	Portugal	3.63	43.77
72	Russian Federation (2014)	3.62	43.67
73	Romania	3.61	43.56
74	Madagascar	3.61	43.42
75	Morocco	3.60	43.37
76	Bhutan	3.60	43.32
77	Bosnia and Herzegovina	3.58	43.08
78	Turkey	3.58	43.04
79	Senegal	3.58	42.94
80	Zimbabwe	3.57	42.77
81	Greece	3.55	42.56
82	Bolivia, Plurinational St.	3.54	42.40
83	Slovakia	3.54	42.31
84	Argentina	3.51	41.89
85	Spain	3.50	41.69
86	Croatia	3.44	40.67
87	Botswana	3.42	40.40
88	Moldova, Rep.	3.41	40.22
89	Nicaragua	3.40	40.05
90	Uruguay	3.40	40.01
91	Tunisia	3.39	39.87
92	Cambodia	3.39	39.75
93	Tanzania	3.38	39.62
94	Armenia	3.37	39.55
95	Kyrgyzstan	3.37	39.53
96	Cameroon	3.37	39.52
97	Ethiopia	3.36	39.36
98	Viet Nam	3.33	38.85
99	Macedonia, FYR	3.32	38.70
100	Mali	3.27	37.89
101	Pakistan	3.27	37.85
102	Mongolia	3.26	37.75
103	Venezuela, Bolivarian Rep.	3.25	37.57
104	Georgia	3.22	37.02
105	Mozambique	3.21	36.76
106	Bulgaria	3.19	36.44
107	Lebanon	3.18	36.39
108	Ukraine	3.15	35.84
109	Uganda	3.14	35.72
110	Algeria	3.13	35.48
111	Italy	3.07	34.44
112	Lesotho	3.04	34.02
113	Paraguay	2.96	32.70
114	Hungary	2.96	32.70
115	Iran	2.95	32.44
116	Serbia	2.88	31.27
117	Bangladesh	2.64	27.39
118	Burkina Faso	2.12	18.70

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

3.3.4 Personal rights

Personal rights indicator | 2015

Rank	Country	Value	Score
1	New Zealand	98.84	100.00
2	Australia	97.68	98.77
2	Estonia	97.68	98.77
2	United Kingdom	97.68	98.77
2	Luxembourg	97.68	98.77
6	Japan	95.36	96.31
7	Cyprus	93.04	93.84
7	Portugal	93.04	93.84
7	Uruguay	93.04	93.84
10	Chile	89.60	90.19
11	Denmark	89.07	89.63
12	Austria	87.91	88.40
12	Canada	87.91	88.40
12	Switzerland	87.91	88.40
12	Finland	87.91	88.40
12	Iceland	87.91	88.40
12	Netherlands	87.91	88.40
12	Norway	87.91	88.40
12	Sweden	87.91	88.40
20	Ireland	86.75	87.17
21	Belgium	85.59	85.93
22	Malta	84.43	84.70
23	Costa Rica	83.28	83.48
24	Spain	83.27	83.47
25	Jamaica	82.65	82.81
26	United States of America	82.16	82.29
27	Poland	80.95	81.01
27	Slovenia	80.95	81.01
29	France	80.47	80.50
30	Germany	79.83	79.82
31	Italy	79.79	79.78
32	Ghana	78.63	78.55
32	Slovakia	78.63	78.55
34	Czech Republic	76.35	76.13
35	Brazil	75.20	74.90
35	South Africa	75.20	74.90
37	Mongolia	73.99	73.62
38	Lithuania	72.87	72.43
39	Mauritius	72.34	71.87
40	Mexico	71.76	71.25
41	El Salvador	71.72	71.21
42	Botswana	71.28	70.74
43	Namibia	70.56	69.98
43	Panama	70.56	69.98
45	Hungary	68.28	67.56
46	Croatia	68.23	67.51
47	Korea, Rep.	67.79	67.04
48	Latvia	67.12	66.33
48	Paraguay	67.12	66.33
50	Argentina	67.08	66.28
51	Macedonia, FYR	64.85	63.92
52	Greece	64.80	63.86
52	Guatemala	64.80	63.86
52	Peru	64.80	63.86
52	Romania	64.80	63.86
56	Bulgaria	62.48	61.40
57	Albania	62.00	60.89
57	Philippines	62.00	60.89
59	Lesotho	61.95	60.84
60	Montenegro	61.36	60.21
61	Mali	60.78	59.60
62	Senegal	59.67	58.42
63	Colombia	58.56	57.24
64	Tunisia	57.99	56.63
65	Bhutan	57.45	56.06
66	Burkina Faso	57.35	55.96
67	Ukraine	56.72	55.29
68	Serbia	55.71	54.21
69	Ecuador	55.56	54.06
70	India	55.07	53.54
71	Turkey	54.44	52.87
72	Bolivia, Plurinational St.	54.40	52.82
73	Zambia	53.92	52.31
74	Honduras	50.48	48.66
75	Singapore	49.50	47.62
76	Indonesia	49.28	47.39
77	Tanzania	49.27	47.38
78	Bangladesh	48.17	46.21
79	Georgia	48.16	46.20
79	Moldova, Rep.	48.16	46.20
81	Israel	47.78	45.80
82	Madagascar	45.88	43.78
83	Nicaragua	45.85	43.75
84	Mozambique	45.36	43.23
85	Dominican Republic	44.15	41.94
86	Bosnia and Herzegovina	43.04	40.76
87	Cambodia	42.45	40.14
88	Morocco	41.29	38.91
89	Thailand	41.28	38.90
90	Armenia	39.61	37.12
90	Kyrgyzstan	39.61	37.12
90	Lebanon	39.61	37.12
93	Uganda	39.50	37.01
94	Oman	36.68	34.01
95	Venezuela, Bolivarian Rep.	36.60	33.93
96	Kuwait	35.63	32.90
97	Pakistan	35.59	32.86
98	Rwanda	33.84	31.00
99	Malaysia	33.31	30.44
100	Kenya	32.16	29.21
101	Qatar	29.91	26.83
102	Bahrain	29.28	26.16
103	Kazakhstan	29.25	26.13
104	Azerbaijan	28.09	24.89
104	Egypt	28.09	24.89
106	Jordan	27.59	24.36
107	Ethiopia	25.76	22.42
108	Sri Lanka	25.23	21.86
109	Cameroon	24.13	20.69
110	United Arab Emirates	21.31	17.70
111	Algeria	20.64	16.99
112	Russian Federation	18.32	14.52
113	Saudi Arabia	9.28	4.93
114	Zimbabwe	9.19	4.83
115	Viet Nam	8.60	4.20
116	Iran	5.75	1.18
117	China	4.64	0.00
n/a	Barbados	n/a	n/a

SOURCE: Social Progress Imperative, The Social Progress Index 2015 (http://www.socialprogressimperative.org/data/spi)
Unless otherwise specified, the data used for computation were collected in 2015.

Pillar 4

Retain

4.1.1 Pension system

Workforce contributing to pension system (%) | 2012

Rank	Country	Value	Score
1	Luxembourg	100.00	100.00
2	Lithuania	99.00	98.99
3	Switzerland	95.00	94.95
3	Czech Republic	95.00	94.95
3	Japan	95.00	94.95
6	Austria	94.00	93.94
6	Estonia	94.00	93.94
8	Denmark	93.00	92.93
8	United Kingdom	93.00	92.93
8	Latvia	93.00	92.93
8	Norway	93.00	92.93
12	Hungary	92.00	91.92
12	Portugal	92.00	91.92
12	United States of America	92.00	91.92
15	Australia	91.00	90.91
15	Belgium	91.00	90.91
15	Netherlands	91.00	90.91
18	Finland	90.00	89.90
18	Italy	90.00	89.90
20	Israel	89.10	88.99
21	Ireland	89.00	88.89
21	Sweden	89.00	88.89
23	Germany	87.00	86.87
23	France	87.00	86.87
23	Iceland	87.00	86.87
23	Slovenia	87.00	86.87
27	Greece	86.00	85.86
28	Barbados	84.00	83.84
29	Croatia	83.00	82.83
30	Poland	81.00	80.81
31	Bulgaria	79.00	78.79
31	Slovakia	79.00	78.79
33	Uruguay	78.00	77.78
34	Bosnia and Herzegovina	71.00	70.71
35	Spain	69.00	68.69
36	Romania	68.00	67.68
37	Canada	67.00	66.67
37	Russian Federation	67.00	66.67
39	Ukraine	65.00	64.65
40	Kazakhstan	63.00	62.63
41	Singapore	62.00	61.62
42	Chile	60.00	59.60
43	Moldova, Rep.	59.00	58.59
43	Turkey	59.00	58.59
45	Costa Rica	56.00	55.56
46	Brazil	55.00	54.55
46	Egypt	55.00	54.55
48	Macedonia, FYR	53.00	52.53
48	Mauritius	53.00	52.53
50	Korea, Rep.	49.00	48.48
50	Malaysia	49.00	48.48
50	Tunisia	49.00	48.48
53	Serbia	45.00	44.44
54	Argentina	42.00	41.41
55	Kyrgyzstan	40.00	39.39
56	Albania	38.00	37.37
56	Jordan	38.00	37.37
58	Algeria	37.00	36.36
59	Azerbaijan	35.00	34.34
59	Lebanon	35.00	34.34
61	Iran	34.00	33.33
61	Venezuela, Bolivarian Rep.	34.00	33.33
63	Mongolia	33.00	32.32
64	Armenia	32.00	31.31
65	Colombia	31.00	30.30
66	Georgia	29.00	28.28
67	China	27.00	26.26
67	Mexico	27.00	26.26
69	Dominican Republic	26.00	25.25
69	Ecuador	26.00	25.25
71	Philippines	25.00	24.24
72	Sri Lanka	24.00	23.23
72	Morocco	24.00	23.23
74	El Salvador	23.00	22.22
74	Thailand	23.00	22.22
76	Nicaragua	22.00	21.21
76	Peru	22.00	21.21
78	Bahrain	20.00	19.19
78	Guatemala	20.00	19.19
78	Zimbabwe	20.00	19.19
81	Viet Nam	19.00	18.18
82	Honduras	17.00	16.16
82	Jamaica	17.00	16.16
84	Cameroon	16.00	15.15
85	Bhutan	14.00	13.13
86	Bolivia, Plurinational St.	12.00	11.11
86	Paraguay	12.00	11.11
88	Zambia	11.00	10.10
89	India	10.00	9.09
89	Namibia	10.00	9.09
89	Uganda	10.00	9.09
92	Botswana	9.00	8.08
93	Ghana	8.00	7.07
93	Kenya	8.00	7.07
95	Indonesia	7.00	6.06
95	Mali	7.00	6.06
97	South Africa	6.00	5.05
98	Madagascar	5.30	4.34
99	Rwanda	5.00	4.04
99	Senegal	5.00	4.04
101	Qatar	4.40	3.43
102	Lesotho	4.00	3.03
102	Pakistan	4.00	3.03
102	Tanzania	4.00	3.03
105	Bangladesh	3.00	2.02
106	Mozambique	2.00	1.01
107	Burkina Faso	1.00	0.00
n/a	United Arab Emirates	n/a	n/a
n/a	Cyprus	n/a	n/a
n/a	Ethiopia	n/a	n/a
n/a	Cambodia	n/a	n/a
n/a	Kuwait	n/a	n/a
n/a	Malta	n/a	n/a
n/a	Montenegro	n/a	n/a
n/a	New Zealand	n/a	n/a
n/a	Oman	n/a	n/a
n/a	Panama	n/a	n/a
n/a	Saudi Arabia	n/a	n/a

SOURCE: Pallares-Miralles, M., Romero, C., & Whitehouse, E. 2012. International patterns of pension provision II: A worldwide overview of facts and figures. Social protection and labor discussion paper no. SP 1211. Washington, DC: World Bank (https://openknowledge.worldbank.org/handle/10986/13560)
Unless otherwise specified, the data used for computation were collected in 2012.

4.1.2 Taxation

Average answer to the question: In your country, to what extent do taxes and social contributions reduce the incentive to work? [1 = to a great extent; 7 = not at all] | 2015

Rank	Country	Value	Score
1	United Arab Emirates (2014)	6.22	87.01
2	Qatar	6.13	85.47
3	Singapore	6.05	84.09
4	Bahrain	5.89	81.50
5	Oman	5.63	77.08
6	Switzerland	5.18	69.72
7	Malaysia	5.16	69.41
8	Mauritius	5.16	69.38
9	Luxembourg	5.10	68.29
10	Saudi Arabia	4.93	65.46
11	New Zealand	4.91	65.19
12	Rwanda	4.87	64.58
13	Georgia	4.84	64.01
14	Kuwait	4.84	63.92
15	Cyprus	4.68	61.30
16	Malta	4.60	59.98
17	Chile	4.56	59.31
18	Botswana	4.50	58.36
19	Paraguay	4.45	57.47
20	Canada	4.41	56.86
21	Namibia	4.34	55.61
22	Macedonia, FYR	4.33	55.58
23	Kazakhstan	4.33	55.55
24	South Africa	4.32	55.35
25	Ghana	4.28	54.74
26	Lebanon	4.28	54.64
27	Panama	4.27	54.50
28	United Kingdom	4.23	53.86
29	United States of America	4.21	53.57
30	India	4.21	53.55
31	Norway	4.18	53.02
32	Japan	4.14	52.39
33	Bhutan	4.10	51.74
34	Guatemala	4.10	51.63
35	Cameroon	4.07	51.16
36	Indonesia	4.05	50.78
37	Sri Lanka	4.03	50.56
38	Philippines	4.03	50.45
39	Estonia	4.02	50.28
40	Morocco	3.98	49.73
41	Senegal	3.97	49.53
42	Zambia	3.97	49.50
43	Cambodia	3.95	49.20
44	Bangladesh	3.93	48.89
45	Jamaica	3.92	48.74
46	China	3.91	48.50
47	Mozambique	3.87	47.85
48	Thailand	3.86	47.75
49	Lesotho	3.85	47.57
50	Ecuador	3.84	47.41
51	Iceland	3.84	47.34
52	Costa Rica	3.83	47.12
53	Montenegro	3.82	47.02
54	Barbados	3.78	46.41
55	Mali	3.78	46.32
56	Israel	3.78	46.31
57	Zimbabwe	3.76	45.93
58	Kenya	3.75	45.76
59	Jordan	3.74	45.73
60	Ireland	3.74	45.62
61	Iran	3.74	45.61
62	Dominican Republic	3.74	45.60
63	Burkina Faso	3.73	45.53
64	Kyrgyzstan	3.71	45.22
65	Ethiopia	3.70	45.07
66	Viet Nam	3.70	44.92
67	Pakistan	3.69	44.90
68	Turkey	3.69	44.83
69	Netherlands	3.66	44.40
70	Uganda	3.62	43.73
71	Bulgaria	3.62	43.69
72	El Salvador	3.62	43.66
73	Albania	3.62	43.58
74	Honduras	3.61	43.46
75	Tunisia	3.61	43.46
76	Sweden	3.56	42.62
77	Germany	3.56	42.60
78	Algeria	3.54	42.39
79	Mongolia	3.51	41.91
80	Bolivia, Plurinational St.	3.51	41.75
81	Korea, Rep.	3.50	41.70
82	Madagascar	3.50	41.62
83	Armenia	3.48	41.40
84	Azerbaijan (2014)	3.44	40.63
85	Egypt	3.43	40.54
86	Latvia	3.35	39.10
87	Czech Republic	3.34	38.97
88	Finland	3.30	38.26
89	Australia	3.29	38.14
90	Moldova, Rep.	3.23	37.11
91	Peru	3.21	36.86
92	Colombia	3.19	36.44
93	Mexico	3.18	36.30
94	Poland	3.12	35.33
95	Nicaragua	3.12	35.31
96	Hungary	3.09	34.82
97	Romania	3.07	34.51
98	Tanzania	3.06	34.30
99	Russian Federation (2014)	3.05	34.14
100	Ukraine	3.03	33.78
101	France	3.02	33.62
102	Lithuania	3.00	33.40
103	Spain	2.96	32.71
104	Venezuela, Bolivarian Rep.	2.96	32.61
105	Uruguay	2.94	32.37
106	Portugal	2.88	31.35
107	Greece	2.79	29.83
108	Serbia	2.75	29.25
109	Denmark	2.73	28.89
110	Slovakia	2.70	28.40
111	Bosnia and Herzegovina	2.61	26.90
112	Austria	2.57	26.17
113	Belgium	2.54	25.60
114	Croatia	2.42	23.64
115	Italy	2.35	22.55
116	Brazil	2.29	21.44
117	Slovenia	2.28	21.33
118	Argentina	2.16	19.41

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

4.1.3 Brain retention

Average answer to the question: To what extent does your country retain talented people? [1 = not at all—the best and brightest leave to pursue opportunities abroad; 7 = to a great extent—the best and brightest stay and pursue opportunities in the country] | 2015

Rank	Country	Value	Score
1	Switzerland	5.85	80.76
2	United States of America	5.72	78.71
3	Qatar	5.69	78.18
4	Norway	5.54	75.63
5	United Arab Emirates (2014)	5.47	74.57
6	Singapore	5.38	72.96
7	Finland	5.33	72.25
8	Malaysia	5.31	71.89
9	United Kingdom	5.25	70.89
10	Netherlands	5.06	67.71
11	Luxembourg	5.04	67.28
12	Germany	4.94	65.64
13	Canada	4.91	65.13
14	Sweden	4.87	64.50
15	Chile	4.78	63.04
16	Bahrain	4.77	62.77
17	Panama	4.66	60.93
18	Ireland	4.60	59.96
19	Belgium	4.60	59.92
20	Saudi Arabia	4.59	59.76
21	Iceland	4.56	59.32
22	Rwanda	4.52	58.65
23	Australia	4.48	58.03
24	Korea, Rep.	4.46	57.59
25	Costa Rica	4.42	56.93
26	Austria	4.38	56.30
27	Denmark	4.33	55.55
28	Japan	4.25	54.10
29	Barbados	4.24	54.01
30	China	4.17	52.84
31	New Zealand	4.12	52.06
32	Malta	4.12	52.04
33	Indonesia	4.10	51.72
34	Thailand	4.04	50.71
35	Guatemala	4.04	50.59
36	Israel	4.01	50.13
37	Bhutan	4.01	50.09
38	Oman	3.99	49.75
39	India	3.89	48.23
40	Peru	3.84	47.32
41	Jordan	3.77	46.14
42	Philippines	3.76	45.96
43	Honduras	3.70	45.07
44	Cyprus	3.70	44.99
45	Namibia	3.67	44.48
46	Zambia	3.67	44.46
47	Brazil	3.66	44.30
48	Ghana	3.63	43.89
49	Lesotho	3.62	43.65
50	Kazakhstan	3.62	43.62
51	Czech Republic	3.62	43.61
52	South Africa	3.56	42.74
53	Ethiopia	3.55	42.47
54	France	3.53	42.22
55	Azerbaijan (2014)	3.52	42.02
56	Cambodia	3.50	41.70
57	Kenya	3.50	41.69
58	Botswana	3.50	41.69
59	Argentina	3.49	41.52
60	Mexico	3.49	41.45
61	Pakistan	3.48	41.32
62	Mozambique	3.48	41.26
63	Ecuador	3.45	40.87
64	Mauritius	3.44	40.73
65	Sri Lanka	3.42	40.38
66	Morocco	3.42	40.34
67	Portugal	3.39	39.85
68	Dominican Republic	3.39	39.84
69	Uruguay	3.39	39.79
70	Kuwait	3.39	39.76
71	Mali	3.37	39.49
72	Bolivia, Plurinational St.	3.28	38.05
73	Colombia	3.28	38.03
74	Turkey	3.26	37.70
75	Senegal	3.24	37.29
76	Viet Nam	3.23	37.18
77	Paraguay	3.22	36.96
78	Tanzania	3.16	35.92
79	Montenegro	3.15	35.85
80	Estonia	3.15	35.80
81	Spain	3.13	35.54
82	Madagascar	3.01	33.54
83	El Salvador	3.01	33.51
84	Burkina Faso	3.01	33.49
85	Slovenia	2.98	32.96
86	Russian Federation (2014)	2.95	32.42
87	Nicaragua	2.94	32.42
88	Egypt	2.94	32.32
89	Georgia	2.92	31.98
90	Latvia	2.90	31.69
91	Jamaica	2.88	31.42
92	Uganda	2.88	31.37
93	Lithuania	2.82	30.32
94	Albania	2.81	30.16
95	Cameroon	2.77	29.57
96	Greece	2.77	29.46
97	Mongolia	2.75	29.21
98	Italy	2.72	28.71
99	Ukraine	2.71	28.56
100	Bangladesh	2.71	28.53
101	Poland	2.69	28.20
102	Tunisia	2.66	27.64
103	Armenia	2.63	27.17
104	Iran	2.59	26.56
105	Lebanon	2.56	25.98
106	Hungary	2.51	25.14
107	Algeria	2.46	24.40
108	Kyrgyzstan	2.46	24.27
109	Slovakia	2.45	24.24
110	Zimbabwe	2.38	23.07
111	Macedonia, FYR	2.38	22.95
112	Romania	2.29	21.55
113	Bulgaria	2.08	18.06
114	Croatia	2.06	17.61
115	Bosnia and Herzegovina	1.97	16.19
116	Moldova, Rep.	1.91	15.16
117	Venezuela, Bolivarian Rep.	1.69	11.47
118	Serbia	1.67	11.18

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

4.2.1 Environmental performance

Environmental Performance Index | 2016

Rank	Country	Value	Score
1	Finland	90.68	100.00
2	Iceland	90.51	99.68
3	Sweden	90.43	99.53
4	Denmark	89.21	97.26
5	Slovenia	88.98	96.83
6	Spain	88.91	96.70
7	Portugal	88.63	96.17
8	Estonia	88.59	96.10
9	Malta	88.48	95.89
10	France	88.20	95.37
11	New Zealand	88.00	95.00
12	United Kingdom	87.38	93.84
13	Australia	87.22	93.54
14	Singapore	87.04	93.21
15	Croatia	86.98	93.09
16	Switzerland	86.93	93.00
17	Norway	86.90	92.95
18	Austria	86.64	92.46
19	Ireland	86.60	92.39
20	Luxembourg	86.58	92.35
21	Greece	85.81	90.91
22	Latvia	85.71	90.72
23	Lithuania	85.49	90.31
24	Slovakia	85.42	90.18
25	Canada	85.06	89.51
26	United States of America	84.72	88.88
27	Czech Republic	84.67	88.78
28	Hungary	84.60	88.65
29	Italy	84.48	88.43
30	Germany	84.26	88.02
31	Azerbaijan	83.78	87.12
32	Russian Federation	83.52	86.64
33	Bulgaria	83.40	86.41
34	Romania	83.24	86.11
35	Netherlands	82.03	83.86
36	Armenia	81.60	83.05
37	Poland	81.26	82.42
38	Japan	80.59	81.17
39	Cyprus	80.24	80.52
40	Belgium	80.15	80.35
41	Costa Rica	80.03	80.12
42	Argentina	79.84	79.77
43	Ukraine	79.69	79.49
44	Brazil	78.90	78.01
45	Montenegro	78.89	78.00
46	Serbia	78.67	77.58
47	Israel	78.14	76.60
48	Macedonia, FYR	78.02	76.37
49	Panama	78.00	76.33
50	Chile	77.67	75.72
51	Tunisia	77.28	74.99
52	Jamaica	77.02	74.51
53	Moldova, Rep.	76.69	73.89
54	Venezuela, Bolivarian Rep.	76.23	73.03
55	Colombia	75.93	72.47
56	Dominican Republic	75.32	71.33
57	Albania	74.38	69.58
58	Malaysia	74.23	69.30
59	Morocco	74.18	69.20
60	Uruguay	73.98	68.83
61	Philippines	73.70	68.31
62	Mexico	73.59	68.10
63	Kazakhstan	73.29	67.54
64	Kyrgyzstan	73.13	67.25
65	Peru	72.95	66.91
66	Jordan	72.24	65.58
67	Bolivia, Plurinational St	71.09	63.44
68	Mauritius	70.85	62.99
69	Namibia	70.84	62.97
70	Botswana	70.72	62.75
71	Korea, Rep.	70.61	62.54
72	South Africa	70.52	62.37
73	Paraguay	70.36	62.08
74	Algeria	70.28	61.93
75	Bahrain	70.07	61.53
76	Qatar	69.94	61.29
77	Guatemala	69.64	60.73
77	Honduras	69.64	60.73
79	Thailand	69.54	60.54
80	United Arab Emirates	69.35	60.19
81	Lebanon	69.14	59.80
82	Saudi Arabia	68.63	58.85
83	El Salvador	68.07	57.80
84	Turkey	67.68	57.07
85	Ecuador	66.58	55.02
86	Egypt	66.45	54.78
87	Iran	66.32	54.54
88	Zambia	66.06	54.05
89	Indonesia	65.85	53.66
90	Sri Lanka	65.55	53.10
91	China	65.10	52.26
92	Bhutan	64.99	52.05
93	Georgia	64.96	52.00
94	Kuwait	64.41	50.97
95	Mongolia	64.39	50.93
96	Nicaragua	64.19	50.56
97	Senegal	63.73	49.70
98	Bosnia and Herzegovina	63.28	48.86
99	Kenya	62.49	47.39
100	Oman	60.13	42.98
101	Zimbabwe	59.25	41.34
102	Ghana	58.89	40.67
103	Viet Nam	58.50	39.94
104	Tanzania	58.34	39.64
105	Uganda	57.56	38.19
106	Cameroon	57.13	37.38
107	Barbados	54.96	33.33
108	India	53.58	30.76
109	Pakistan	51.42	26.73
110	Cambodia	51.24	26.39
111	Rwanda	50.34	24.71
112	Lesotho	47.17	18.79
113	Ethiopia	45.83	16.29
114	Burkina Faso	43.71	12.34
115	Mozambique	41.82	8.81
116	Bangladesh	41.77	8.72
117	Mali	41.48	8.17
118	Madagascar	37.10	0.00

SOURCE: The 2016 Environmental Performance Index, Yale Center for Environmental Law and Policy (epi.yale.edu)
Unless otherwise specified, the data used for computation were collected in 2016.

4.2.2 Personal safety

Personal safety indicator | 2015

Rank	Country	Value	Score
1	Iceland	93.57	100.00
2	Sweden	93.48	99.87
3	Switzerland	92.85	98.94
3	Norway	92.85	98.94
5	Denmark	92.66	98.66
6	Czech Republic	92.11	97.85
7	Austria	91.75	97.32
8	Canada	91.66	97.19
9	Slovenia	91.47	96.91
10	Japan	90.27	95.15
11	Australia	89.87	94.56
12	Finland	89.29	93.70
13	Netherlands	88.79	92.97
14	Germany	88.41	92.41
14	Ireland	88.41	92.41
16	Qatar	88.22	92.13
17	Portugal	87.11	90.50
18	Belgium	86.78	90.01
19	New Zealand	86.30	89.31
20	Slovakia	86.16	89.10
21	Singapore	85.23	87.73
22	Bhutan	84.29	86.35
23	United Kingdom	83.79	85.61
24	Poland	82.86	84.25
25	Korea, Rep.	82.84	84.22
26	Spain	80.83	81.26
27	Croatia	80.59	80.91
28	France	80.35	80.55
29	Kuwait	79.53	79.35
30	United Arab Emirates	79.44	79.21
31	Estonia	79.28	78.98
32	Hungary	79.06	78.66
33	United States of America	77.66	76.60
34	Cyprus	77.62	76.54
35	Mauritius	77.33	76.11
36	Bulgaria	76.33	74.64
37	Bosnia and Herzegovina	75.95	74.08
38	Romania	75.94	74.07
39	Serbia	75.15	72.90
40	Latvia	75.07	72.79
41	Macedonia, FYR	73.22	70.06
42	Chile	72.19	68.55
43	Uruguay	72.11	68.43
44	Oman	71.81	67.99
45	Lithuania	71.75	67.90
46	Greece	71.16	67.03
47	Italy	70.62	66.24
48	Viet Nam	70.22	65.65
49	Mongolia	69.38	64.42
50	Saudi Arabia	69.34	64.36
51	Georgia	69.24	64.21
52	Morocco	69.17	64.11
53	Montenegro	68.80	63.56
54	Algeria	68.54	63.18
55	Armenia	68.31	62.84
56	Albania	67.74	62.00
57	Azerbaijan	67.50	61.65
58	Israel	67.20	61.21
59	Malaysia	66.93	60.81
60	Bahrain	66.83	60.66
61	Moldova, Rep.	66.09	59.58
62	Jordan	65.99	59.43
63	Tunisia	65.85	59.22
64	Costa Rica	65.65	58.93
65	Argentina	64.86	57.77
66	Sri Lanka	62.90	54.88
67	Botswana	62.61	54.46
68	Senegal	62.09	53.69
69	Bangladesh	61.80	53.27
70	Bolivia, Plurinational St.	61.46	52.77
71	Nicaragua	60.57	51.46
72	Kazakhstan	60.11	50.78
73	Turkey	58.68	48.68
74	Mali	58.22	48.00
75	Ukraine	57.96	47.62
76	China	57.73	47.28
77	Mozambique	57.70	47.23
78	Panama	57.54	47.00
79	Paraguay	57.23	46.54
80	Indonesia	56.78	45.88
81	Burkina Faso	56.38	45.29
82	Namibia	55.51	44.01
83	Madagascar	55.37	43.81
84	Zambia	54.95	43.19
85	Ghana	54.69	42.81
86	Egypt	53.85	41.57
87	Ethiopia	53.66	41.29
88	Iran	53.14	40.53
89	Philippines	51.49	38.10
90	Tanzania	51.28	37.79
91	India	51.06	37.47
92	Lesotho	50.71	36.95
93	Rwanda	50.70	36.94
94	Kyrgyzstan	49.71	35.48
95	Uganda	49.33	34.92
96	Cambodia	48.76	34.08
97	Lebanon	48.66	33.94
98	Russian Federation	48.03	33.01
99	Ecuador	47.31	31.95
100	Cameroon	46.35	30.54
101	Peru	46.20	30.32
102	Pakistan	45.12	28.73
103	Thailand	44.88	28.38
104	Colombia	41.01	22.68
105	Jamaica	40.82	22.40
106	Guatemala	40.23	21.54
107	Zimbabwe	39.58	20.58
108	Kenya	38.48	18.96
109	Brazil	35.55	14.65
110	El Salvador	35.12	14.02
111	Mexico	35.03	13.89
112	Dominican Republic	34.95	13.77
113	Honduras	34.45	13.03
114	South Africa	28.96	4.96
115	Venezuela, Bolivarian Rep.	25.59	0.00
n/a	Barbados	n/a	n/a
n/a	Luxembourg	n/a	n/a
n/a	Malta	n/a	n/a

SOURCE: Social Progress Imperative, The Social Progress Index 2015 (http://www.socialprogressimperative.org/data/spi)
Unless otherwise specified, the data used for computation were collected in 2015.

4.2.3 Physician density

Physicians (per 1,000 people) | 2014

Rank	Country	Value	Score
1	Qatar (2010)	7.74	100.00
2	Greece (2010)	6.17	79.63
3	Spain (2013)	4.95	63.85
4	Belgium (2013)	4.89	63.04
5	Austria (2011)	4.83	62.30
6	Russian Federation (2010)	4.31	55.55
7	Norway (2012)	4.28	55.19
8	Georgia (2013)	4.27	55.07
9	Lithuania (2012)	4.12	53.05
10	Portugal (2012)	4.10	52.84
11	Switzerland (2012)	4.05	52.18
12	Sweden (2011)	3.93	50.59
13	Germany (2012)	3.89	50.11
14	Bulgaria (2012)	3.87	49.81
15	Argentina (2013)	3.86	49.72
16	Italy (2012)	3.76	48.49
17	Uruguay (2010)	3.74	48.13
18	Czech Republic (2011)	3.62	46.68
19	Kazakhstan (2013)	3.62	46.59
20	Latvia (2012)	3.58	46.09
21	Ukraine (2013)	3.54	45.63
22	Malta (2013)	3.49	44.89
23	Denmark (2010)	3.49	44.87
24	Iceland (2012)	3.48	44.76
25	Azerbaijan (2013)	3.40	43.80
26	Israel (2012)	3.34	43.05
27	Slovakia (2012)	3.32	42.74
28	Australia (2011)	3.27	42.13
29	Estonia (2012)	3.24	41.73
30	Lebanon (2011)	3.20	41.18
31	France (2013)	3.19	41.05
32	Hungary (2012)	3.08	39.63
33	Croatia (2012)	3.00	38.59
34	Moldova, Rep. (2013)	2.98	38.38
35	Finland (2010)	2.91	37.36
36	Luxembourg (2013)	2.90	37.29
37	Netherlands (2010)	2.86	36.76
38	Mongolia (2011)	2.84	36.48
39	Egypt (2010)	2.83	36.39
40	United Kingdom (2013)	2.81	36.12
41	New Zealand (2010)	2.74	35.16
42	Kuwait (2012)	2.70	34.70
43	Armenia (2013)	2.70	34.68
44	Ireland (2013)	2.67	34.31
45	Macedonia, FYR (2010)	2.63	33.76
46	Jordan (2010)	2.56	32.86
47	United Arab Emirates (2010)	2.53	32.54
48	Slovenia (2011)	2.52	32.32
49	Saudi Arabia (2012)	2.49	31.99
50	United States of America (2011)	2.45	31.49
51	Romania (2012)	2.45	31.44
52	Oman (2012)	2.43	31.19
53	Cyprus (2012)	2.33	29.90
54	Japan (2010)	2.30	29.48
55	Poland (2012)	2.22	28.47
56	Korea, Rep. (2012)	2.14	27.48
57	Montenegro (2013)	2.11	27.10
58	Serbia (2010)	2.11	27.08
59	Mexico (2011)	2.10	26.86
60	Canada (2010)	2.07	26.51
61	Kyrgyzstan (2013)	1.97	25.23
62	Singapore (2013)	1.95	24.98
63	China (2012)	1.94	24.85
64	Bosnia and Herzegovina (2013)	1.93	24.72
65	Brazil (2013)	1.89	24.22
66	Barbados (2010)	1.81	23.18
67	Ecuador (2011)	1.72	22.06
68	Turkey (2011)	1.71	21.89
69	Panama (2013)	1.65	21.10
70	El Salvador (2010)	1.60	20.40
71	Dominican Republic (2011)	1.49	19.02
72	Colombia (2010)	1.47	18.78
73	Paraguay (2012)	1.23	15.61
74	Tunisia (2010)	1.22	15.55
75	Algeria (2010)	1.21	15.36
76	Malaysia (2010)	1.20	15.24
77	Viet Nam (2013)	1.19	15.14
78	Albania (2013)	1.15	14.55
79	Peru (2012)	1.13	14.38
80	Costa Rica (2013)	1.11	14.14
81	Chile (2010)	1.03	13.01
82	Guatemala (2009)	0.93	11.79
83	Bahrain (2012)	0.92	11.57
84	Nicaragua	0.90	11.34
85	Iran (2010)	0.89	11.25
86	Pakistan (2010)	0.83	10.43
87	South Africa (2013)	0.78	9.77
88	India (2012)	0.70	8.81
89	Sri Lanka (2010)	0.68	8.53
90	Morocco (2010)	0.62	7.75
91	Bolivia, Plurinational St. (2011)	0.47	5.84
92	Jamaica (2008)	0.41	5.04
93	Thailand (2010)	0.39	4.81
94	Namibia (2010)	0.37	4.56
95	Honduras (2005)	0.37	4.54
96	Bangladesh (2011)	0.36	4.33
97	Botswana (2010)	0.34	4.07
98	Bhutan (2012)	0.26	3.07
99	Indonesia (2012)	0.20	2.36
100	Kenya (2013)	0.20	2.28
101	Zambia (2012)	0.17	1.96
102	Cambodia (2012)	0.17	1.90
103	Madagascar (2010)	0.16	1.80
104	Uganda (2010)	0.12	1.23
105	Ghana (2010)	0.10	0.96
106	Mali (2010)	0.08	0.79
106	Zimbabwe (2011)	0.08	0.79
108	Cameroon (2009)	0.08	0.71
109	Senegal (2010)	0.06	0.48
110	Rwanda (2010)	0.06	0.44
111	Burkina Faso (2010)	0.05	0.32
112	Mozambique (2012)	0.04	0.23
113	Tanzania (2012)	0.03	0.12
114	Ethiopia (2010)	0.02	0.00
n/a	Lesotho	n/a	n/a
n/a	Mauritius	n/a	n/a
n/a	Philippines	n/a	n/a
n/a	Venezuela, Bolivarian Rep.	n/a	n/a

SOURCE: World Bank, World Development Indicators based on World Health Organization, Global Atlas of the Health Workforce (http://data.worldbank.org/data-catalog/world-development-indicators)

Unless otherwise specified, the data used for computation were collected in 2014.

4.2.4 Sanitation

Population with access to improved sanitation facilities (%) | 2015

Rank	Country	Value	Score
1	Australia	100.00	100.00
1	Austria	100.00	100.00
1	Cyprus	100.00	100.00
1	Israel	100.00	100.00
1	Japan	100.00	100.00
1	Korea, Rep.	100.00	100.00
1	Kuwait	100.00	100.00
1	Malta	100.00	100.00
1	Saudi Arabia	100.00	100.00
1	Singapore	100.00	100.00
1	United States of America	100.00	100.00
12	Switzerland	99.90	99.89
12	Spain	99.90	99.89
14	Canada	99.80	99.77
15	Portugal	99.70	99.66
16	Denmark	99.60	99.55
17	Belgium	99.50	99.43
17	Italy	99.50	99.43
19	Sweden	99.30	99.20
20	Bahrain	99.20	99.09
20	Germany	99.20	99.09
20	United Kingdom	99.20	99.09
23	Chile	99.10	98.98
23	Czech Republic	99.10	98.98
23	Slovenia	99.10	98.98
26	Greece	99.00	98.86
27	Iceland	98.80	98.64
27	Slovakia	98.80	98.64
29	France	98.70	98.52
30	Jordan	98.60	98.41
31	Norway	98.10	97.84
32	Hungary	98.00	97.73
32	Qatar	98.00	97.73
34	Netherlands	97.70	97.39
35	United Arab Emirates	97.60	97.27
35	Finland	97.60	97.27
35	Luxembourg	97.60	97.27
38	Kazakhstan	97.50	97.16
39	Estonia	97.20	96.82
39	Poland	97.20	96.82
41	Croatia	97.00	96.59
42	Oman	96.70	96.25
43	Argentina	96.40	95.91
43	Serbia	96.40	95.91
43	Uruguay	96.40	95.91
46	Barbados	96.20	95.68
47	Malaysia	96.00	95.45
48	Montenegro	95.90	95.34
48	Ukraine	95.90	95.34
50	Sri Lanka	95.10	94.43
51	Turkey	94.90	94.20
52	Bosnia and Herzegovina	94.80	94.09
53	Egypt	94.70	93.98
54	Costa Rica	94.50	93.75
55	Venezuela, Bolivarian Rep.	94.40	93.64
56	Kyrgyzstan	93.30	92.39
57	Albania	93.20	92.27
58	Mauritius	93.10	92.16
59	Thailand	93.00	92.05
60	Lithuania	92.40	91.36
61	Tunisia	91.60	90.45
62	Macedonia, FYR	90.90	89.66
63	Ireland	90.50	89.20
64	Iran	90.00	88.64
65	Armenia	89.50	88.07
66	Azerbaijan	89.30	87.84
67	Paraguay	88.60	87.05
68	Latvia	87.80	86.14
69	Algeria	87.60	85.91
70	Georgia	86.30	84.43
71	Bulgaria	86.00	84.09
72	Mexico	85.20	83.18
73	Ecuador	84.70	82.61
74	Dominican Republic	84.00	81.82
75	Brazil	82.80	80.45
76	Honduras	82.60	80.23
77	Jamaica	81.80	79.32
78	Colombia	81.10	78.52
79	Lebanon	80.70	78.07
80	Romania	79.10	76.25
81	Viet Nam	78.00	75.00
82	Morocco	76.70	73.52
83	China	76.50	73.30
84	Moldova, Rep.	76.40	73.18
85	Peru	76.20	72.95
86	Panama	75.00	71.59
86	El Salvador	75.00	71.59
88	Philippines	73.90	70.34
89	Russian Federation	72.20	68.41
90	Nicaragua	67.90	63.52
91	South Africa	66.40	61.82
92	Guatemala	63.90	58.98
93	Pakistan	63.50	58.52
94	Botswana	63.40	58.41
95	Rwanda	61.60	56.36
96	Indonesia	60.80	55.45
97	Bangladesh	60.60	55.23
98	Mongolia	59.70	54.20
99	Bhutan	50.40	43.64
100	Bolivia, Plurinational St.	50.30	43.52
101	Senegal	47.60	40.45
102	Cameroon	45.80	38.41
103	Zambia	43.90	36.25
104	Cambodia	42.40	34.55
105	India	39.60	31.36
106	Zimbabwe	36.80	28.18
107	Namibia	34.40	25.45
108	Lesotho	30.30	20.80
109	Kenya	30.10	20.57
110	Ethiopia	28.00	18.18
111	Mali	24.70	14.43
112	Mozambique	20.50	9.66
113	Burkina Faso	19.70	8.75
114	Uganda	19.10	8.07
115	Tanzania	15.60	4.09
116	Ghana	14.90	3.30
117	Madagascar	12.00	0.00
n/a	New Zealand	n/a	n/a

SOURCE: World Bank, World Development Indicators based on WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation (http://data.worldbank.org/data-catalog/world-development-indicators)
Unless otherwise specified, the data used for computation were collected in 2015.

Pillar 5

Vocational and Technical Skills

5.1.1 Workforce with secondary education

Labour force with secondary education (%) | 2014

Rank	Country	Value	Score
1	Kyrgyzstan (2013)	73.90	100.00
2	Philippines (2012)	73.30	99.16
3	Czech Republic	72.90	98.61
4	Slovakia	72.50	98.05
5	Azerbaijan (2013)	66.20	89.28
6	Bosnia and Herzegovina (2012)	65.20	87.88
7	Croatia	63.90	86.07
8	Poland	62.40	83.98
9	Georgia (2013)	61.90	83.29
9	Hungary	61.90	83.29
11	Germany	59.70	80.22
12	Latvia	58.40	78.41
13	Slovenia	57.50	77.16
14	Chile (2011)	57.00	76.46
15	Bulgaria	56.70	76.04
16	Romania	56.50	75.77
17	Moldova, Rep. (2013)	56.20	75.35
18	Lithuania	55.00	73.68
19	Macedonia, FYR	54.70	73.26
20	Austria	53.80	72.01
20	Montenegro (2012)	53.80	72.01
22	Estonia	51.70	69.08
23	Switzerland	47.60	63.37
24	Italy	47.20	62.81
24	Sweden	47.20	62.81
26	Finland	46.40	61.70
27	France	45.10	59.89
28	Mexico (2011)	45.00	59.75
29	Panama (2012)	44.10	58.50
30	Kazakhstan (2013)	43.60	57.80
30	Malaysia	43.60	57.80
32	Armenia (2013)	43.10	57.10
33	Colombia (2013)	42.60	56.41
34	Netherlands	42.40	56.13
35	Denmark	42.30	55.99
36	Korea, Rep. (2007)	42.00	55.57
37	United Kingdom	41.90	55.43
37	Greece	41.90	55.43
39	New Zealand (2008)	41.20	54.46
40	Norway	41.10	54.32
41	Israel (2008)	40.80	53.90
42	Argentina	40.00	52.79
43	Mauritius (2007)	39.80	52.51
44	Russian Federation (2013)	39.50	52.09
45	Belgium	39.00	51.39
46	Australia (2008)	38.90	51.25
47	Ireland	38.60	50.84
48	Cyprus	38.40	50.56
49	Canada	38.20	50.28
50	Bolivia, Plurinational St. (2009)	38.10	50.14
51	Tunisia (2011)	37.90	49.86
52	Egypt (2013)	37.50	49.30
53	Iceland	36.80	48.33
54	Brazil (2013)	36.00	47.21
55	Nicaragua (2010)	34.80	45.54
56	Luxembourg	34.70	45.40
57	Albania (2013)	34.50	45.13
58	Dominican Republic (2013)	34.20	44.71
59	Serbia (2013)	34.10	44.57
60	Madagascar (2012)	33.30	43.45
61	South Africa (2013)	31.30	40.67
62	Malta	30.70	39.83
63	Singapore (2013)	30.30	39.28
64	Ecuador (2013)	29.00	37.47
65	United States of America (2008)	28.90	37.33
66	United Arab Emirates (2005)	28.80	37.19
67	Saudi Arabia (2009)	28.40	36.63
68	Uruguay (2013)	26.90	34.54
69	Indonesia (2013)	26.60	34.12
70	Venezuela, Bolivarian Rep. (2012)	25.50	32.59
71	Iran (2008)	25.30	32.31
72	Paraguay (2013)	25.10	32.03
73	Portugal	24.70	31.48
74	Mongolia (2013)	24.30	30.92
75	Honduras (2011)	23.90	30.36
76	Namibia (2012)	23.40	29.67
77	Spain	23.30	29.53
78	Jordan (2012)	22.40	28.27
79	Costa Rica (2013)	21.80	27.44
80	Algeria (2011)	21.50	27.02
81	Kuwait (2011)	20.70	25.91
82	Cambodia (2012)	20.50	25.63
83	Turkey	20.30	25.35
84	Peru	19.50	24.23
84	Thailand (2013)	19.50	24.23
86	Guatemala (2013)	18.70	23.12
87	India (2010)	18.40	22.70
88	Lebanon (2007)	18.20	22.42
89	Botswana (2010)	17.50	21.45
90	Ghana (2010)	17.40	21.31
91	Sri Lanka (2013)	16.00	19.36
92	El Salvador (2013)	13.70	16.16
93	Morocco (2012)	11.60	13.23
93	Pakistan (2008)	11.60	13.23
95	Bahrain (2012)	9.60	10.45
96	Ethiopia (2012)	4.50	3.34
96	Rwanda (2012)	4.50	3.34
98	Ukraine	2.10	0.00
n/a	Burkina Faso	n/a	n/a
n/a	Bangladesh	n/a	n/a
n/a	Barbados	n/a	n/a
n/a	Bhutan	n/a	n/a
n/a	China	n/a	n/a
n/a	Cameroon	n/a	n/a
n/a	Jamaica	n/a	n/a
n/a	Japan	n/a	n/a
n/a	Kenya	n/a	n/a
n/a	Lesotho	n/a	n/a
n/a	Mali	n/a	n/a
n/a	Mozambique	n/a	n/a
n/a	Oman	n/a	n/a
n/a	Qatar	n/a	n/a
n/a	Senegal	n/a	n/a
n/a	Tanzania	n/a	n/a
n/a	Uganda	n/a	n/a
n/a	Viet Nam	n/a	n/a
n/a	Zambia	n/a	n/a
n/a	Zimbabwe	n/a	n/a

SOURCE: International Labour Organization, *Key Indicators of the Labour Market 2015,* 9th edition (www.ilo.org/kilm)
Unless otherwise specified, the data used for computation were collected in 2014.

5.1.2 Population with secondary education

Population with secondary education (%) | 2015

Rank	Country	Value	Score
1	Czech Republic (2014)	70.66	100.00
2	Slovakia (2014)	65.82	93.14
3	Kyrgyzstan (2009)	61.52	87.04
4	Azerbaijan (2014)	58.66	82.98
5	Poland (2014)	56.36	79.73
6	Slovenia (2014)	54.58	77.20
7	Montenegro (2011)	52.86	74.77
8	Estonia (2014)	52.58	74.37
9	Croatia (2011)	52.32	74.00
10	Latvia (2014)	50.03	70.75
11	Bulgaria (2014)	49.75	70.36
12	Austria (2014)	49.69	70.27
13	Germany (2014)	49.50	70.00
14	Switzerland (2014)	48.88	69.12
15	South Africa (2014)	48.51	68.60
16	Bosnia and Herzegovina (2014)	48.27	68.26
17	Serbia (2014)	48.23	68.19
18	United States of America (2014)	46.42	65.64
19	Hungary (2014)	45.91	64.92
20	Romania (2014)	45.75	64.69
21	Jamaica (2011)	44.67	63.16
22	Sri Lanka (2009)	44.38	62.74
23	Armenia (2011)	43.27	61.17
24	Georgia (2014)	42.66	60.30
25	Denmark (2014)	42.58	60.19
26	Moldova, Rep. (2014)	41.20	58.24
27	Japan (2010)	39.91	56.40
28	France (2014)	39.79	56.23
29	Kazakhstan (2007)	39.73	56.15
30	Venezuela, Bolivarian Rep. (2011)	39.06	55.21
31	Finland (2013)	38.46	54.35
32	Netherlands (2014)	38.35	54.19
33	Norway (2014)	37.93	53.59
34	Korea, Rep. (2010)	37.40	52.85
35	Sweden (2014)	37.27	52.67
36	Luxembourg (2014)	36.42	51.45
37	Chile (2013)	35.47	50.11
38	Malaysia (2010)	34.53	48.78
39	Israel (2014)	34.42	48.62
40	Peru (2014)	34.36	48.54
41	Italy (2012)	33.74	47.66
42	Lithuania (2014)	32.44	45.82
43	Albania (2012)	32.38	45.73
44	Cyprus (2014)	32.28	45.58
45	Australia (2014)	32.20	45.47
46	Mongolia (2010)	32.05	45.26
47	Belgium (2014)	31.22	44.08
48	Mauritius (2011)	30.54	43.12
49	United Kingdom (2014)	29.66	41.87
50	Brazil (2013)	29.19	41.20
51	Iceland (2005)	28.33	39.98
52	Tunisia (2012)	27.46	38.75
53	Ireland (2011)	27.24	38.44
54	Ecuador (2014)	26.80	37.81
55	Greece (2014)	26.51	37.40
56	Philippines (2013)	25.61	36.12
57	Iran (2013)	25.00	35.26
58	Colombia (2014)	24.84	35.04
59	United Arab Emirates (2005)	24.52	34.58
60	New Zealand (2014)	23.40	33.00
61	Canada (2011)	23.11	32.58
62	Saudi Arabia (2013)	23.00	32.43
63	Paraguay (2014)	22.88	32.26
64	Oman (2010)	22.49	31.71
65	Indonesia (2014)	22.44	31.63
66	Dominican Republic (2014)	22.38	31.56
67	Russian Federation (2010)	21.93	30.91
68	Panama (2010)	20.15	28.39
69	Qatar (2014)	19.39	27.31
70	Turkey (2014)	19.07	26.86
71	Bolivia, Plurinational St. (2012)	18.52	26.07
72	Singapore (2014)	18.39	25.90
73	Spain (2014)	18.26	25.71
74	Pakistan (2013)	18.08	25.45
75	Lebanon (2007)	17.52	24.66
76	Mexico (2014)	17.36	24.43
77	Algeria (2008)	17.26	24.29
78	Zambia (2010)	17.08	24.04
79	El Salvador (2013)	16.82	23.67
80	Costa Rica (2014)	16.58	23.32
81	Uruguay (2014)	16.31	22.95
82	Guatemala (2014)	16.29	22.92
83	Portugal (2014)	16.23	22.83
84	Kuwait (2013)	14.57	20.47
85	Jordan (2010)	14.24	20.01
86	Kenya (2010)	13.86	19.47
87	Viet Nam (2009)	13.60	19.11
88	China (2010)	13.50	18.97
89	Honduras (2014)	13.20	18.54
90	Thailand (2013)	12.35	17.33
91	Malta (2014)	12.06	16.92
92	Ghana (2010)	9.22	12.90
93	Lesotho (2008)	8.46	11.82
94	Cameroon (2010)	4.66	6.43
95	Rwanda (2012)	4.66	6.42
96	Cambodia (2009)	4.22	5.80
97	Senegal (2013)	3.97	5.45
98	Mali	3.96	5.44
99	Ethiopia (2011)	2.94	3.99
100	Burkina Faso (2014)	2.81	3.80
101	Zimbabwe (2012)	2.44	3.28
102	Mozambique (2011)	2.44	3.28
103	Bahrain (2010)	1.99	2.65
104	Uganda (2012)	1.70	2.23
105	Tanzania (2012)	0.84	1.01
106	Bhutan (2012)	0.13	0.00
n/a	Argentina	n/a	n/a
n/a	Bangladesh	n/a	n/a
n/a	Barbados	n/a	n/a
n/a	Botswana	n/a	n/a
n/a	Egypt	n/a	n/a
n/a	India	n/a	n/a
n/a	Morocco	n/a	n/a
n/a	Madagascar	n/a	n/a
n/a	Macedonia, FYR	n/a	n/a
n/a	Namibia	n/a	n/a
n/a	Nicaragua	n/a	n/a
n/a	Ukraine	n/a	n/a

SOURCE: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)
Unless otherwise specified, the data used for computation were collected in 2015.

5.1.3 Technicians and associate professionals

Technicians and associate professionals (%) | 2014

Rank	Country	Value	Score
1	Singapore (2011)	20.70	100.00
2	Germany (2011)	20.20	97.46
3	France (2011)	20.10	96.95
4	Czech Republic (2011)	19.30	92.89
5	Slovakia (2011)	19.00	91.37
6	Mauritius (2011)	18.70	89.85
7	Austria (2011)	18.60	89.34
8	Luxembourg (2011)	18.30	87.82
9	Switzerland (2011)	18.20	87.31
10	Israel (2008)	17.60	84.26
11	Italy (2011)	17.30	82.74
12	Montenegro (2012)	17.00	81.22
13	Canada (2013)	16.80	80.20
13	Finland (2011)	16.80	80.20
15	Denmark (2011)	16.50	78.68
16	Iceland (2011)	16.40	78.17
16	Norway (2011)	16.40	78.17
16	Sweden (2011)	16.40	78.17
19	Netherlands (2011)	16.20	77.16
20	Belgium (2011)	15.90	75.63
21	Russian Federation (2013)	15.00	71.07
22	Malaysia (2010)	14.80	70.05
23	Serbia (2010)	14.60	69.04
24	United Arab Emirates (2008)	14.50	68.53
25	Hungary (2011)	14.10	66.50
25	Malta (2011)	14.10	66.50
27	Slovenia (2011)	14.00	65.99
28	Australia (2008)	13.70	64.47
29	Argentina (2006)	13.50	63.45
29	Costa Rica (2011)	13.50	63.45
31	Cyprus (2011)	12.90	60.41
31	Estonia (2011)	12.90	60.41
33	Croatia (2011)	12.50	58.38
34	New Zealand (2008)	12.40	57.87
35	Ukraine	12.20	56.85
36	Latvia (2011)	12.00	55.84
37	Lithuania (2011)	11.60	53.81
37	Saudi Arabia (2013)	11.60	53.81
39	United Kingdom (2011)	11.50	53.30
40	South Africa (2012)	11.30	52.28
41	Poland (2011)	11.10	51.27
42	Spain (2011)	10.90	50.25
43	Korea, Rep. (2008)	10.80	49.75
44	Barbados (2013)	10.50	48.22
44	Ireland (2011)	10.50	48.22
46	Macedonia, FYR (2011)	10.20	46.70
47	Lebanon (2007)	9.70	44.16
47	Mexico (2008)	9.70	44.16
49	Armenia (2008)	9.30	42.13
50	Kazakhstan (2008)	9.10	41.12
51	Nicaragua (2006)	8.80	39.59
51	Portugal (2011)	8.80	39.59
53	Moldova, Rep. (2012)	8.70	39.09
54	Egypt (2013)	8.50	38.07
55	Colombia (2010)	8.40	37.56
56	Kuwait (2005)	8.10	36.04
56	Panama (2011)	8.10	36.04
58	Bulgaria (2011)	7.90	35.03
59	Botswana (2010)	7.80	34.52
59	Greece (2011)	7.80	34.52
61	Bolivia, Plurinational St. (2009)	7.20	31.47
62	Lesotho (2008)	7.10	30.96
63	Brazil (2013)	7.00	30.46
63	Dominican Republic (2013)	7.00	30.46
65	Peru (2013)	6.90	29.95
66	Romania (2011)	6.80	29.44
66	Uruguay (2011)	6.80	29.44
68	El Salvador (2012)	6.70	28.93
69	Kyrgyzstan (2006)	6.60	28.43
70	Paraguay	6.30	26.90
71	Georgia (2007)	5.90	24.87
71	Turkey (2010)	5.90	24.87
73	Sri Lanka (2012)	5.70	23.86
73	Qatar (2013)	5.70	23.86
75	Ecuador (2012)	5.30	21.83
75	Pakistan (2008)	5.30	21.83
77	Iran (2008)	4.80	19.29
78	Mongolia (2008)	4.60	18.27
78	Namibia (2013)	4.60	18.27
80	Morocco (2011)	4.40	17.26
81	Algeria (2013)	4.10	15.74
82	Bhutan (2013)	4.00	15.23
83	Azerbaijan (2008)	3.90	14.72
84	Uganda (2009)	3.70	13.71
85	Thailand (2011)	3.40	12.18
85	Viet Nam (2012)	3.40	12.18
87	India (2010)	3.00	10.15
88	Philippines (2013)	2.60	8.12
89	Indonesia (2013)	2.40	7.11
90	Cambodia (2008)	2.30	6.60
91	Tanzania (2007)	2.20	6.09
92	Albania (2009)	2.10	5.58
93	Ghana (2006)	2.00	5.08
94	Bangladesh (2011)	1.80	4.06
95	Burkina Faso (2006)	1.10	0.51
96	Madagascar (2012)	1.00	0.00
n/a	Bahrain	n/a	n/a
n/a	Bosnia and Herzegovina	n/a	n/a
n/a	Chile	n/a	n/a
n/a	China	n/a	n/a
n/a	Cameroon	n/a	n/a
n/a	Ethiopia	n/a	n/a
n/a	Guatemala	n/a	n/a
n/a	Honduras	n/a	n/a
n/a	Jamaica	n/a	n/a
n/a	Jordan	n/a	n/a
n/a	Japan	n/a	n/a
n/a	Kenya	n/a	n/a
n/a	Mali	n/a	n/a
n/a	Mozambique	n/a	n/a
n/a	Oman	n/a	n/a
n/a	Rwanda	n/a	n/a
n/a	Senegal	n/a	n/a
n/a	Tunisia	n/a	n/a
n/a	United States of America	n/a	n/a
n/a	Venezuela, Bolivarian Rep.	n/a	n/a
n/a	Zambia	n/a	n/a
n/a	Zimbabwe	n/a	n/a

SOURCE: International Labour Organization, *Key Indicators of the Labour Market 2015,* 9th edition (www.ilo.org/kilm)
Unless otherwise specified, the data used for computation were collected in 2014.

5.1.4 Labour productivity per employee

Labour productivity per person employed (constant 2015 US$) | 2015

Rank	Country	Value	Score
1	Qatar	200,973.67	100.00
2	United Arab Emirates	165,738.97	82.22
3	Saudi Arabia	163,415.04	81.04
4	Kuwait	147,264.82	72.89
5	Luxembourg	137,808.17	68.12
6	Singapore	132,927.61	65.65
7	Norway	126,533.50	62.43
8	Ireland	121,578.40	59.93
9	United States of America	117,816.98	58.03
10	Oman	111,769.73	54.98
11	Belgium	106,512.22	52.32
12	Australia	97,544.57	47.80
13	Switzerland	96,715.48	47.38
14	Sweden	96,483.84	47.26
15	France	95,464.40	46.75
16	Bahrain	94,666.07	46.34
17	Netherlands	93,741.86	45.88
18	Austria	93,147.31	45.58
19	Denmark	91,505.58	44.75
20	Finland	88,979.99	43.47
21	Germany	88,195.38	43.08
22	Italy	87,981.27	42.97
23	Canada	87,438.25	42.69
24	Spain	86,665.20	42.30
25	United Kingdom	84,450.07	41.19
26	Iceland	82,527.86	40.22
27	Cyprus	79,252.85	38.56
28	Malta	76,434.27	37.14
29	Greece	73,402.86	35.61
30	Japan	73,397.88	35.61
31	Israel	70,921.32	34.36
32	Korea, Rep.	70,601.91	34.20
33	Slovakia	70,217.98	34.00
34	New Zealand	70,128.96	33.96
35	Slovenia	66,744.58	32.25
36	Czech Republic	63,173.36	30.45
37	Portugal	62,836.88	30.28
38	Poland	62,672.31	30.19
39	Lithuania	61,753.12	29.73
40	Hungary	59,660.30	28.67
41	Estonia	59,423.90	28.56
42	Turkey	58,634.76	28.16
43	Croatia	56,520.28	27.09
44	Latvia	56,467.98	27.06
45	Malaysia	56,397.78	27.03
46	Iran	55,141.20	26.39
47	Bosnia and Herzegovina	55,007.97	26.33
48	Chile	53,977.12	25.81
49	Jordan	51,191.19	24.40
50	Algeria	50,836.68	24.22
51	Kazakhstan	49,103.79	23.35
52	Russian Federation	48,782.94	23.18
53	Romania	46,539.72	22.05
54	Serbia	46,318.19	21.94
55	Uruguay	44,163.33	20.85
56	Mexico	43,676.66	20.61
57	South Africa	42,279.87	19.90
58	Venezuela, Bolivarian Rep.	40,796.56	19.15
59	Macedonia, FYR	38,964.14	18.23
60	Argentina	38,705.93	18.10
61	Bulgaria	37,957.52	17.72
62	Tunisia	37,545.11	17.51
63	Azerbaijan	37,368.96	17.42
64	Barbados	36,376.80	16.92
65	Albania	34,687.13	16.07
66	Dominican Republic	32,526.28	14.98
67	Egypt	32,044.15	14.74
68	Costa Rica	31,055.05	14.24
69	Ecuador	29,993.72	13.70
70	Sri Lanka	29,643.49	13.52
71	Thailand	28,324.99	12.86
72	Brazil	28,288.84	12.84
73	Peru	28,109.52	12.75
74	Colombia	27,484.79	12.43
75	Guatemala	26,473.85	11.92
76	Indonesia	25,088.36	11.22
77	Jamaica	21,519.11	9.42
78	Morocco	21,303.69	9.31
79	Georgia	20,921.45	9.12
80	Armenia	20,726.28	9.02
81	Ukraine	19,724.36	8.52
82	Philippines	19,045.29	8.17
83	Pakistan	16,878.35	7.08
84	China	16,850.36	7.07
85	Moldova, Rep.	14,895.75	6.08
86	Bolivia, Plurinational St.	14,345.95	5.80
87	India	14,132.97	5.70
88	Zambia	12,200.96	4.72
89	Viet Nam	10,122.67	3.67
90	Ghana	9,327.89	3.27
91	Bangladesh	9,058.52	3.13
92	Kyrgyzstan	8,667.25	2.94
93	Senegal	7,068.90	2.13
94	Cameroon	6,859.26	2.02
95	Kenya	6,660.42	1.92
96	Uganda	6,041.77	1.61
97	Cambodia	5,861.32	1.52
98	Mali	5,708.47	1.44
99	Burkina Faso	4,618.02	0.89
100	Tanzania	4,358.45	0.76
101	Zimbabwe	4,190.02	0.68
102	Madagascar	3,417.58	0.29
103	Mozambique	3,243.07	0.20
104	Ethiopia	2,849.28	0.00
n/a	Bhutan	n/a	n/a
n/a	Botswana	n/a	n/a
n/a	Honduras	n/a	n/a
n/a	Lebanon	n/a	n/a
n/a	Lesotho	n/a	n/a
n/a	Montenegro	n/a	n/a
n/a	Mongolia	n/a	n/a
n/a	Mauritius	n/a	n/a
n/a	Namibia	n/a	n/a
n/a	Nicaragua	n/a	n/a
n/a	Panama	n/a	n/a
n/a	Paraguay	n/a	n/a
n/a	Rwanda	n/a	n/a
n/a	El Salvador	n/a	n/a

SOURCE: The Conference Board, Total Economy Database™ (www.conference-board.org/data/economydatabase)
Unless otherwise specified, the data used for computation were collected in 2015.

5.2.1 Ease of finding skilled employees

Average answer to the question: In your country, to what extent can companies find employees with the skills required to meet their needs? [1 = not at all; 7 = to a great extent] | 2015

Rank	Country	Value	Score
1	Finland	5.61	76.79
2	Malaysia	5.42	73.60
3	Ireland	5.38	72.97
4	Norway	5.30	71.70
5	Cyprus	5.28	71.31
6	Qatar	5.22	70.35
7	France	5.18	69.62
8	Iceland	5.17	69.56
9	United Arab Emirates (2014)	5.16	69.37
10	United States of America	5.12	68.59
11	Netherlands	5.12	68.59
12	Portugal	5.07	67.89
13	Denmark	5.01	66.86
14	Costa Rica	5.00	66.74
15	Zambia	4.99	66.44
16	Sweden	4.98	66.31
17	Barbados	4.97	66.10
18	Israel	4.96	66.04
19	Australia	4.94	65.68
20	Switzerland	4.94	65.59
21	Singapore	4.90	65.03
22	Germany	4.90	65.00
23	Japan	4.88	64.59
24	New Zealand	4.87	64.46
25	Belgium	4.86	64.36
26	Canada	4.85	64.11
27	United Kingdom	4.81	63.52
28	Spain	4.78	63.02
29	Kenya	4.78	63.02
30	Greece	4.59	59.84
31	Ukraine	4.59	59.82
32	Austria	4.58	59.69
33	Senegal	4.55	59.17
34	Philippines	4.54	59.03
35	Zimbabwe	4.53	58.90
36	Jordan	4.47	57.88
37	Bahrain	4.47	57.88
38	China	4.43	57.22
39	Sri Lanka	4.40	56.72
40	Malta	4.40	56.61
41	Italy	4.40	56.59
42	Indonesia	4.39	56.50
43	Lebanon	4.35	55.92
44	Cameroon	4.35	55.88
45	India	4.34	55.71
46	Korea, Rep.	4.32	55.27
47	Slovenia	4.28	54.68
48	Chile	4.26	54.38
49	Uganda	4.26	54.31
50	Lesotho	4.25	54.21
51	Poland	4.22	53.59
52	Honduras	4.21	53.53
53	Luxembourg	4.20	53.42
54	Mexico	4.17	52.89
55	Burkina Faso	4.17	52.77
56	Mali	4.13	52.25
57	Colombia	4.12	51.93
58	Argentina	4.12	51.92
59	Jamaica	4.08	51.27
60	Ghana	4.05	50.89
61	Guatemala	3.96	49.33
62	Madagascar	3.95	49.21
63	Tunisia	3.95	49.13
64	Ecuador	3.92	48.71
65	Kazakhstan	3.92	48.66
66	Rwanda	3.91	48.57
67	Morocco	3.87	47.90
68	Egypt	3.87	47.88
69	Thailand	3.87	47.88
70	Algeria	3.86	47.65
71	Macedonia, FYR	3.84	47.38
72	Kuwait	3.83	47.14
73	Romania	3.82	47.03
74	El Salvador	3.82	47.03
75	Tanzania	3.82	47.00
76	Czech Republic	3.81	46.87
77	Iran	3.79	46.57
78	Saudi Arabia	3.77	46.14
79	Peru	3.74	45.71
80	Mauritius	3.74	45.68
81	Venezuela, Bolivarian Rep.	3.73	45.52
82	Turkey	3.71	45.19
83	Dominican Republic	3.71	45.18
84	Viet Nam	3.71	45.11
85	Bolivia, Plurinational St.	3.70	45.06
86	Estonia	3.70	44.99
87	Lithuania	3.68	44.64
88	Montenegro	3.67	44.55
89	Ethiopia	3.67	44.48
90	Latvia	3.66	44.41
91	Uruguay	3.66	44.35
92	Pakistan	3.64	44.05
93	Croatia	3.64	43.98
94	Panama	3.63	43.88
95	Bangladesh	3.61	43.44
96	Slovakia	3.60	43.40
97	Azerbaijan (2014)	3.58	42.94
98	Hungary	3.57	42.88
99	South Africa	3.52	42.07
100	Albania	3.52	41.92
101	Serbia	3.42	40.32
102	Kyrgyzstan	3.39	39.86
103	Botswana	3.38	39.74
104	Cambodia	3.33	38.85
105	Bulgaria	3.32	38.64
106	Brazil	3.30	38.40
107	Mozambique	3.26	37.67
108	Bhutan	3.25	37.43
109	Russian Federation (2014)	3.24	37.29
110	Armenia	3.20	36.68
111	Nicaragua	3.18	36.35
112	Bosnia and Herzegovina	3.17	36.22
113	Georgia	3.16	36.04
114	Namibia	3.14	35.65
115	Moldova, Rep.	3.09	34.89
116	Oman	2.85	30.90
117	Paraguay	2.82	30.39
118	Mongolia	2.64	27.39

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

5.2.2 Relevance of education system to the economy

Average answer to the question: In your country, how well does the education system meet the needs of a competitive economy? [1 = not well at all; 7 = extremely well] | 2015

Rank	Country	Value	Score
1	Switzerland	6.13	85.54
2	Qatar	5.88	81.35
3	Singapore	5.85	80.76
4	Finland	5.71	78.57
5	Belgium	5.47	74.44
6	Malaysia	5.44	74.05
7	New Zealand	5.43	73.80
8	Netherlands	5.43	73.79
9	Ireland	5.36	72.71
10	Germany	5.36	72.62
11	Norway	5.29	71.52
12	United Arab Emirates (2014)	5.28	71.33
13	Australia	5.11	68.54
14	Canada	5.10	68.41
15	Iceland	5.05	67.46
16	Barbados	5.04	67.34
17	Denmark	4.89	64.91
18	Cyprus	4.86	64.33
19	United States of America	4.86	64.25
20	Lebanon	4.85	64.18
21	United Kingdom	4.74	62.37
22	Malta	4.69	61.53
23	Luxembourg	4.67	61.12
24	Sri Lanka	4.65	60.89
25	Sweden	4.61	60.15
26	Bahrain	4.59	59.90
27	Japan	4.55	59.12
28	Costa Rica	4.54	59.00
29	Albania	4.50	58.37
30	France	4.50	58.36
31	Philippines	4.47	57.85
32	Jordan	4.44	57.32
33	Estonia	4.36	56.00
34	Zambia	4.34	55.63
35	Kenya	4.33	55.48
36	Austria	4.32	55.40
37	Portugal	4.31	55.10
38	Indonesia	4.29	54.78
39	Zimbabwe	4.23	53.77
40	India	4.19	53.24
41	Lesotho	4.17	52.85
42	Rwanda	4.16	52.65
43	Saudi Arabia	4.10	51.71
44	Mauritius	4.09	51.56
45	Slovenia	4.07	51.25
46	Bhutan	4.05	50.81
47	Israel	4.05	50.79
48	Lithuania	4.04	50.70
49	Ukraine	3.99	49.77
50	China	3.92	48.63
51	Montenegro	3.92	48.62
52	Czech Republic	3.84	47.40
53	Macedonia, FYR	3.82	47.06
54	Senegal	3.75	45.91
55	Latvia	3.72	45.27
56	Italy	3.71	45.11
57	Korea, Rep.	3.70	45.05
58	Kazakhstan	3.69	44.86
59	Ethiopia	3.68	44.68
60	Jamaica	3.67	44.48
61	Ecuador	3.65	44.11
62	Cameroon	3.63	43.81
63	Poland	3.60	43.28
64	Thailand	3.58	43.04
65	Pakistan	3.57	42.87
66	Ghana	3.57	42.87
67	Botswana	3.56	42.74
68	Viet Nam	3.53	42.15
69	Honduras	3.51	41.79
70	Uganda	3.49	41.53
71	Russian Federation (2014)	3.48	41.28
72	Armenia	3.45	40.85
73	Spain	3.44	40.69
74	Chile	3.38	39.59
75	Bangladesh	3.36	39.40
76	Kuwait	3.35	39.19
77	Tunisia	3.35	39.11
78	Romania	3.32	38.72
79	Algeria	3.32	38.60
80	Turkey	3.31	38.51
81	Bulgaria	3.29	38.14
82	Panama	3.27	37.85
83	Iran	3.22	36.98
84	Namibia	3.21	36.80
85	Moldova, Rep.	3.20	36.74
86	Tanzania	3.19	36.47
87	Hungary	3.16	35.98
88	Cambodia	3.16	35.96
89	Georgia	3.15	35.83
90	Colombia	3.14	35.75
91	Croatia	3.14	35.64
92	Bolivia, Plurinational St.	3.11	35.17
93	Oman	3.09	34.85
94	Azerbaijan (2014)	3.09	34.82
95	Argentina	3.07	34.56
96	Mali	3.06	34.34
97	Serbia	3.06	34.28
98	Mongolia	3.04	33.97
99	Kyrgyzstan	3.02	33.73
100	Uruguay	2.99	33.21
101	Greece	2.93	32.21
102	Madagascar	2.91	31.85
103	Burkina Faso	2.87	31.15
104	El Salvador	2.86	31.08
105	Mexico	2.85	30.82
106	Mozambique	2.81	30.15
107	Slovakia	2.79	29.88
108	Morocco	2.77	29.57
109	Guatemala	2.71	28.52
110	Dominican Republic	2.65	27.48
111	Venezuela, Bolivarian Rep.	2.51	25.09
112	Peru	2.49	24.88
113	Brazil	2.44	24.05
114	Bosnia and Herzegovina	2.36	22.60
115	Nicaragua	2.31	21.89
116	South Africa	2.25	20.82
117	Egypt	2.14	18.92
118	Paraguay	2.05	17.55

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

5.2.3 Availability of scientists and engineers

Average answer to the question: In your country, to what extent are scientists and engineers available? [1 = not at all; 7 = widely available] | 2014

Rank	Country	Value	Score
1	Finland	6.06	84.33
2	Qatar	5.61	76.88
3	Japan	5.57	76.13
4	United States of America	5.42	73.62
5	Malaysia	5.39	73.24
6	Greece	5.32	71.93
7	United Arab Emirates	5.25	70.82
8	Israel	5.21	70.20
9	Ireland	5.19	69.85
10	Canada	5.18	69.71
11	Singapore	5.06	67.59
12	Norway	5.02	67.06
13	Sri Lanka	5.02	67.01
14	Sweden	5.00	66.61
15	Germany	4.98	66.39
16	Spain	4.97	66.19
17	Australia	4.94	65.62
18	United Kingdom	4.93	65.44
19	France	4.91	65.13
20	Cyprus	4.91	65.12
21	Portugal	4.88	64.74
22	Netherlands	4.85	64.12
23	Switzerland	4.84	63.95
24	Iceland	4.79	63.21
25	Jordan	4.78	63.07
26	Italy	4.78	62.99
27	Lebanon	4.77	62.82
28	Ukraine	4.67	61.25
29	Costa Rica	4.66	60.99
30	Belgium	4.61	60.10
31	Chile	4.60	59.95
32	New Zealand	4.59	59.76
33	Indonesia	4.56	59.38
34	Denmark	4.56	59.35
35	China	4.47	57.90
36	Austria	4.47	57.79
37	Saudi Arabia	4.46	57.74
38	Zambia	4.42	56.99
39	Korea, Rep.	4.40	56.72
40	Bahrain	4.33	55.50
41	Iran	4.31	55.17
42	Pakistan	4.31	55.11
43	Egypt	4.30	55.01
44	Thailand	4.26	54.38
45	Tunisia	4.26	54.30
46	India	4.22	53.71
47	Turkey	4.21	53.57
48	Hungary	4.18	52.92
49	Luxembourg	4.17	52.90
50	Poland	4.17	52.82
51	Azerbaijan	4.17	52.79
52	Kenya	4.15	52.53
53	Morocco	4.14	52.34
54	Romania	4.13	52.23
55	Barbados	4.13	52.18
56	Madagascar	4.13	52.12
57	Armenia	4.11	51.87
58	Mongolia	4.10	51.65
59	Lithuania	4.09	51.45
60	Slovenia	4.07	51.17
61	Mexico	4.07	51.16
62	Russian Federation	4.06	51.06
63	Montenegro	4.03	50.55
64	Czech Republic	4.02	50.38
65	Philippines	4.01	50.13
66	Malta	4.01	50.10
67	Kazakhstan	3.98	49.74
68	Rwanda	3.97	49.51
69	Senegal	3.95	49.20
70	Estonia	3.95	49.11
71	Algeria	3.92	48.67
72	Viet Nam	3.92	48.66
73	Panama	3.90	48.33
74	Croatia	3.87	47.80
75	Mali	3.84	47.42
76	Slovakia	3.84	47.41
77	Ethiopia	3.82	46.93
78	Serbia	3.81	46.81
79	Bangladesh	3.80	46.61
80	Honduras	3.79	46.48
81	Kuwait	3.78	46.37
82	Macedonia, FYR	3.78	46.37
83	Colombia	3.77	46.21
84	Lesotho	3.77	46.11
85	Bulgaria	3.74	45.65
86	Uganda	3.68	44.67
87	Mauritius	3.68	44.67
88	Guatemala	3.67	44.58
89	Cameroon	3.65	44.13
90	Tanzania	3.64	43.94
91	Ghana	3.63	43.83
92	Jamaica	3.55	42.42
93	Burkina Faso	3.50	41.61
94	Argentina	3.50	41.60
95	Latvia	3.48	41.34
96	Zimbabwe	3.47	41.14
97	Uruguay	3.41	40.14
98	South Africa	3.40	39.99
99	Namibia	3.39	39.76
100	Oman	3.38	39.74
101	Botswana	3.36	39.41
102	Dominican Republic	3.34	39.03
103	Ecuador	3.34	38.94
104	Georgia	3.30	38.33
105	Brazil	3.25	37.57
106	Venezuela, Bolivarian Rep.	3.25	37.45
107	Peru	3.24	37.32
108	Albania	3.24	37.31
109	Bolivia, Plurinational St	3.22	36.97
110	Kyrgyzstan	3.21	36.91
111	El Salvador	3.13	35.56
112	Mozambique	3.12	35.42
113	Bosnia and Herzegovina	3.09	34.78
114	Cambodia	3.05	34.23
115	Bhutan	3.05	34.10
116	Moldova, Rep.	2.92	32.05
117	Nicaragua	2.79	29.84
118	Paraguay	2.56	25.98

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2014.

5.2.4 Skills gap as major constraint

Percentage of firms identifying an inadequately educated workforce as a major constraint (%) | 2016

Rank	Country	Value	Score
1	Montenegro (2013)	0.30	100.00
2	Azerbaijan (2013)	0.50	99.73
3	China (2012)	2.30	97.32
4	Namibia (2014)	3.10	96.25
5	Ethiopia (2015)	3.40	95.84
6	Indonesia (2015)	4.50	94.37
7	Estonia (2013)	5.00	93.70
7	Zimbabwe (2011)	5.00	93.70
9	Albania (2013)	6.40	91.82
9	Armenia (2013)	6.40	91.82
11	Korea, Rep. (2005)	6.80	91.29
12	Germany (2005)	6.90	91.15
13	Bosnia and Herzegovina (2013)	7.40	90.48
13	Croatia (2013)	7.40	90.48
13	Ukraine (2013)	7.40	90.48
16	Philippines (2015)	7.80	89.95
17	Slovenia (2013)	8.30	89.28
18	Greece (2005)	8.60	88.87
19	South Africa (2007)	8.70	88.74
20	Viet Nam (2015)	8.90	88.47
21	Senegal (2014)	9.20	88.07
22	India (2014)	9.40	87.80
23	Jordan (2013)	9.50	87.67
24	Georgia (2013)	9.90	87.13
25	Hungary (2013)	10.10	86.86
26	Turkey (2013)	10.40	86.46
27	Madagascar (2013)	10.50	86.33
28	Serbia (2013)	11.30	85.25
29	Egypt (2013)	11.70	84.72
30	Zambia (2013)	12.10	84.18
31	Israel (2013)	12.20	84.05
31	Mali (2010)	12.20	84.05
33	Portugal (2005)	12.40	83.78
34	Kazakhstan (2013)	13.10	82.84
35	Poland (2013)	13.60	82.17
36	Spain (2005)	13.80	81.90
36	Uganda (2013)	13.80	81.90
38	Macedonia, FYR (2013)	14.00	81.64
39	Bhutan (2015)	14.40	81.10
40	Bulgaria (2013)	15.30	79.89
40	Ghana (2013)	15.30	79.89
40	Lebanon (2013)	15.30	79.89
43	Ireland (2005)	15.60	79.49
44	Bangladesh (2013)	15.70	79.36
45	Sri Lanka (2011)	16.00	78.95
46	Lesotho (2009)	16.50	78.28
47	Sweden (2014)	17.30	77.21
48	Mozambique (2007)	18.80	75.20
49	Panama (2010)	18.90	75.07
50	Slovakia (2013)	19.20	74.66
51	Czech Republic (2013)	19.50	74.26
52	Jamaica (2010)	19.90	73.73
53	Malaysia (2015)	20.20	73.32
54	Mongolia (2013)	22.80	69.84
55	Nicaragua (2010)	24.00	68.23
56	Pakistan (2013)	24.20	67.96
57	Venezuela, Bolivarian Rep. (2010)	24.70	67.29
58	Russian Federation (2012)	25.40	66.35
59	Latvia (2013)	26.70	64.61
60	Cambodia	27.30	63.81
61	Honduras (2010)	27.70	63.27
62	Peru (2010)	28.40	62.33
62	Rwanda (2011)	28.40	62.33
64	Tunisia (2013)	29.10	61.39
65	Kenya (2013)	29.70	60.59
66	El Salvador (2010)	29.90	60.32
67	Uruguay (2010)	30.80	59.12
68	Mexico (2010)	30.90	58.98
69	Moldova, Rep. (2013)	31.20	58.58
70	Morocco (2013)	31.80	57.77
71	Botswana (2010)	32.20	57.24
72	Barbados (2010)	33.10	56.03
72	Guatemala (2010)	33.10	56.03
74	Kyrgyzstan (2013)	33.50	55.50
75	Ecuador (2010)	34.20	54.56
76	Dominican Republic (2010)	36.20	51.88
76	Romania (2013)	36.20	51.88
78	Bolivia, Plurinational St. (2010)	36.70	51.21
79	Algeria (2007)	36.80	51.07
80	Burkina Faso (2009)	37.50	50.13
81	Cameroon (2009)	37.80	49.73
82	Costa Rica (2010)	38.30	49.06
83	Thailand	38.80	48.39
84	Lithuania (2013)	39.90	46.92
85	Chile (2010)	40.70	45.84
86	Tanzania (2013)	40.80	45.71
87	Colombia (2010)	44.50	40.75
88	Mauritius (2009)	45.70	39.14
89	Paraguay (2010)	51.40	31.50
90	Argentina (2010)	56.60	24.53
91	Brazil (2009)	74.90	0.00
n/a	United Arab Emirates	n/a	n/a
n/a	Australia	n/a	n/a
n/a	Austria	n/a	n/a
n/a	Belgium	n/a	n/a
n/a	Bahrain	n/a	n/a
n/a	Canada	n/a	n/a
n/a	Switzerland	n/a	n/a
n/a	Cyprus	n/a	n/a
n/a	Denmark	n/a	n/a
n/a	Finland	n/a	n/a
n/a	France	n/a	n/a
n/a	United Kingdom	n/a	n/a
n/a	Iran	n/a	n/a
n/a	Iceland	n/a	n/a
n/a	Italy	n/a	n/a
n/a	Japan	n/a	n/a
n/a	Kuwait	n/a	n/a
n/a	Luxembourg	n/a	n/a
n/a	Malta	n/a	n/a
n/a	Netherlands	n/a	n/a
n/a	Norway	n/a	n/a
n/a	New Zealand	n/a	n/a
n/a	Oman	n/a	n/a
n/a	Qatar	n/a	n/a
n/a	Saudi Arabia	n/a	n/a
n/a	Singapore	n/a	n/a
n/a	United States of America	n/a	n/a

SOURCE: World Bank, Enterprise Surveys (www.enterprisesurveys.org)
Unless otherwise specified, the data used for computation were collected in 2016.

Pillar 6

Global Knowledge Skills

6.1.1 Workforce with tertiary education

Labour force with tertiary education (%) | 2014

Rank	Country	Value	Score
1	United States of America	61.90	100.00
2	Russian Federation (2013)	56.30	90.94
3	Canada	51.50	83.17
4	Armenia (2013)	50.30	81.23
5	Singapore (2013)	49.90	80.58
6	Luxembourg	47.80	77.18
7	Ukraine	45.80	73.95
8	Israel (2008)	45.10	72.82
9	Cyprus	43.20	69.74
10	Ireland	42.10	67.96
11	Norway	41.60	67.15
12	Belgium	41.50	66.99
13	Japan (2008)	41.40	66.83
14	Finland	40.50	65.37
15	United Kingdom	40.00	64.56
16	Estonia	39.70	64.08
17	Lithuania	39.50	63.75
18	Switzerland	37.60	60.68
19	Spain	37.20	60.03
20	Sweden	36.80	59.39
21	France	36.50	58.90
22	New Zealand (2008)	36.20	58.41
23	Korea, Rep. (2007)	35.00	56.47
24	Australia (2008)	33.80	54.53
25	Netherlands	33.60	54.21
26	Denmark	32.30	52.10
27	Iceland	32.10	51.78
27	Latvia	32.10	51.78
29	Austria	31.60	50.97
30	Georgia (2013)	31.00	50.00
30	Poland	31.00	50.00
32	Greece	30.80	49.68
32	Slovenia	30.80	49.68
34	Venezuela, Bolivarian Rep. (2012)	30.30	48.87
35	Kazakhstan (2013)	30.00	48.38
36	Bulgaria	29.60	47.73
37	Panama (2012)	28.60	46.12
38	Jordan (2012)	28.30	45.63
38	Mongolia (2013)	28.30	45.63
40	Germany	27.00	43.53
41	Azerbaijan (2013)	26.80	43.20
42	Colombia (2013)	26.50	42.72
43	Montenegro (2012)	25.50	41.10
44	Costa Rica (2013)	25.30	40.78
44	Hungary	25.30	40.78
44	Moldova, Rep. (2013)	25.30	40.78
47	Pakistan (2008)	25.10	40.45
48	Philippines (2012)	25.00	40.29
49	Croatia	24.20	39.00
49	Lebanon (2007)	24.20	39.00
51	Malta	24.10	38.83
52	Peru	23.60	38.03
53	Mexico (2011)	23.30	37.54
54	Portugal	23.10	37.22
55	Paraguay (2013)	22.50	36.25
56	Malaysia	22.30	35.92
57	Czech Republic	22.20	35.76
58	Uruguay (2013)	21.90	35.28
59	Dominican Republic (2013)	21.70	34.95
60	Serbia (2013)	21.40	34.47
61	Argentina	20.90	33.66
61	Slovakia	20.90	33.66
63	Ecuador (2013)	20.70	33.33
63	Macedonia, FYR	20.70	33.33
63	Saudi Arabia (2009)	20.70	33.33
66	Turkey	19.80	31.88
67	Chile (2011)	19.70	31.72
68	Tunisia (2011)	19.40	31.23
69	Italy	19.30	31.07
70	Kuwait (2011)	19.10	30.74
71	Iran (2008)	18.80	30.26
72	Egypt (2013)	18.70	30.10
73	Romania	18.30	29.45
74	Kyrgyzstan (2013)	18.20	29.29
75	Sri Lanka (2013)	17.70	28.48
76	South Africa (2013)	17.10	27.51
77	United Arab Emirates (2005)	16.60	26.70
78	Ethiopia (2012)	16.40	26.38
79	Albania (2013)	16.30	26.21
80	Botswana (2010)	15.90	25.57
81	Algeria (2011)	15.20	24.43
82	Bosnia and Herzegovina (2012)	14.50	23.30
82	Bolivia, Plurinational St. (2009)	14.50	23.30
84	Brazil (2013)	13.40	21.52
85	Nicaragua (2010)	12.90	20.71
86	Thailand (2013)	12.80	20.55
87	Mauritius (2007)	11.20	17.96
88	Bahrain (2012)	9.80	15.70
88	India (2010)	9.80	15.70
90	Morocco (2012)	9.20	14.72
91	Indonesia (2013)	8.50	13.59
92	Guatemala (2013)	7.30	11.65
93	Namibia (2012)	6.70	10.68
94	Honduras (2011)	6.10	9.71
95	Madagascar (2012)	5.20	8.25
96	Cambodia (2012)	2.80	4.37
97	Rwanda (2012)	2.70	4.21
98	Ghana (2010)	2.50	3.88
99	El Salvador (2013)	0.10	0.00
n/a	Burkina Faso	n/a	n/a
n/a	Bangladesh	n/a	n/a
n/a	Barbados	n/a	n/a
n/a	Bhutan	n/a	n/a
n/a	China	n/a	n/a
n/a	Cameroon	n/a	n/a
n/a	Jamaica	n/a	n/a
n/a	Kenya	n/a	n/a
n/a	Lesotho	n/a	n/a
n/a	Mali	n/a	n/a
n/a	Mozambique	n/a	n/a
n/a	Oman	n/a	n/a
n/a	Qatar	n/a	n/a
n/a	Senegal	n/a	n/a
n/a	Tanzania	n/a	n/a
n/a	Uganda	n/a	n/a
n/a	Viet Nam	n/a	n/a
n/a	Zambia	n/a	n/a
n/a	Zimbabwe	n/a	n/a

SOURCE: International Labour Organization, *Key Indicators of the Labour Market 2015*, 9th edition (www.ilo.org/kilm)
Unless otherwise specified, the data used for computation were collected in 2014.

6.1.2 Population with tertiary education

Population with tertiary education (%) | 2015

Rank	Country	Value	Score
1	Russian Federation (2010)	58.93	100
2	Canada (2011)	47.67	80.71
3	Armenia (2011)	43.39	73.37
4	Luxembourg (2014)	43.06	72.81
5	Singapore (2014)	42.44	71.74
6	Estonia (2014)	37.10	62.59
7	Israel (2014)	34.18	57.60
8	Moldova, Rep. (2014)	32.83	55.27
9	Korea, Rep. (2010)	31.78	53.47
10	United States of America (2014)	30.12	50.64
11	Japan (2010)	29.88	50.22
12	Australia (2014)	29.31	49.24
13	Spain (2014)	28.98	48.68
14	Iceland (2005)	27.55	46.23
15	New Zealand (2014)	26.40	44.27
16	Philippines (2013)	26.12	43.78
17	Cyprus (2014)	25.72	43.09
18	Kazakhstan (2007)	25.48	42.69
19	Azerbaijan (2014)	25.41	42.56
20	United Kingdom (2014)	25.07	41.98
21	Norway (2014)	25.02	41.90
22	Qatar (2014)	24.58	41.13
23	Bulgaria (2014)	24.06	40.26
24	Venezuela, Bolivarian Rep. (2011)	23.98	40.11
25	Finland (2013)	22.90	38.26
26	Denmark (2014)	22.68	37.89
27	Bolivia, Plurinational St. (2012)	21.55	35.95
28	Ireland (2011)	21.54	35.93
29	Mongolia (2010)	21.23	35.40
30	Costa Rica (2014)	20.97	34.95
31	Greece (2014)	20.62	34.36
32	Saudi Arabia (2013)	20.43	34.03
33	France (2014)	20.14	33.53
34	Sweden (2014)	20.13	33.51
35	Montenegro (2011)	19.53	32.48
36	Netherlands (2014)	19.45	32.35
37	Peru (2014)	19.23	31.98
38	Panama (2010)	18.88	31.37
39	Lithuania (2014)	18.30	30.38
40	Bahrain (2010)	18.26	30.32
41	Croatia (2011)	18.26	30.31
42	Iran (2013)	18.10	30.05
43	Belgium (2014)	18.06	29.97
44	United Arab Emirates (2005)	17.95	29.79
45	Latvia (2014)	17.93	29.75
46	Serbia (2014)	17.48	28.98
47	Switzerland (2014)	17.35	28.75
48	Chile (2013)	17.32	28.71
49	Oman (2010)	16.51	27.31
50	Colombia (2014)	16.40	27.13
51	Malaysia (2010)	16.37	27.07
52	Jordan (2010)	16.18	26.75
53	Austria (2014)	15.82	26.13
54	Lebanon (2007)	15.32	25.28
55	Thailand (2013)	15.05	24.82
56	Zambia (2010)	14.54	23.94
57	Sri Lanka (2009)	14.11	23.20
58	Germany (2014)	14.10	23.19
59	Turkey (2014)	13.94	22.92
60	South Africa (2014)	13.56	22.25
61	Kuwait (2013)	13.38	21.95
62	Jamaica (2011)	13.33	21.86
63	Mexico (2014)	13.18	21.61
64	Italy (2012)	12.75	20.87
65	Brazil (2013)	12.62	20.64
66	Hungary (2014)	12.40	20.27
67	Tunisia (2012)	12.35	20.18
68	Malta (2014)	12.25	20.01
69	Slovenia (2014)	11.94	19.48
70	Dominican Republic (2014)	11.79	19.22
71	Bosnia and Herzegovina (2014)	10.75	17.45
72	Ecuador (2014)	10.74	17.43
73	Uruguay (2014)	10.51	17.03
74	El Salvador (2013)	9.90	15.99
75	Honduras (2014)	9.75	15.72
76	China (2010)	8.43	13.48
77	Guatemala (2014)	8.17	13.02
78	Indonesia (2014)	8.09	12.89
79	Uganda (2012)	8.02	12.77
80	Algeria (2008)	7.97	12.68
81	Paraguay (2014)	7.22	11.40
82	Viet Nam (2009)	6.70	10.50
83	Pakistan (2013)	6.26	9.75
84	Mauritius (2011)	5.21	7.95
85	Poland (2014)	5.14	7.83
86	Romania (2014)	4.27	6.33
87	Czech Republic (2014)	4.22	6.25
88	Portugal (2014)	3.97	5.82
89	Bhutan (2012)	3.79	5.53
90	Georgia (2014)	3.46	4.95
91	Rwanda (2012)	3.29	4.66
92	Ghana (2010)	3.13	4.39
93	Zimbabwe (2012)	3.09	4.32
94	Slovakia (2014)	2.94	4.06
95	Senegal (2013)	2.33	3.01
96	Kyrgyzstan (2009)	2.18	2.75
97	Mali	2.07	2.58
98	Cambodia (2009)	2.04	2.52
99	Tanzania (2012)	1.93	2.33
100	Lesotho (2008)	1.89	2.26
101	Mozambique (2011)	1.69	1.91
102	Cameroon (2010)	1.44	1.50
103	Ethiopia (2011)	1.09	0.90
104	Albania (2012)	0.57	0.00
n/a	Argentina	n/a	n/a
n/a	Burkina Faso	n/a	n/a
n/a	Bangladesh	n/a	n/a
n/a	Barbados	n/a	n/a
n/a	Botswana	n/a	n/a
n/a	Egypt	n/a	n/a
n/a	India	n/a	n/a
n/a	Kenya	n/a	n/a
n/a	Morocco	n/a	n/a
n/a	Madagascar	n/a	n/a
n/a	Macedonia, FYR	n/a	n/a
n/a	Namibia	n/a	n/a
n/a	Nicaragua	n/a	n/a
n/a	Ukraine	n/a	n/a

SOURCE: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)
Unless otherwise specified, the data used for computation were collected in 2015.

6.1.3 Professionals

Professionals (%) | 2014

Rank	Country	Value	Score
1	Luxembourg (2011)	33.00	100.00
2	Sweden (2011)	25.20	76.36
3	Denmark (2011)	24.90	75.45
4	United Kingdom (2011)	23.80	72.12
5	Switzerland (2011)	22.90	69.39
5	Iceland (2011)	22.90	69.39
7	Netherlands (2011)	22.50	68.18
8	United States of America (2013)	22.20	67.27
9	Lithuania (2011)	22.10	66.97
9	Norway (2011)	22.10	66.97
11	Ireland (2011)	21.70	65.76
12	Finland (2011)	21.30	64.55
13	Belgium (2011)	20.40	61.82
14	Jamaica (2008)	20.10	60.91
15	Russian Federation (2013)	19.90	60.30
16	Estonia (2011)	19.50	59.09
16	Slovenia (2011)	19.50	59.09
18	Canada (2013)	19.00	57.58
19	Australia (2008)	18.10	54.85
20	Greece (2011)	17.70	53.64
21	Germany (2011)	17.30	52.42
21	Poland (2011)	17.30	52.42
23	Ukraine	17.10	51.82
24	Cyprus (2011)	17.00	51.52
25	New Zealand (2008)	16.80	50.91
26	France (2011)	16.70	50.61
27	Latvia (2011)	16.60	50.30
28	Spain (2011)	16.00	48.48
29	Hungary (2011)	15.80	47.88
29	Israel (2008)	15.80	47.88
31	Bulgaria (2011)	15.40	46.67
32	Malta (2011)	15.20	46.06
32	Montenegro (2012)	15.20	46.06
34	Armenia (2008)	15.10	45.76
34	Azerbaijan (2008)	15.10	45.76
36	Moldova, Rep. (2012)	14.70	44.55
37	Portugal (2011)	14.20	43.03
38	United Arab Emirates (2008)	14.10	42.73
38	Austria (2011)	14.10	42.73
40	Romania (2011)	14.00	42.42
41	Singapore (2011)	13.70	41.52
42	Croatia (2011)	13.40	40.61
43	Italy (2011)	13.20	40.00
44	Macedonia, FYR (2011)	12.90	39.09
45	Georgia (2007)	12.80	38.79
45	Kazakhstan (2008)	12.80	38.79
47	Czech Republic (2011)	12.70	38.48
47	Egypt (2013)	12.70	38.48
49	Serbia (2010)	11.80	35.76
50	Saudi Arabia (2013)	11.70	35.45
51	Slovakia (2011)	11.60	35.15
52	Mongolia (2008)	11.50	34.85
53	Barbados (2013)	11.40	34.55
54	Algeria (2013)	11.00	33.33
55	Bhutan (2013)	10.50	31.82
56	Costa Rica (2011)	10.30	31.21
56	Lebanon (2007)	10.30	31.21
58	Uruguay (2011)	10.20	30.91
59	Qatar (2013)	9.90	30.00
60	Panama (2011)	9.80	29.70
61	Albania (2009)	9.70	29.39
62	Kyrgyzstan (2006)	9.40	28.48
62	Korea, Rep. (2008)	9.40	28.48
64	Brazil (2013)	9.00	27.27
65	Kuwait (2005)	8.50	25.76
66	Ecuador (2012)	8.10	24.55
67	Iran (2008)	7.80	23.64
68	Peru (2013)	7.60	23.03
69	Paraguay	7.30	22.12
70	Bolivia, Plurinational St. (2009)	7.20	21.82
70	Dominican Republic (2013)	7.20	21.82
72	Namibia (2013)	7.10	21.52
72	Turkey (2010)	7.10	21.52
74	Botswana (2010)	6.80	20.61
74	Mexico (2008)	6.80	20.61
76	Ethiopia (2012)	6.60	20.00
77	Sri Lanka (2012)	6.40	19.39
78	Malaysia (2010)	6.30	19.09
79	South Africa (2012)	5.90	17.88
80	Bangladesh (2011)	5.70	17.27
80	China (2005)	5.70	17.27
82	Viet Nam (2012)	5.50	16.67
83	Indonesia (2013)	4.90	14.85
83	Philippines (2013)	4.90	14.85
85	Thailand (2011)	4.80	14.55
86	Argentina (2006)	4.00	12.12
87	El Salvador (2012)	3.90	11.82
88	India (2010)	3.80	11.52
89	Nicaragua (2006)	3.50	10.61
90	Ghana (2006)	2.80	8.48
91	Colombia (2010)	2.40	7.27
92	Uganda (2009)	2.30	6.97
93	Lesotho (2008)	2.00	6.06
93	Madagascar (2012)	2.00	6.06
93	Rwanda (2005)	2.00	6.06
96	Morocco (2011)	1.80	5.45
97	Cambodia (2008)	1.70	5.15
98	Pakistan (2008)	1.50	4.55
99	Burkina Faso (2006)	0.50	1.52
100	Tanzania (2007)	0.40	1.21
101	Mauritius (2011)	0.00	0.00
n/a	Bahrain	n/a	n/a
n/a	Bosnia and Herzegovina	n/a	n/a
n/a	Chile	n/a	n/a
n/a	Cameroon	n/a	n/a
n/a	Guatemala	n/a	n/a
n/a	Honduras	n/a	n/a
n/a	Jordan	n/a	n/a
n/a	Japan	n/a	n/a
n/a	Kenya	n/a	n/a
n/a	Mali	n/a	n/a
n/a	Mozambique	n/a	n/a
n/a	Oman	n/a	n/a
n/a	Senegal	n/a	n/a
n/a	Tunisia	n/a	n/a
n/a	Venezuela, Bolivarian Rep.	n/a	n/a
n/a	Zambia	n/a	n/a
n/a	Zimbabwe	n/a	n/a

SOURCE: International Labour Organization, *Key Indicators of the Labour Market 2015,* 9th edition (www.ilo.org/kilm)
Unless otherwise specified, the data used for computation were collected in 2014.

6.1.4 Researchers

Full-time equivalent researchers (per million population) | 2014

Rank	Country	Value	Score
1	Israel (2012)	8,282.00	100.00
2	Denmark (2013)	7,265.00	87.71
3	Finland (2013)	7,188.00	86.78
4	Iceland (2011)	7,035.00	84.93
5	Sweden (2013)	6,473.00	78.14
6	Korea, Rep. (2013)	6,457.00	77.95
7	Singapore (2012)	6,442.00	77.77
8	Norway (2013)	5,576.00	67.30
9	Japan (2013)	5,201.00	62.77
10	Luxembourg (2013)	4,800.00	57.93
11	Austria (2013)	4,704.00	56.77
12	Canada (2012)	4,490.00	54.18
13	Switzerland (2012)	4,481.00	54.07
14	Germany (2013)	4,472.00	53.96
15	Australia (2008)	4,335.00	52.31
16	Netherlands (2013)	4,303.00	51.92
17	Slovenia (2013)	4,217.00	50.88
18	France (2013)	4,153.00	50.11
19	Portugal (2013)	4,142.00	49.98
20	United Kingdom (2013)	4,055.00	48.92
21	United States of America (2012)	4,019.00	48.49
22	Belgium (2013)	4,003.00	48.30
23	New Zealand (2011)	3,701.00	44.65
24	Ireland (2012)	3,370.00	40.65
25	Estonia (2013)	3,339.00	40.27
26	Czech Republic (2013)	3,250.00	39.20
27	Russian Federation (2013)	3,073.00	37.06
28	Lithuania (2013)	2,887.00	34.81
29	Slovakia (2013)	2,718.00	32.77
30	Spain (2013)	2,653.00	31.98
31	Greece (2013)	2,628.00	31.68
32	Hungary (2013)	2,523.00	30.41
33	Malta (2013)	2,107.00	25.39
34	Italy (2013)	1,974.00	23.78
35	Poland (2013)	1,851.00	22.29
36	Latvia (2013)	1,802.00	21.70
37	Malaysia (2012)	1,794.00	21.60
38	Bulgaria (2013)	1,693.00	20.38
39	Croatia (2013)	1,529.00	18.40
40	Tunisia (2012)	1,393.00	16.76
41	Serbia (2013)	1,381.00	16.61
42	Costa Rica (2011)	1,327.00	15.96
43	Argentina (2012)	1,226.00	14.74
44	Turkey (2013)	1,169.00	14.05
45	Ukraine (2013)	1,165.00	14.00
46	China (2013)	1,089.00	13.09
47	Romania (2013)	945.00	11.35
48	Morocco (2011)	852.00	10.22
49	Cyprus (2013)	775.00	9.29
50	Iran (2010)	738.00	8.84
51	Kazakhstan (2013)	734.00	8.80
52	Brazil (2010)	698.00	8.36
53	Macedonia, FYR (2013)	676.00	8.10
54	Montenegro (2013)	647.00	7.75
55	Moldova, Rep. (2013)	644.00	7.71
56	Qatar (2012)	597.00	7.14
57	Georgia	585.00	7.00
58	Egypt (2013)	544.00	6.50
59	Thailand (2011)	543.00	6.49
60	Uruguay (2013)	529.00	6.32
61	South Africa (2012)	405.00	4.82
62	Chile (2012)	391.00	4.65
63	Mexico (2011)	383.00	4.56
64	Senegal (2010)	361.00	4.29
65	Venezuela, Bolivarian Rep. (2012)	291.00	3.44
66	Kenya (2010)	231.00	2.72
67	Bosnia and Herzegovina (2013)	217.00	2.55
68	Mauritius (2012)	181.00	2.11
69	Ecuador (2011)	180.00	2.10
70	Paraguay (2012)	169.00	1.97
71	Algeria (2005)	168.00	1.96
72	Pakistan (2013)	167.00	1.95
73	Bolivia, Plurinational St. (2010)	166.00	1.93
74	Botswana (2012)	165.00	1.92
75	Colombia (2012)	164.00	1.91
76	Albania (2008)	157.00	1.82
76	India (2010)	157.00	1.82
78	Kuwait (2012)	128.00	1.47
79	Oman (2013)	127.00	1.46
80	Panama (2011)	119.00	1.37
81	Sri Lanka (2010)	106.00	1.21
82	Indonesia (2009)	90.00	1.01
82	Zimbabwe (2012)	90.00	1.01
84	Philippines (2007)	78.00	0.87
85	Madagascar (2011)	51.00	0.54
86	Bahrain (2013)	50.00	0.53
87	Burkina Faso (2010)	47.00	0.50
88	Ethiopia (2013)	45.00	0.47
89	Zambia (2008)	41.00	0.42
90	Ghana (2010)	39.00	0.40
91	Mozambique (2010)	38.00	0.39
91	Uganda (2010)	38.00	0.39
93	Tanzania (2010)	35.00	0.35
94	Mali (2010)	29.00	0.28
95	Guatemala (2012)	27.00	0.25
96	Rwanda (2009)	12.00	0.07
97	Lesotho (2011)	6.00	0.00
n/a	United Arab Emirates	n/a	n/a
n/a	Armenia	n/a	n/a
n/a	Azerbaijan	n/a	n/a
n/a	Bangladesh	n/a	n/a
n/a	Barbados	n/a	n/a
n/a	Bhutan	n/a	n/a
n/a	Cameroon	n/a	n/a
n/a	Dominican Republic	n/a	n/a
n/a	Honduras	n/a	n/a
n/a	Jamaica	n/a	n/a
n/a	Jordan	n/a	n/a
n/a	Kyrgyzstan	n/a	n/a
n/a	Cambodia	n/a	n/a
n/a	Lebanon	n/a	n/a
n/a	Mongolia	n/a	n/a
n/a	Namibia	n/a	n/a
n/a	Nicaragua	n/a	n/a
n/a	Peru	n/a	n/a
n/a	Saudi Arabia	n/a	n/a
n/a	El Salvador	n/a	n/a
n/a	Viet Nam	n/a	n/a

SOURCE: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)
Unless otherwise specified, the data used for computation were collected in 2014.

6.1.5 Senior officials and managers

Legislators, senior officials, and managers (%) | 2014

Rank	Country	Value	Score
1	Singapore (2011)	17.80	100.00
2	Philippines (2013)	16.20	91.01
3	United States of America (2013)	15.80	88.76
4	Egypt (2013)	15.00	84.27
5	New Zealand (2008)	13.70	76.97
6	Pakistan (2008)	12.70	71.35
7	Bangladesh (2011)	12.50	70.22
8	Lebanon (2007)	11.90	66.85
9	Australia (2008)	11.10	62.36
10	United Kingdom (2011)	10.20	57.30
11	Latvia (2011)	10.00	56.18
12	Lithuania (2011)	9.10	51.12
13	Barbados (2013)	9.00	50.56
13	Estonia (2011)	9.00	50.56
13	Iceland (2011)	9.00	50.56
16	Malta (2011)	8.60	48.31
16	Russian Federation (2013)	8.60	48.31
18	Canada (2013)	8.40	47.19
19	Slovenia (2011)	8.30	46.63
19	Turkey (2010)	8.30	46.63
21	South Africa (2012)	8.10	45.51
22	Ukraine	8.00	44.94
23	Moldova, Rep. (2012)	7.90	44.38
24	Switzerland (2011)	7.80	43.82
24	Israel (2008)	7.80	43.82
26	United Arab Emirates (2008)	7.50	42.13
26	Ireland (2011)	7.50	42.13
26	Malaysia (2010)	7.50	42.13
29	France (2011)	7.40	41.57
30	Netherlands (2011)	7.30	41.01
31	Belgium (2011)	7.20	40.45
32	Norway (2011)	6.50	36.52
33	Bulgaria (2011)	6.40	35.96
33	Kazakhstan (2008)	6.40	35.96
35	Portugal (2011)	6.20	34.83
35	Uruguay (2011)	6.20	34.83
37	Poland (2011)	6.10	34.27
38	Colombia (2010)	6.00	33.71
39	Macedonia, FYR (2011)	5.80	32.58
39	Panama (2011)	5.80	32.58
41	Hungary (2011)	5.70	32.02
42	India (2010)	5.60	31.46
43	Sweden (2011)	5.50	30.90
44	Montenegro (2012)	5.40	30.34
45	Slovakia (2011)	5.30	29.78
46	Finland (2011)	5.20	29.21
47	Brazil (2013)	5.10	28.65
47	Serbia (2010)	5.10	28.65
49	Austria (2011)	5.00	28.09
49	Spain (2011)	5.00	28.09
51	Germany (2011)	4.90	27.53
52	Czech Republic (2011)	4.70	26.40
53	Armenia (2008)	4.50	25.28
53	Paraguay	4.50	25.28
55	Albania (2009)	4.30	24.16
55	Croatia (2011)	4.30	24.16
57	Greece (2011)	4.20	23.60
57	Luxembourg (2011)	4.20	23.60
57	Mongolia (2008)	4.20	23.60
60	Cyprus (2011)	4.10	23.03
61	Italy (2011)	3.90	21.91
62	Georgia (2007)	3.60	20.22
63	Botswana (2010)	3.40	19.10
64	Saudi Arabia (2013)	3.30	18.54
65	Dominican Republic (2013)	3.00	16.85
66	Namibia (2013)	2.90	16.29
67	Costa Rica (2011)	2.80	15.73
67	Ethiopia (2012)	2.80	15.73
69	Denmark (2011)	2.70	15.17
69	Qatar (2013)	2.70	15.17
71	Nicaragua (2006)	2.60	14.61
71	Thailand (2011)	2.60	14.61
73	Algeria (2013)	2.40	13.48
73	Iran (2008)	2.40	13.48
75	Kyrgyzstan (2006)	2.30	12.92
75	Korea, Rep. (2008)	2.30	12.92
75	Lesotho (2008)	2.30	12.92
78	Romania (2011)	2.10	11.80
79	Kuwait (2005)	2.00	11.24
79	Mexico (2008)	2.00	11.24
81	Bhutan (2013)	1.90	10.67
82	Sri Lanka (2012)	1.80	10.11
83	China (2005)	1.70	9.55
83	Indonesia (2013)	1.70	9.55
85	El Salvador (2012)	1.30	7.30
86	Azerbaijan (2008)	1.20	6.74
86	Ecuador (2012)	1.20	6.74
88	Viet Nam (2012)	1.00	5.62
89	Bolivia, Plurinational St. (2009)	0.90	5.06
90	Morocco (2011)	0.70	3.93
91	Cambodia (2008)	0.60	3.37
92	Madagascar (2012)	0.50	2.81
92	Peru (2013)	0.50	2.81
94	Ghana (2006)	0.40	2.25
95	Tanzania (2007)	0.30	1.69
96	Argentina (2006)	0.20	1.12
97	Rwanda (2005)	0.10	0.56
98	Burkina Faso (2006)	0.00	0.00
n/a	Bahrain	n/a	n/a
n/a	Bosnia and Herzegovina	n/a	n/a
n/a	Chile	n/a	n/a
n/a	Cameroon	n/a	n/a
n/a	Guatemala	n/a	n/a
n/a	Honduras	n/a	n/a
n/a	Jamaica	n/a	n/a
n/a	Jordan	n/a	n/a
n/a	Japan	n/a	n/a
n/a	Kenya	n/a	n/a
n/a	Mali	n/a	n/a
n/a	Mozambique	n/a	n/a
n/a	Mauritius	n/a	n/a
n/a	Oman	n/a	n/a
n/a	Senegal	n/a	n/a
n/a	Tunisia	n/a	n/a
n/a	Uganda	n/a	n/a
n/a	Venezuela, Bolivarian Rep.	n/a	n/a
n/a	Zambia	n/a	n/a
n/a	Zimbabwe	n/a	n/a

SOURCE: International Labour Organization, *Key Indicators of the Labour Market 2015,* 9th edition (www.ilo.org/kilm)
Unless otherwise specified, the data used for computation were collected in 2014.

6.1.6 Quality of scientific institutions

Average answer to the question: In your country, how would you assess the quality of scientific research institutions? [1 = extremely poor, among the worst in the world; 7 = extremely good, among the best in the world] | 2015

Rank	Country	Value	Score
1	Switzerland	6.44	90.74
2	United Kingdom	6.26	87.68
3	Israel	6.23	87.24
4	United States of America	6.10	84.97
5	Belgium	6.00	83.33
6	Netherlands	5.97	82.90
7	Japan	5.83	80.46
8	Australia	5.82	80.26
9	Germany	5.78	79.67
10	Finland	5.76	79.30
11	Sweden	5.72	78.64
12	Singapore	5.65	77.49
13	France	5.64	77.30
14	Qatar	5.61	76.89
15	Ireland	5.54	75.70
16	Denmark	5.51	75.12
17	Norway	5.40	73.26
18	Canada	5.39	73.17
19	New Zealand	5.38	72.94
20	Malaysia	5.34	72.30
21	Portugal	5.24	70.74
22	Estonia	5.16	69.26
23	Iceland	5.09	68.25
24	Luxembourg	5.09	68.20
25	Austria	5.08	67.97
26	Korea, Rep.	4.83	63.85
27	Hungary	4.83	63.84
28	United Arab Emirates (2014)	4.80	63.33
29	Slovenia	4.79	63.16
30	Lithuania	4.72	62.00
31	South Africa	4.67	61.21
32	Czech Republic	4.67	61.13
33	Italy	4.65	60.85
34	Costa Rica	4.56	59.31
35	Spain	4.45	57.49
36	Argentina	4.37	56.14
37	Sri Lanka	4.27	54.58
38	Senegal	4.26	54.40
39	Indonesia	4.26	54.25
40	China	4.24	54.01
41	Ukraine	4.20	53.41
42	Kenya	4.19	53.14
43	India	4.12	52.03
44	Cyprus	4.12	51.99
45	Mexico	4.10	51.75
46	Chile	4.07	51.21
47	Saudi Arabia	4.07	51.18
48	Latvia	4.06	51.01
49	Jamaica	4.06	50.98
50	Croatia	4.01	50.21
51	Thailand	4.00	50.08
52	Barbados	3.99	49.84
53	Panama	3.98	49.63
54	Iran	3.97	49.44
55	Jordan	3.96	49.33
56	Russian Federation (2014)	3.96	49.30
57	Macedonia, FYR	3.95	49.11
58	Malta	3.94	49.07
59	Uruguay	3.93	48.82
60	Slovakia	3.93	48.76
61	Poland	3.91	48.46
62	Lesotho	3.87	47.78
63	Montenegro	3.81	46.77
64	Greece	3.77	46.14
65	Serbia	3.76	46.05
66	Rwanda	3.76	45.96
67	Philippines	3.73	45.45
68	Romania	3.72	45.33
69	Bulgaria	3.70	44.96
70	Colombia	3.68	44.66
71	Mali	3.67	44.45
72	Ghana	3.62	43.69
73	Ethiopia	3.59	43.09
74	Brazil	3.58	42.97
75	Kazakhstan	3.56	42.72
76	Turkey	3.55	42.58
77	Uganda	3.51	41.82
78	Zambia	3.50	41.74
79	Tanzania	3.47	41.21
80	Bahrain	3.46	40.97
81	Namibia	3.46	40.92
82	Azerbaijan (2014)	3.43	40.48
83	Cameroon	3.41	40.17
84	Ecuador	3.39	39.91
85	Mauritius	3.39	39.87
86	Burkina Faso	3.39	39.79
87	Honduras	3.39	39.77
88	Viet Nam	3.34	38.96
89	Kuwait	3.29	38.15
90	Lebanon	3.29	38.14
91	Botswana	3.29	38.09
92	Guatemala	3.28	38.01
93	Madagascar	3.28	37.93
94	Morocco	3.23	37.20
95	Pakistan	3.21	36.77
96	Armenia	3.16	35.93
97	Bosnia and Herzegovina	3.12	35.26
98	El Salvador	3.09	34.80
99	Mongolia	3.04	33.98
100	Mozambique	3.02	33.72
101	Tunisia	2.99	33.20
102	Algeria	2.99	33.10
103	Venezuela, Bolivarian Rep.	2.97	32.79
104	Zimbabwe	2.97	32.78
105	Oman	2.94	32.29
106	Peru	2.91	31.88
107	Dominican Republic	2.89	31.57
108	Georgia	2.85	30.75
109	Bolivia, Plurinational St.	2.84	30.70
110	Cambodia	2.82	30.29
111	Bangladesh	2.75	29.12
112	Moldova, Rep.	2.73	28.83
113	Bhutan	2.73	28.75
114	Kyrgyzstan	2.68	28.07
115	Egypt	2.60	26.69
116	Nicaragua	2.34	22.26
117	Albania	2.28	21.35
118	Paraguay	2.19	19.79

SOURCE: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)
Unless otherwise specified, the data used for computation were collected in 2015.

6.1.7 Scientific journal articles

Number of scientific and technical journal articles (per million PPP$ GDP) | 2013

Rank	Country	Value	Score
1	Slovenia	55.25	100
2	Serbia	50.88	92.06
3	Denmark	48.41	87.56
4	Croatia	45.92	83.03
5	Portugal	45.84	82.87
6	Australia	45.31	81.93
7	Finland	44.99	81.34
8	Sweden	44.37	80.21
9	Czech Republic	43.88	79.32
10	New Zealand	43.62	78.84
11	Switzerland	43.53	78.68
12	Israel	41.44	74.87
13	United Kingdom	38.75	69.98
14	Greece	38.28	69.13
15	Netherlands	37.57	67.83
16	Canada	37.01	66.81
17	Estonia	36.11	65.18
18	Korea, Rep.	35.79	64.60
19	Spain	34.76	62.71
20	Belgium	34.03	61.39
21	Tunisia	33.83	61.02
22	Iceland	32.91	59.35
23	Slovakia	31.10	56.06
24	Ireland	30.89	55.67
25	Poland	30.74	55.40
26	Italy	30.73	55.39
27	Austria	29.65	53.42
28	Cyprus	29.58	53.30
29	Norway	28.74	51.77
30	Romania	28.27	50.91
31	France	28.03	50.47
32	Germany	27.82	50.09
33	Lithuania	26.62	47.91
34	Hungary	25.88	46.56
35	Iran, Islamic Rep.	25.74	46.29
36	Malaysia	24.73	44.46
37	United States	24.60	44.22
38	Latvia	24.59	44.21
39	Singapore	24.38	43.82
40	China	24.24	43.58
41	Japan	22.10	39.68
42	Bulgaria	21.58	38.72
43	Turkey	20.89	37.48
44	Armenia	20.86	37.42
45	Jordan	18.85	33.77
46	Ukraine	18.25	32.67
47	Malta	16.03	28.63
48	Montenegro	15.08	26.89
49	Brazil	15.06	26.86
50	Macedonia, FYR	14.61	26.05
51	South Africa	14.08	25.07
52	India	13.75	24.49
53	Chile	13.57	24.16
54	Luxembourg	13.12	23.34
55	Georgia	13.08	23.27
56	Lebanon	13.06	23.23
57	Moldova	11.12	19.70
58	Russian Federation	10.98	19.44
59	Bosnia and Herzegovina	10.33	18.25
60	Egypt	10.07	17.78
61	Morocco	10.06	17.75
62	Pakistan	9.24	16.26
63	Argentina	9.16	16.12
64	Thailand	8.26	14.49
65	Senegal	8.24	14.45
66	Uruguay	8.24	14.45
67	Cameroon	7.90	13.84
68	Colombia	7.36	12.85
69	Uganda	7.12	12.41
70	Zimbabwe	7.10	12.38
71	Algeria	6.91	12.03
72	Kenya	6.83	11.88
73	Mexico	6.53	11.33
74	Jamaica	6.46	11.21
75	Ethiopia	6.00	10.37
76	Burkina Faso	5.77	9.96
77	Ghana	5.44	9.35
78	Albania	5.43	9.33
79	Saudi Arabia	4.99	8.53
80	Barbados	4.80	8.19
81	Mongolia	4.62	7.87
82	Botswana	4.42	7.50
83	Rwanda	4.33	7.34
84	Bangladesh	4.24	7.16
85	Mauritius	4.22	7.13
86	Oman	4.10	6.91
87	Costa Rica	3.88	6.52
88	Viet Nam	3.86	6.48
89	Bahrain	3.38	5.60
90	Sri Lanka	3.22	5.32
91	Madagascar	3.14	5.17
92	Tanzania	3.12	5.14
93	Bhutan	3.09	5.08
94	Namibia	3.07	5.04
95	Kuwait	3.02	4.96
96	Azerbaijan	2.92	4.77
97	United Arab Emirates	2.88	4.69
98	Kyrgyzstan	2.73	4.43
99	Qatar	2.63	4.23
100	Mali	2.23	3.51
101	Kazakhstan	2.20	3.46
102	Venezuela	2.15	3.36
103	Mozambique	2.12	3.32
104	Panama	2.00	3.10
105	Zambia	1.93	2.97
106	Peru	1.79	2.72
107	Cambodia	1.69	2.53
108	Ecuador	1.46	2.11
109	Philippines	1.42	2.04
110	Lesotho	1.38	1.97
111	Bolivia	1.29	1.81
112	Indonesia	1.16	1.57
113	Paraguay	1.04	1.35
114	Nicaragua	0.89	1.08
115	Guatemala	0.69	0.71
116	El Salvador	0.67	0.67
117	Honduras	0.49	0.34
118	Dominican Republic	0.30	0.00

SOURCE: World Bank, World Development Indicators based on National Science Foundation, Science and Engineering Indicators, 2013; GDP data come from the International Monetary Fund World Economic Outlook database, 2013

Unless otherwise specified, the data used for computation were collected in 2013.

6.2.1 Innovation output

Innovation output sub-index | 2015

Rank	Country	Value	Score
1	Switzerland	68.60	100.00
2	Luxembourg	59.00	82.76
3	Netherlands	58.90	82.59
4	Sweden	57.80	80.61
5	United Kingdom	57.70	80.43
6	Iceland	56.60	78.46
7	Ireland	55.40	76.30
8	Germany	53.10	72.17
9	United States of America	52.90	71.81
10	Finland	52.00	70.20
11	Korea, Rep.	50.10	66.79
12	Denmark	49.50	65.71
13	Malta	49.20	65.17
14	Estonia	48.80	64.45
15	New Zealand	48.70	64.27
16	Israel	48.60	64.09
17	Czech Republic	48.50	63.91
18	Austria	47.20	61.58
19	China	46.60	60.50
19	Singapore	46.60	60.50
21	Canada	46.40	60.14
22	France	45.90	59.25
23	Australia	45.60	58.71
24	Norway	45.40	58.35
25	Japan	44.10	56.01
26	Slovenia	43.80	55.48
27	Belgium	43.20	54.40
28	Spain	41.10	50.63
29	Latvia	40.60	49.73
30	Moldova, Rep.	40.10	48.83
31	Italy	39.40	47.58
31	Portugal	39.40	47.58
33	Malaysia	39.20	47.22
34	Bulgaria	38.20	45.42
35	Barbados	38.00	45.06
36	Hungary	37.70	44.52
37	Slovakia	37.00	43.27
38	Viet Nam	36.60	42.55
39	Montenegro	36.50	42.37
40	Croatia	35.80	41.11
41	Cyprus	34.70	39.14
41	Lithuania	34.70	39.14
43	Costa Rica	34.00	37.88
43	Saudi Arabia	34.00	37.88
45	Turkey	33.90	37.70
45	Ukraine	33.90	37.70
47	Chile	33.50	36.98
48	Russian Federation	33.30	36.62
49	Thailand	33.00	36.09
50	Armenia	32.80	35.73
51	Romania	32.50	35.19
52	Mexico	32.20	34.65
52	Panama	32.20	34.65
54	Macedonia, FYR	32.10	34.47
55	Poland	31.90	34.11
56	Greece	31.80	33.93
57	Serbia	31.20	32.85
58	Mauritius	31.00	32.50
59	South Africa	29.70	30.16
60	Qatar	29.60	29.98
61	Argentina	29.40	29.62
62	Bahrain	29.10	29.08
63	Uruguay	28.40	27.83
64	Jordan	28.30	27.65
65	Oman	28.20	27.47
66	India	28.00	27.11
66	Kuwait	28.00	27.11
68	Tunisia	27.90	26.93
69	Senegal	27.80	26.75
70	Mongolia	27.60	26.39
71	Brazil	27.50	26.21
72	Colombia	27.40	26.03
73	Lebanon	27.10	25.49
74	Philippines	26.90	25.13
75	Kenya	26.60	24.60
75	Sri Lanka	26.60	24.60
77	Mali	26.40	24.24
78	Peru	26.20	23.88
78	Paraguay	26.20	23.88
80	Georgia	25.80	23.16
80	Indonesia	25.80	23.16
80	Morocco	25.80	23.16
83	Cameroon	25.40	22.44
84	Bolivia, Plurinational St.	24.70	21.18
84	Cambodia	24.70	21.18
86	Tanzania	23.60	19.21
87	Egypt	23.40	18.85
88	United Arab Emirates	23.30	18.67
88	Dominican Republic	23.30	18.67
88	Mozambique	23.30	18.67
91	Burkina Faso	23.20	18.49
92	Guatemala	23.10	18.31
93	Ghana	22.90	17.95
94	Azerbaijan	22.60	17.41
95	El Salvador	22.40	17.06
96	Iran	22.00	16.34
97	Kazakhstan	21.50	15.44
98	Botswana	21.40	15.26
99	Jamaica	21.00	14.54
100	Albania	20.30	13.29
100	Ethiopia	20.30	13.29
102	Uganda	20.10	12.93
103	Honduras	20.00	12.75
103	Zambia	20.00	12.75
105	Pakistan	19.90	12.57
106	Kyrgyzstan	19.40	11.67
107	Namibia	19.10	11.13
108	Venezuela, Bolivarian Rep.	18.40	9.87
108	Zimbabwe	18.40	9.87
110	Bosnia and Herzegovina	18.20	9.52
110	Madagascar	18.20	9.52
112	Ecuador	18.10	9.34
113	Lesotho	18.00	9.16
114	Bangladesh	17.90	8.98
114	Rwanda	17.90	8.98
116	Algeria	16.70	6.82
117	Nicaragua	15.00	3.77
118	Bhutan	12.90	0.00

SOURCE: INSEAD, Cornell University and World Intellectual Property Organization, *The Global Innovation Index 2015* (https://www.globalinnovationindex.org/userfiles/file/reportpdf/GII-2015-v5.pdf)

Unless otherwise specified, the data used for computation were collected in 2015.

6.2.2 High-value exports

High technology manufactures (%) | 2014

Rank	Country	Value	Score
1	Costa Rica	0.80	100.00
2	Philippines	0.58	71.63
3	Singapore	0.55	68.38
4	Malta	0.55	68.09
5	Malaysia	0.52	65.17
6	Cyprus	0.47	58.60
7	Israel	0.45	56.44
8	Switzerland	0.40	49.37
9	Ireland	0.39	48.46
10	China	0.34	42.21
11	Korea, Rep.	0.33	40.91
12	Kazakhstan	0.33	40.63
13	Viet Nam	0.32	40.14
14	Netherlands	0.32	40.10
15	France	0.31	38.97
16	Denmark	0.31	37.90
17	Australia	0.31	37.77
18	Mexico	0.28	35.19
19	United States of America	0.28	34.53
20	Estonia	0.28	34.45
21	Hungary	0.28	34.30
22	United Kingdom	0.27	33.99
23	Uganda	0.27	33.14
24	Latvia	0.26	32.17
25	Thailand	0.26	31.71
26	Sweden	0.24	29.18
27	Slovenia	0.24	29.04
28	Iceland	0.23	28.92
29	Burkina Faso	0.23	28.79
30	Slovakia	0.23	28.66
31	Norway	0.23	28.39
32	Germany	0.23	28.27
33	Czech Republic	0.23	28.11
34	Mauritius	0.23	27.92
35	Belgium	0.22	27.70
36	Greece	0.22	27.51
37	Barbados	0.22	27.24
38	Japan	0.22	27.07
39	Austria	0.21	26.10
40	Panama	0.20	25.22
41	Rwanda	0.20	24.56
42	Canada	0.19	22.75
43	Tunisia	0.17	21.30
44	Croatia	0.17	21.12
45	Montenegro	0.17	20.91
46	Finland	0.17	20.77
47	Poland	0.17	20.58
48	Jordan	0.17	20.46
49	Bulgaria	0.17	20.39
50	New Zealand	0.16	19.41
51	India	0.16	19.30
52	United Arab Emirates	0.16	18.98
53	Mongolia	0.15	18.95
54	Namibia	0.15	18.55
55	Spain	0.15	18.44
56	Lebanon	0.14	17.59
57	Kyrgyzstan	0.14	16.80
58	Italy	0.13	16.28
59	Brazil	0.13	15.81
60	Ethiopia	0.13	15.69
61	Jamaica	0.13	15.59
62	Indonesia	0.13	15.38
63	Lithuania	0.12	15.12
64	Russian Federation	0.12	14.91
65	Botswana	0.12	14.31
66	Romania	0.12	14.15
67	Ecuador	0.11	13.00
68	Luxembourg	0.10	12.52
69	Colombia	0.10	11.63
70	Serbia	0.10	11.53
71	Portugal	0.09	11.27
72	Azerbaijan	0.09	10.99
73	South Africa	0.09	10.60
74	Egypt	0.09	10.57
75	Mozambique	0.09	10.46
76	Morocco	0.09	10.41
77	Uruguay	0.09	10.31
78	Paraguay	0.09	10.28
79	Kenya	0.09	10.26
80	Dominican Republic	0.08	10.11
81	Armenia	0.08	10.10
82	Cameroon	0.08	10.04
83	Georgia	0.08	9.92
84	Moldova, Rep.	0.08	9.83
85	El Salvador	0.08	9.75
86	Ukraine	0.08	9.48
87	Tanzania	0.07	8.79
88	Senegal	0.07	8.74
89	Guatemala	0.07	8.37
90	Chile	0.07	8.35
91	Argentina	0.07	8.10
92	Zimbabwe	0.07	8.07
93	Ghana	0.07	7.80
94	Bahrain	0.06	7.67
95	Mali	0.06	6.75
96	Bosnia and Herzegovina	0.06	6.62
97	Lesotho	0.06	6.47
98	Turkey	0.05	6.16
99	Madagascar	0.04	4.59
100	Macedonia, FYR	0.04	4.25
101	Peru	0.04	4.07
102	Albania	0.03	3.64
103	Sri Lanka	0.03	3.62
104	Cambodia	0.03	3.01
105	Bolivia, Plurinational St.	0.03	2.76
106	Oman	0.02	2.36
107	Kuwait	0.02	2.32
108	Iran	0.02	2.16
109	Zambia	0.02	2.11
110	Pakistan	0.02	1.80
111	Saudi Arabia	0.02	1.66
112	Honduras	0.01	0.84
113	Qatar	0.01	0.78
114	Bhutan	0.01	0.56
115	Algeria	0.01	0.44
116	Nicaragua	0.01	0.26
117	Bangladesh	0.01	0.26
118	Venezuela, Bolivarian Rep.	0.00	0.00

SOURCE: World Bank, World Integrated Trade Solution (http://wits.worldbank.org/). The classification of exports is based on Lall, S. (2000)
Unless otherwise specified, the data used for computation were collected in 2014.

6.2.3 New product entrepreneurial activity

New product entrepreneurial activity (%) | 2015

Rank	Country	Value	Score
1	Chile	88.74	100.00
2	Turkey (2013)	77.02	85.02
3	China	71.89	78.46
4	India	70.41	76.56
5	Guatemala	68.93	74.67
6	Namibia (2013)	68.59	74.24
7	Bolivia, Plurinational St. (2014)	67.90	73.35
8	Italy	66.20	71.18
9	Luxembourg	65.14	69.82
10	Korea, Rep.	61.13	64.70
11	Poland	60.52	63.92
12	Colombia	59.98	63.22
13	Denmark (2014)	57.24	59.72
14	Canada	57.22	59.70
15	United Arab Emirates (2011)	56.98	59.39
16	Belgium	56.04	58.18
17	Ireland	55.40	57.36
18	Morocco	55.05	56.92
19	Israel	54.84	56.66
20	United Kingdom	54.26	55.91
21	Philippines	53.59	55.06
22	Tunisia	52.96	54.25
23	Switzerland	52.93	54.21
24	Estonia	52.85	54.11
25	Czech Republic (2013)	52.10	53.15
26	South Africa	51.99	53.00
27	France (2014)	51.47	52.34
28	Uruguay	51.20	51.99
29	Iceland (2010)	49.85	50.27
30	Lebanon	49.33	49.60
31	Lithuania (2014)	49.13	49.35
32	Germany	48.92	49.08
33	Singapore (2014)	48.76	48.88
34	Qatar (2014)	48.11	48.05
35	Slovakia	47.67	47.48
36	Slovenia	47.64	47.45
37	Japan (2014)	47.40	47.14
38	Austria (2014)	47.14	46.80
39	United States of America	47.09	46.74
40	Pakistan (2012)	46.87	46.46
41	Panama	45.70	44.97
42	Sweden	45.13	44.24
43	Viet Nam	45.05	44.14
44	Australia	44.76	43.76
45	Jordan (2009)	44.58	43.53
46	Indonesia	44.45	43.37
47	Saudi Arabia (2010)	44.43	43.34
48	Romania	44.29	43.16
49	Egypt	42.88	41.36
50	Serbia (2009)	42.52	40.90
51	Ecuador	42.44	40.79
52	Finland	42.34	40.67
53	Netherlands	41.75	39.91
54	Costa Rica (2014)	41.20	39.21
55	Thailand	41.13	39.12
56	Latvia	40.60	38.44
57	Greece	39.36	36.86
58	Argentina	39.33	36.81
59	Dominican Republic (2009)	38.69	36.00
60	New Zealand (2005)	37.86	34.94
61	Peru	37.06	33.91
62	Hungary	36.11	32.69
63	Macedonia, FYR	35.41	31.80
64	Montenegro (2010)	34.63	30.81
65	Spain	34.44	30.56
66	Portugal	34.37	30.48
67	Algeria (2013)	31.97	27.41
68	Cameroon	31.58	26.90
69	Botswana	30.94	26.09
70	Mexico	30.84	25.96
71	Russian Federation (2014)	30.74	25.83
72	Venezuela, Bolivarian Rep. (2011)	29.69	24.49
73	Iran	29.16	23.81
74	Georgia (2014)	28.95	23.54
75	Kazakhstan	28.64	23.15
76	Brazil	28.39	22.83
77	Croatia	28.17	22.54
78	Burkina Faso	26.03	19.81
79	Bosnia and Herzegovina (2014)	24.45	17.79
80	Ethiopia (2012)	23.37	16.41
81	Ghana (2013)	21.81	14.41
82	Barbados	21.73	14.31
83	Norway	19.76	11.80
84	Zambia (2013)	19.35	11.27
85	Jamaica (2014)	18.63	10.35
86	Malaysia	17.00	8.26
87	Uganda (2014)	14.85	5.51
88	Bulgaria	14.45	5.01
89	Senegal	12.48	2.48
90	El Salvador (2014)	10.57	0.04
91	Bangladesh (2011)	10.54	0.00
n/a	Albania	n/a	n/a
n/a	Armenia	n/a	n/a
n/a	Azerbaijan	n/a	n/a
n/a	Bahrain	n/a	n/a
n/a	Bhutan	n/a	n/a
n/a	Cyprus	n/a	n/a
n/a	Honduras	n/a	n/a
n/a	Kenya	n/a	n/a
n/a	Kyrgyzstan	n/a	n/a
n/a	Cambodia	n/a	n/a
n/a	Kuwait	n/a	n/a
n/a	Sri Lanka	n/a	n/a
n/a	Lesotho	n/a	n/a
n/a	Moldova, Rep.	n/a	n/a
n/a	Madagascar	n/a	n/a
n/a	Mali	n/a	n/a
n/a	Malta	n/a	n/a
n/a	Mongolia	n/a	n/a
n/a	Mozambique	n/a	n/a
n/a	Mauritius	n/a	n/a
n/a	Nicaragua	n/a	n/a
n/a	Oman	n/a	n/a
n/a	Paraguay	n/a	n/a
n/a	Rwanda	n/a	n/a
n/a	Tanzania	n/a	n/a
n/a	Ukraine	n/a	n/a
n/a	Zimbabwe	n/a	n/a

SOURCE: Global Entrepreneurship Research Association, Global Entrepreneurship Monitor database (www.gemconsortium.org/data)
Unless otherwise specified, the data used for computation were collected in 2015.

6.2.4 New business density

New corporate registrations (per 1,000 working-age population) | 2014

Rank	Country	Value	Score
1	Malta	17.26	100.00
2	New Zealand	16.63	96.34
3	Estonia	16.05	92.98
4	Australia	14.91	86.36
5	Panama (2012)	14.10	81.66
6	Cyprus	13.70	79.34
7	Botswana	13.11	75.91
8	United Kingdom (2012)	12.90	74.70
9	Latvia	10.61	61.40
10	Singapore	9.51	55.02
11	Iceland	9.48	54.85
12	Bulgaria	8.86	51.25
13	Chile	8.03	46.43
14	Norway	7.72	44.63
15	Sweden	6.87	39.70
16	Montenegro	6.85	39.58
17	Mongolia	6.31	36.45
18	Luxembourg (2012)	6.10	35.23
19	Ireland	5.78	33.37
20	Georgia	5.65	32.62
21	Netherlands	5.34	30.82
22	Mauritius	5.14	29.66
23	Croatia	4.63	26.70
24	Portugal	4.62	26.64
25	Slovenia	4.44	25.59
26	Denmark	4.36	25.13
27	Russian Federation	4.20	24.20
28	Lithuania	4.19	24.14
29	Romania	4.07	23.45
30	Macedonia, FYR	3.70	21.30
31	Hungary	3.66	21.07
32	Finland	3.43	19.73
33	Czech Republic	3.42	19.67
34	Israel	3.11	17.88
35	Slovakia	3.10	17.82
36	Spain	2.97	17.06
37	Brazil	2.88	16.54
38	Switzerland (2012)	2.53	14.51
39	Uruguay (2012)	2.49	14.28
40	Peru	2.44	13.99
41	Malaysia	2.37	13.58
42	Italy	2.32	13.29
43	Korea, Rep.	2.30	13.17
44	France	2.26	12.94
45	Belgium (2013)	2.05	11.72
46	Colombia (2012)	2.00	11.43
47	South Africa (2011)	1.82	10.39
48	Kenya	1.80	10.27
49	Kazakhstan (2012)	1.71	9.75
50	Qatar	1.70	9.69
51	Moldova, Rep. (2009)	1.63	9.29
52	Serbia	1.62	9.23
53	Lesotho	1.55	8.82
54	Morocco	1.54	8.76
55	Armenia	1.52	8.65
55	Tunisia (2013)	1.52	8.65
57	Rwanda	1.49	8.47
58	United Arab Emirates (2012)	1.38	7.84
59	Zambia	1.33	7.54
60	Germany (2013)	1.29	7.31
61	Canada	1.28	7.25
62	Dominican Republic	1.20	6.79
63	Uganda (2012)	1.17	6.62
64	Turkey	1.13	6.38
65	Albania (2013)	1.11	6.27
66	Costa Rica	1.10	6.21
67	Kyrgyzstan	1.08	6.09
68	Oman (2013)	1.02	5.75
69	Jamaica	1.00	5.63
70	Azerbaijan	0.99	5.57
70	Jordan	0.99	5.57
72	Mexico	0.94	5.28
73	Ukraine (2012)	0.92	5.17
74	Thailand	0.90	5.05
75	Namibia (2012)	0.85	4.76
76	Bosnia and Herzegovina	0.83	4.64
77	Austria	0.73	4.06
78	Madagascar	0.70	3.89
79	Algeria	0.58	3.19
80	Bolivia, Plurinational St.	0.57	3.13
81	Poland (2009)	0.53	2.90
82	Guatemala (2012)	0.52	2.84
82	El Salvador	0.52	2.84
84	Sri Lanka (2012)	0.51	2.79
85	Argentina	0.43	2.32
86	Senegal	0.30	1.57
87	Indonesia (2012)	0.29	1.51
88	Philippines (2012)	0.27	1.39
89	Burkina Faso (2012)	0.15	0.70
89	Japan	0.15	0.70
91	India	0.12	0.52
92	Bangladesh (2012)	0.09	0.35
93	Bhutan	0.06	0.17
94	Pakistan	0.04	0.06
95	Ethiopia (2009)	0.03	0.00
n/a	Bahrain	n/a	n/a
n/a	Barbados	n/a	n/a
n/a	China	n/a	n/a
n/a	Cameroon	n/a	n/a
n/a	Ecuador	n/a	n/a
n/a	Egypt	n/a	n/a
n/a	Ghana	n/a	n/a
n/a	Greece	n/a	n/a
n/a	Honduras	n/a	n/a
n/a	Iran	n/a	n/a
n/a	Cambodia	n/a	n/a
n/a	Kuwait	n/a	n/a
n/a	Lebanon	n/a	n/a
n/a	Mali	n/a	n/a
n/a	Mozambique	n/a	n/a
n/a	Nicaragua	n/a	n/a
n/a	Paraguay	n/a	n/a
n/a	Saudi Arabia	n/a	n/a
n/a	Tanzania	n/a	n/a
n/a	United States of America	n/a	n/a
n/a	Venezuela, Bolivarian Rep.	n/a	n/a
n/a	Viet Nam	n/a	n/a
n/a	Zimbabwe	n/a	n/a

SOURCE: World Bank, *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises* (http://www.doingbusiness.org/reports/global-reports/doing-business-2014)

Unless otherwise specified, the data used for computation were collected in 2014.

Appendices

Appendix I

Technical Notes

Technical Notes

Audit by the Joint Research Centre of the European Commission

The Joint Research Centre (JRC) of the European Commission has conducted extensive research on the development of composite indicators, most notably publishing the *Handbook on Constructing Composite Indicators: Methodology and User Guide* in collaboration with the Organisation for Economic Co-operation and Development (OECD). For the fourth consecutive edition of the Global Talent Competitiveness Index (GTCI), the GTCI development team engaged the JRC to conduct an audit.[1] This exercise has provided external validation and further improved the statistical analyses to ensure the consistency and rigour of the GTCI index model.

In May 2016, an earlier version of the index model for the GTCI 2017 was submitted to the JRC team. The results from the preliminary audit were taken into account and are reflected in the final version of the index model, as appropriate. The final audit was then completed in August 2016 based on the latest model, the results of which can be found in Chapter 7.

Composite Indicators

The GTCI framework builds on six pillars: (1) Enable, (2) Attract, (3) Grow, (4) Retain, (5) Vocational and Technical Skills, and (6) Global Knowledge Skills. Each pillar consists of two to three sub-pillars. Each sub-pillar is composed of several variables (normally, between three and seven variables). Each sub-pillar score is derived as the simple arithmetic average of its individual variables. The successive arithmetic aggregation continues at the pillar level.

Overall, the GTCI includes three indices:

- The Talent Competitiveness Input sub-index is the simple average of the first four pillars.
- The Talent Competitiveness Output sub-index is the simple average of the last two pillars.
- The Global Talent Competitiveness Index is the simple average of the six pillars.

In addition to the overall index scores, country rankings are provided for each variable, sub-pillar, pillar, and sub-index in the Country Profiles.

Individual Variables

The GTCI 2017 model includes 65 variables, which fall within the following categories:[2]

1. Hard/quantitative data (25 variables)
2. Index/composite indicator data (15 variables)
3. Survey/qualitative data (25 variables)

Hard Data

The 25 variables based on hard data were drawn from a variety of public sources, such as the United Nations Educational, Scientific and Cultural Organisation (UNESCO), the United Nations Conference on Trade and Development (UNCTAD), the International Labour Organisation (ILO), the World Bank, the OECD, and The Conference Board. Most variables were already scaled at their source and therefore did not need to be re-scaled.

Indices

The 15 variables measured as indices come from sources such as the World Bank (the World Governance Indicators and the Doing Business Report), the International Telecommunication Union, and Transparency International. They also come from other composite indicators such as the Social Progress Index, the Global Innovation Index (Cornell, INSEAD, and the World Intellectual Property Organisation), and the Environmental Performance Index (Yale University and Columbia University). There were two main concerns about using 'indices within an index': (1) doubts over its methodology to derive a single score; and (2) the risk of duplicating variables. Despite these concerns, the GTCI team determined that the gains outweighed the downsides, as there are certain phenomena that are best captured by a multi-dimensional index. To address these concerns, only indices that transparently indicate their methodology and are widely well received were included in the GTCI. Additionally, to avoid double-counting, only indices with a narrow focus were selected.

Survey Data

The 25 variables based on survey data were mainly extracted from the World Economic Forum's Executive Opinion Survey. Qualitative information tends to provide the most current assessment of certain areas related to talent competitiveness for which hard data either do not exist or have low country coverage.

Country Coverage and Missing Data

The 118 economies covered in the GTCI 2017 were selected based on an aggregate data availability threshold of at least 80% (52 out of 65 variables) and a sub-pillar level data availability threshold of at least 40%. The most recent data points for each country were considered in the calculation, with 2005 as the cut-off year. Meanwhile, each variable had to pass a country-based availability threshold of 50% (59 out of 118 economies). In order to provide transparency and replicability, there was no imputation effort to fill in missing values in the data set. Missing values

were noted with 'n/a' and were not considered in the calculation of sub-pillar scores.

Treatment of Series with Outliers

Inclusion of series with outliers can be problematic and potentially bias the rankings. Outliers were detected based on an absolute value of skewness greater than 2 and kurtosis greater than 3.5.[3] In our data set, there were six variables with outliers. As a general rule, for variables with one to five outliers, the Winsorisation method should be applied. The values distorting the variable distribution were assigned the next highest value until the reported skewness and/or kurtosis fell within the ranges specified above. For variables with five outliers and above, transformation by natural logarithms, with the following formula, was used:[4]

$$\ln\left[(\max \times \text{factor} - 1) \times \frac{(\text{value} - \min)}{(\max - \min)} + 1\right]$$

Normalisation

To adjust for differences in units of measurement and ranges of variation, all 65 variables were normalised into the [0, 100] range, with higher scores representing better outcomes. A min-max normalisation method was adopted, given the minimum and maximum values of each variable respectively, except for the World Economic Forum's Executive Opinion Survey questions, where the original range of [1, 7] was kept as the minimum and maximum values.

For variables where higher values indicate higher outcomes, the following normalisation formula was applied:

$$100 \times \frac{(\text{value} - \min)}{(\max - \min)}$$

For variables where higher values indicate worse outcomes, the following reverse normalisation formula was applied:[5]

$$-100 \times \frac{(\text{value} - \min)}{(\max - \min)}$$

ENDNOTES

1 The JRC has audited various index projects. The most recent ones include the Global Innovation Index (Cornell, INSEAD, and WIPO), the Environment Performance Index (Yale and Columbia), and the Corruption Perceptions Index (Transparency international).

2 The last edition of the GTCI had 61 variables in total, 27 of which were hard/quantitative data, 10 were index/composite indicators, and 24 were survey/qualitative data.

3 Adopted from Groeneveld & Meeden (1984).

4 The formula ensures that natural logarithms are positive and starting at zero.

5 The reverse normalisation affects four indicators: 1.3.1 Ease of hiring, 1.3.2 Ease of redundancy, 2.2.1 Tolerance of minorities, and 5.2.4 Skills gap as a major constraint.

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Appendix II

Sources and Definitions

Sources and Definitions

1 ENABLE

1.1 Regulatory Landscape

1.1.1 Government effectiveness

Government effectiveness indicator | 2014

The government effectiveness indicator captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation, and implementation and the credibility of the government's commitment to such policies. Scores are standardised.

Source: World Bank, *Worldwide Governance Indicators,* 2015 Update (www.govindicators.org)

1.1.2 Business-government relations

Average answer to the question: In your country, how would you best characterise relations between business and government? [1 = highly confrontational; 7 = highly cooperative] | 2014

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2013–2014 (http://reports.weforum.org)

1.1.3 Political stability

Political stability and absence of violence indicator | 2014

The political stability and absence of violence indicator captures perceptions of the likelihood that the government will be destabilised or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism. Scores are standardised.

Source: World Bank, *Worldwide Governance Indicators,* 2015 update (www.govindicators.org)

1.1.4 Regulatory quality

Regulatory quality indicator | 2014

The regulatory quality indicator captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Scores are standardised.

Source: World Bank, *Worldwide Governance Indicators,* 2015 update (www.govindicators.org)

1.1.5 Corruption

Corruption Perceptions Index | 2015

The Corruption Perceptions Index aggregates data from a number of different sources that provide perceptions of business people and country experts of the level of corruption in the public sector.

Source: Transparency International, *The Corruption Perceptions Index 2015* (http://www.transparency.org/research/cpi)

1.2 Market Landscape

1.2.1 Competition intensity

Average answer to the question: In your country, how intense is competition in the local markets? [1 = not intense at all; 7 = extremely intense] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

1.2.2 Ease of doing business

Ease of doing business index | 2016

The ease of doing business index aggregates a country's percentile rankings on 10 topics covered in the World Bank's *Doing Business 2016* report, which include starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts, and resolving insolvency. A high ranking indicates that the regulatory environment is more conducive to setting up business.

Source: World Bank, *Doing Business 2016: Measuring Regulatory Quality and Efficiency* (http://www.doingbusiness.org/reports/global-reports/doing-business-2016)

1.2.3 Cluster development

Average answer to the question: In your country, how widespread are well-developed and deep clusters (geographic concentrations of firms, suppliers, producers of related products and services, and specialized institutions in a particular field)? [1 = nonexistent; 7 = widespread in many fields] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

1.2.4 R&D expenditure

Gross expenditure on R&D (%) | 2014

R&D expenditure refers to the total domestic intramural expenditure on research and development (R&D) during a given period as a percentage of GDP. Intramural R&D expenditure is all expenditure for R&D performed within a statistical unit or sector of the economy during a specific period, whatever the source of funds.

Source: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)

1.2.5 ICT infrastructure

ICT access index | 2015

The ICT access index is a composite indicator that aggregates five ICT indicators (at 20% each): (1) Fixed telephone lines per 100 inhabitants; (2) Mobile cellular telephone subscriptions per 100 inhabitants; (3) International internet bandwidth (bit/s) per internet user; (4) Proportion of households with a computer; and (5) Proportion of households with internet access at home. It is the first sub-index in ITU's ICT Development Index (IDI).

Source: International Telecommunication Union, *Measuring the Information Society Report 2015,* ICT Development Index 2015 (www.itu.int/en/ITU-D/Statistics/Pages/publications/default.aspx)

1.2.6 Technology utilisation

Average answer to the question: To what extent do businesses in your country absorb new technology? [1 = not at all; 7 = aggressively absorb] | 2014

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2013–2014 (http://reports.weforum.org)

1.3 Business and Labour Landscape

Labour Market Flexibility

1.3.1 Ease of hiring

Hiring indicators | 2016

Doing Business measures the regulation of employment as it relates to the hiring and redundancy of workers and the scheduling of working hours. The hiring indicators measure (1) whether fixed-term contracts are prohibited for permanent tasks; (2) the maximum cumulative duration of fixed-term contracts; and (3) the ratio of the minimum wage for a trainee or first-time employee to the average value added per worker. The score is calculated based on the proposed methodology from the Employing Workers annex in the World Bank's 2012 *Doing Business* report. The values are between 0 and 100, with higher values indicating more rigid regulation.

Source: World Bank, *Doing Business 2016: Measuring Regulatory Quality and Efficiency* (http://www.doingbusiness.org/reports/global-reports/doing-business-2016)

1.3.2 Ease of redundancy

Redundancy indicators | 2016

Doing Business measures the regulation of employment as it relates to the hiring and redundancy of workers and the scheduling of working hours. The redundancy indicators measure: (1) whether redundancy is disallowed as a basis for terminating workers; (2) whether the employer needs to notify a third party (such as a government agency) to terminate one redundant worker; (3) whether the employer needs to notify a third party to terminate a group of nine redundant workers; (4) whether the employer needs approval from a third party to terminate one redundant worker; (5) whether the employer needs approval from a third party to terminate a group of nine redundant workers; (6) whether the law requires the employer to reassign or retrain a worker before making the worker redundant; (7) whether priority rules apply for redundancies; and (8) whether priority rules apply for reemployment. The score is calculated based on the proposed methodology from the Employing Workers annex in the World Bank's 2012 *Doing Business* report. The values are between 0 and 100, with higher values indicating more rigid regulation.

Source: World Bank, *Doing Business 2016: Measuring Regulatory Quality and Efficiency* (http://www.doingbusiness.org/reports/global-reports/doing-business-2016)

Governance

1.3.3 Labour-employer cooperation

Average answer to the question: In your country, how would you characterise labour-employer relations? [1 = generally confrontational; 7 = generally cooperative] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

1.3.4 Professional management

Average answer to the question: In your country, who holds senior management positions? [1 = usually relatives or friends without regard to merit; 7 = mostly professional managers chosen for merit and qualifications] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

1.3.5 Relationship of pay to productivity

Average answer to the question: In your country, to what extent is pay related to employee productivity? [1 = not at all; 7 = to a great extent] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

2 ATTRACT

2.1 External Openness

Attract Business

2.1.1 FDI and technology transfer

Average answer to the question: To what extent does foreign direct investment (FDI) bring new technology into your country? [1 = not at all; 7 = to a great extent] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

2.1.2 Prevalence of foreign ownership

Average answer to the question: In your country, how prevalent is foreign ownership of companies? [1 = extremely rare; 7 = extremely prevalent] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

Attract People

2.1.3 Migrant stock

Adult migrant stock (%) | 2015

Adult migrant stock refers to the percentage of the migrant stock population above 25 years old in the total population of the same age group, and is based on 2015 estimates.

Source: United Nations Population Division, Trends in International Migrant Stock: Migrants by Age and Sex (www.un.org/en/development/desa/population/migration/data/estimates2/estimates15.shtml)

2.1.4 International students

Tertiary inbound mobility ratio (%) | 2015

Tertiary inbound mobility ratio refers to the number of students from abroad studying in a given country, as a percentage of the total tertiary enrolment in that country.

Source: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)

2.1.5 Brain gain

Average answer to the question: Does your country attract talented people from abroad? [1 = not at all; 7 = to a great extent—attracts the best and brightest from around the world] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

2.2 Internal Openness

Social Diversity

2.2.1 Tolerance of minorities

Discrimination and violence against minorities | 2015

This indicator is a component of the Tolerance and Inclusion variables used to measure the Opportunity dimension of the Social Progress Index. It is based on the Group Grievance indicator designed by the Fund for Peace Fragile States Index. It takes into account six components—discrimination, powerlessness, ethnic violence, communal violence, sectarian violence, and religious violence—measured on a scale of 0 (low pressure) to 10 (very high pressure).

Source: The Social Progress Index 2015 (http://www.socialprogressimperative.org/data/spi) based on the Fund for Peace Fragile States Index

2.2.2 Tolerance of immigrants

The percentage of respondents answering yes to the question: Is the city or area where you live a good place or not a good place to live for immigrants from other countries? | 2015

This indicator is a component of the Tolerance and Inclusion variables used to measure the Opportunity dimension of the Social Progress Index.

Source: The Social Progress Index 2015 (http://www.socialprogressimperative.org/data/spi) based on the Gallup World Poll

2.2.3 Social mobility

Average answer to the question: To what extent do individuals in your country have the opportunity to improve their economic situation through their personal efforts regardless of the socioeconomic status of their parents? [1 = not at all; 7 = to a great extent] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

Gender Equality

2.2.4 Female graduates

Female tertiary graduates (%) | 2015

Female tertiary graduates refers to the percentage of female graduates whose highest educational attainment is the tertiary level. The tertiary level includes both short-cycle tertiary and bachelor's or equivalent level based on International Standard Classification of Education (ISCED) 5 or 6.

Source: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)

2.2.5 Gender earnings gap

Estimated earned income ratio | 2015

The estimated earned income ratio refers to the estimated income earned by females over the corresponding value for males.

Source: World Economic Forum, *The Global Gender Gap Report 2015* (http://reports.weforum.org/global-gender-gap-report-2015)

2.2.6 Business opportunities for women

Average answer to the question: In your country, to what extent do companies provide women the same opportunities as men to rise to positions of leadership? [1 = not at all; 7 = to a great extent] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

3 GROW

3.1 Formal Education

Enrolment

3.1.1 Vocational enrolment

Vocational enrolment (%) | 2015

Vocational enrolment refers to the total number of students enrolled in vocational programmes at a given level of education, expressed as a percentage of the total number of students enrolled in all programmes (vocational and general) at that level. The level of educational attainment is based on International Standard Classification of Education (ISCED 2 and 3).

Source: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)

3.1.2 Tertiary enrolment

Tertiary enrolment (%) | 2015

Tertiary enrolment refers to the ratio of total tertiary enrolment, regardless of age, to the population of the age group that officially corresponds to the tertiary level of education. Tertiary education, whether or not to an advanced research qualification, normally requires as a minimum condition of admission the successful completion of education at the secondary level. The level of educational attainment is based on International Standard Classification of Education (ISCED) 5 and 6.

Source: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)

Quality

3.1.3 Tertiary education expenditure

Government expenditure on tertiary education (%) | 2015

Government expenditure on tertiary education as percentage of GDP.

Source: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)

3.1.4 Reading, maths, and science

PISA average scores in reading, mathematics, and science | 2014

The OECD Programme for International Student Assessment (PISA) develops three-yearly surveys that examine 15-year-old students' performance in reading, mathematics, and science. The scores are calculated so that the mean is 500 and the standard deviation is 100. The scores for China come from Shanghai.

Source: OECD Programme for International Student Assessment (PISA) (www.oecd.org/pisa)

3.1.5 University ranking

QS World University Ranking | 2016

The QS World University Ranking is based on six indicators (with their weights in parentheses): (1) Academic reputation from global survey (40%); (2) Employer reputation from global survey (10%); (3) Citations per faculty from SciVerse Scopus (20%); (4) Faculty-student ratio (20%); (5) Proportion of international students (5%); and (6) Proportion of international faculty (5%). The value is derived from the average score of the top three universities per country. If the country has fewer than three universities listed in the QS ranking, the sum of the scores of the listed universities is still divided by three, implying a score of 0 for non-listed universities.

Source: Quacquarelli Symonds Ltd (QS), QS World University Ranking 2014/2015, Top Universities (www.topuniversities.com/university-rankings/world-university-rankings)

3.2 Lifelong Learning

3.2.1 Quality of management schools

Average answer to the question: In your country, how do you assess the following: Quality of business schools [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

3.2.2 Prevalence of training in firms

Proportion of firms offering formal training (%) | 2015

The Enterprise Survey is a firm-level survey of a representative sample of an economy's private sector. The surveys cover a broad range of business environment topics including access to finance, corruption, infrastructure, crime, competition, and performance measures. Since 2002, the World Bank has collected these data from face-to-face interviews with top managers and business owners in over 130,000 companies in 135 economies. More detailed information about the Enterprise Surveys can be found on their Methodology page.

Source: World Bank, Enterprise Surveys (www.enterprisesurveys.org)

3.2.3 Employee development

Average answer to the question: In your country, to what extent do companies invest in training and employee development? [1 = not at all; 7 = to a great extent] | 2015

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Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

3.3 Access to Growth Opportunities

Networks

3.3.1 Use of virtual social networks

Average answer to the question: In your country, how widely are virtual social networks used (e.g., Facebook, Twitter, LinkedIn)? [1 = not at all used; 7 = used extensively] | 2015

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Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

3.3.2 Use of virtual professional networks

LinkedIn users (per 1,000 labour force) | 2015

LinkedIn users refers to the number of registered LinkedIn accounts per 1,000 labour force (15–64 years old).

Source: LinkedIn, LinkedIn Campaign Manager and International Labour Organization, *Key Indicators of the Labour Market,* 8th edition (http://key-indicators-of-the-labour-market-8th.software.informer.com/download)

Empowerment

3.3.3 Delegation of authority

Average answer to the question: In your country, how do you assess the willingness to delegate authority to subordinates? [1 = not willing at all—senior management takes all important decisions; 7 = very willing—authority is mostly delegated to business unit heads and other lower-level managers] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

3.3.4 Personal rights

Personal rights indicator | 2015

Personal Rights are a component in the Opportunity Dimension of the Social Progress Index. This component is based on five variables: Political rights, Freedom of speech, Freedom of assembly/association, Freedom of movement, and Private property rights.

Source: Social Progress Imperative, The Social Progress Index 2015 (http://www.socialprogressimperative.org/data/spi)

4 RETAIN

4.1 Sustainability

4.1.1 Pension system

Workforce contributing to pension system (%) | 2012

Pension system coverage, in this context, includes only mandatory schemes because voluntary arrangements are not formally integrated into most mandatory social security systems. It is reported as the percentage of the active workforce contributing to the pension system.

Source: Pallares-Miralles, M., Romero, C., & Whitehouse, E. 2012. International patterns of pension provision II: A worldwide overview of facts and figures. Social protection and labor discussion paper no. SP 1211. Washington, DC: World Bank (https://openknowledge.worldbank.org/handle/10986/13560)

4.1.2 Taxation

Average answer to the question: In your country, to what extent do taxes and social contributions reduce the incentive to work? [1 = to a great extent; 7 = not at all] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

4.1.3 Brain retention

Average answer to the question: To what extent does your country retain talented people? [1 = not at all—the best and brightest leave to pursue opportunities abroad; 7 = to a great extent—the best and brightest stay and pursue opportunities in the country] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

4.2 Lifestyle

4.2.1 Environmental performance

Environmental Performance Index | 2016

The Environmental Performance Index (EPI) ranks how well countries perform on high-priority environmental issues in two broad policy areas: protection of human health from environmental harm and protection of ecosystems. Within these two policy objectives the EPI scores country performance in nine issue areas comprised of 20 indicators. Indicators in the EPI measure how close countries are to meeting internationally established targets or, in the absence of agreed-upon targets, how they compare relative to the best-performing countries.

Source: The 2016 Environmental Performance Index, Yale Center for Environmental Law and Policy (epi.yale.edu)

4.2.2 Personal safety

Personal safety indicator | 2015

Personal safety is a component in the Basic Human Needs Dimension of the Social Progress Index. This component is based on five variables: Homicide rate, Level of violent crime, Perceived criminality, Political terror, and Traffic deaths.

Source: Social Progress Imperative, The Social Progress Index 2015 (http://www.socialprogressimperative.org/data/spi)

4.2.3 Physician density

Physicians (per 1,000 people) | 2014

Physician density refers to number of medical doctors (physicians), including generalist and specialist medical practitioners, per 1,000 people.

Source: World Bank, World Development Indicators based on World Health Organization, Global Atlas of the Health Workforce (http://data.worldbank.org/data-catalog/world-development-indicators)

4.2.4 Sanitation

Population with access to improved sanitation facilities (%) | 2015

This indicator refers to the percentage of population using improved sanitation facilities. Improved sanitation facilities include flush/pour flush toilets (to piped sewer system, septic tank, pit latrine), ventilated improved pit latrines, pit latrines with slab, and composting toilets.

Source: World Bank, World Development Indicators based on WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation (http://data.worldbank.org/data-catalog/world-development-indicators)

5 VOCATIONAL AND TECHNICAL SKILLS

5.1 Mid-Level Skills

5.1.1 Workforce with secondary education

Labour force with secondary education (%) | 2014

Workforce with secondary education refers to the percentage of labour force (above 15 years old) whose highest educational attainment is the secondary level. Secondary level includes both upper secondary and post-secondary non-tertiary education based on International Standard Classification of Education (ISCED) 3 or 4. The data for the United States of America are from workers aged above 25 years old.

Source: International Labour Organization, *Key Indicators of the Labour Market 2015,* 9th edition (www.ilo.org/kilm)

5.1.2 Population with secondary education

Population with secondary education (%) | 2015

Population with secondary education refers to the percentage of the population (above 25 years old) whose highest educational attainment is the secondary level. This is based on International Standard Classification of Education (ISCED) 3 or 4.

Source: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)

5.1.3 Technicians and associate professionals

Technicians and associate professionals (%) | 2014

Technicians and associate professionals refers to the percentage of technicians and associate professionals out of total employment. The employment by occupation is based on the International Standard Classification of Occupation (ISCO) Revision 1988. It includes physical and engineering science associate professionals, life science and health associate professionals, teaching associate professionals, and other associate professionals (finance and sales, social work, artistic, entertainment and sports, religious associate professionals, police inspectors and detectives, administrative, customs, and tax and related government associate professionals).

Source: International Labour Organization, *Key Indicators of the Labour Market 2015,* 9th edition (www.ilo.org/kilm)

5.1.4 Labour productivity per employee

Labour productivity per person employed (constant 2015 US$) | 2015

Labour productivity estimates are obtained by dividing the total output (GDP) by the total labour input used (labour force) to produce that output. GDP is measured in constant 2015 US$.

Source: The Conference Board, Total Economy Database™ (www.conference-board.org/data/economydatabase)

5.2 Employability

5.2.1 Ease of finding skilled employees

Average answer to the question: In your country, to what extent can companies find employees with the skills required to meet their needs? [1 = not at all; 7 = to a great extent] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

5.2.2 Relevance of education system to the economy

Average answer to the question: In your country, how well does the education system meet the needs of a competitive economy? [1 = not well at all; 7 = extremely well] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

5.2.3 Availability of scientists and engineers

Average answer to the question: In your country, to what extent are scientists and engineers available? [1 = not at all; 7 = widely available] | 2014

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

5.2.4 Skills gap as major constraint

Percentage of firms identifying an inadequately educated workforce as a major constraint (%) | 2016

The Enterprise Survey is a firm-level survey of a representative sample of an economy's private sector. The surveys cover a broad range of business environment topics including access to finance, corruption, infrastructure, crime, competition, and performance measures. Since 2002, the World Bank has collected these data from face-to-face interviews with top managers and business owners in over 130,000 companies in 135 economies. More detailed information about the Enterprise Surveys can be found on their Methodology page.

Source: World Bank, Enterprise Surveys (www.enterprisesurveys.org)

6 GLOBAL KNOWLEDGE SKILLS

6.1 High-Level Skills

6.1.1 Workforce with tertiary education

Labour force with tertiary education (%) | 2014

Workforce with tertiary education refers to the percentage of the labour force (above 15 years old) whose highest educational attainment is at the tertiary level. The tertiary level includes both short-cycle tertiary and bachelor's or equivalent level based on International Standard Classification of Education (ISCED) 5 or 6. The data for the United States of America is from workers aged above 25 years old.

Source: International Labour Organization, *Key Indicators of the Labour Market 2015,* 9th edition (www.ilo.org/kilm)

6.1.2 Population with tertiary education

Population with tertiary education (%) | 2014

Population with tertiary education refers to the percentage of population (above 25 years old) whose highest educational attainment is at the tertiary level. This is based on International Standard Classification of Education (ISCED) 5 or 6.

Source: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)

6.1.3 Professionals

Professionals (%) | 2014

Professionals refers to the percentage of professionals out of total employment. The employment by occupation is based on International Standard Classification of Occupation (ISCO) Revision 1988. It includes physical, mathematical and engineering science professionals, life science and health professionals, teaching professionals, and other professionals (business, legal, archivists, librarians, social science, religious professionals, and writers and creative or performing artists).

Source: International Labour Organization, *Key Indicators of the Labour Market 2015,* 9th edition (www.ilo.org/kilm)

6.1.4 Researchers

Full-time equivalent researchers (per million population) | 2014

Researchers are professionals engaged in the conception or creation of new knowledge, products, processes, methods or systems, as well as the management of these projects. Full-time equivalence (FTE) R&D data is a measure of the actual volume of human resources devoted to R&D, and is especially useful for international comparisons. One full-time equivalent may be thought of as one person-year. Thus, a person who normally spends 30% of time on R&D and the rest on other activities (such as teaching, university administration and student counselling) should be considered as 0.3 FTE. Similarly, if a full-time R&D worker is employed at an R&D unit for only six months, this results in an FTE of 0.5. The data are reported per million population.

Source: UNESCO Institute for Statistics, UIS online database (stats.uis.unesco.org)

6.1.5 Senior officials and managers

Legislators, senior officials, and managers (%) | 2014

This variable measures the percentage of legislators, senior officials, and managers within total employment. The employment by occupation is based on the International Standard Classification of Occupation (ISCO) Revision 1988.

Source: International Labour Organization, *Key Indicators of the Labour Market 2015,* 9th edition (www.ilo.org/kilm)

6.1.6 Quality of scientific institutions

Average answer to the question: In your country, how would you assess the quality of scientific research institutions? [1 = extremely poor, among the worst in the world; 7 = extremely good, among the best in the world] | 2015

The World Economic Forum's Executive Opinion Survey (EOS) is conducted on an annual basis to gather information from business leaders on topics for which hard data sources are scarce or nonexistent. It is part of the effort to supplement *The Global Competitiveness Report* in assessing issues that drive national competitiveness.

Source: World Economic Forum, Executive Opinion Survey 2014–2015 (http://reports.weforum.org)

6.1.7 Scientific journal articles

Number of scientific and technical journal articles (per million PPP$ GDP) | 2013

Scientific and technical journal articles refers to the number of scientific and engineering articles published in the following fields: physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences. The data are reported per million PPP$ GDP.

Source: World Bank, World Development Indicators based on National Science Foundation, Science and Engineering Indicators, 2013; GDP data come from the International Monetary Fund World Economic Outlook database, 2013

6.2 Talent Impact

6.2.1 Innovation output

Innovation output sub-index | 2015

The Global Innovation Index (GII), developed jointly by INSEAD and the World Intellectual Property Organization, aims to capture the richness of innovation in society. Innovation output is one of the two sub-indices in the GII, which is derived by aggregating two output pillars: Knowledge and Technology Output and Creative Output. The first pillar covers elements of knowledge creation, impact, and diffusion, while the second pillar includes creative intangibles, creative goods and services, and online creativity.

Source: INSEAD, Cornell University, and World Intellectual Property Organization, *The Global Innovation Index 2015* (https://www.globalinnovationindex.org/userfiles/file/reportpdf/GII-2015-v5.pdf)

6.2.2 High-value exports

High technology manufactures (%) | 2014

High-value exports here refers to high technology manufactures (electronic and electrical and other), as calculated according to the Lall classification, over exports of all manufactured goods.

Source: World Bank, World Integrated Trade Solution (http://wits.worldbank.org/). The classification of exports is based on Lall, S. (2000), The Technological Structure and Performance of Developing Country Manufactured Exports, *Oxford Development Studies,* 28(3), 1985–1989

Entrepreneurship

6.2.3 New product entrepreneurial activity

New product entrepreneurial activity (%) | 2015

New product entrepreneurial activity refers to the percentage of total early-stage entrepreneurs who indicate that their product or service is new to at least some customers. The Global Entrepreneurship Monitor project is an annual assessment of the entrepreneurial activity, aspirations, and attitudes of individuals across a wide range of countries.

Source: Global Entrepreneurship Research Association, Global Entrepreneurship Monitor database (www.gemconsortium.org/data)

6.2.4 New business density

New corporate registrations (per 1,000 working-age population) | 2014

New business density is defined as the number of newly registered corporations per 1,000 working-age population (between 15 and 64 years old).

Source: World Bank, *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises* (http://www.doingbusiness.org/reports/global-reports/doing-business-2014)

Appendix III

About the Contributors and Partners

About the Contributors

Liri Andersson

Liri Andersson is the Founder of the boutique business and marketing consultancy 'this fluid world'. Since its inception, this fluid world has built an impressive track record and has become a trusted advisor, at senior management and board levels, to many global brands.

Ms Andersson's experience spreads across nations, industries, brands, business problems, and disciplines. Her work in deciphering the complex business environment has helped develop winning business and marketing strategies for global brands such as Nestlé, Chanel, General Mills, Nespresso, Crédit Agricole, Danone, GSK, Bacardi, IKEA, and Cisco.

Her contributions to the areas of strategy, innovation, marketing, and organisational management are a key reason for her frequent invitations to speak at conferences and corporate events.

Ms Andersson holds an MBA specialising in Strategy and Management and a BA in International Marketing. In addition to researching disruptive technologies at INSEAD, she is a guest lecturer for its prestigious executive education programmes.

Jacques Bughin

Jacques Bughin is a Senior Partner at McKinsey & Company and Director of the McKinsey Global Institute (MGI), based in Brussels. His advisory work concentrates mostly in sectors such as telecom, media, and high tech, as well as in marketing, R&D, and IT. At MGI, he focuses mostly on the influence of disruptive and digital technologies, and on innovation in economic and societal performance. An economist by training, he has published more than 50 academic articles in acclaimed international journals such as *Management Science* and *Research Policy,* and is co-author of the book *Managing Media Companies: Harnessing Creativity* (Wiley, 2005). He has co-authored about 40 articles for the *McKinsey Quarterly* and directed multiple MGI research projects on topics including big data and digital labour markets. Recent projects include reports on global flows and digital Europe. He has a Master's degree in Economics and a Doctoral degree, *summa cum laude,* in Economics.

William Becker

William Becker is a Researcher at the European Commission's Competence Centre on Composite Indicators and Scoreboards. His work involves providing institutional support to other parts of the European Commission, as well as theoretical research on composite indicators, particularly in the areas of uncertainty and sensitivity analysis. He has authored several book chapters and a number of journal articles, and is a lecturer at international training courses in sensitivity analysis. Dr Becker holds a PhD and an MEng in Mechanical Engineering from the University of Sheffield, UK.

Don J. Q. Chen

Don J. Q. Chen (PhD) is a senior researcher with Research & Insights at the Human Capital Leadership Institute (HCLI). He has published in top tier academic journals such as the *Journal of Organizational Behavior,* the *Journal of Vocational Behavior,* and the *Academy of Management Learning & Education*. His studies on work stress and work-life intersections have been featured in publications such as the *Harvard Business Review, Forbes, The Wall Street Journal,* and *The Globe and Mail*. His early research on cyberloafing has been suggested by Financial Times Publishing to be one of the 101 business ideas that will change the way we think about work. Prior to joining HCLI, Dr Chen was a research scholar at the National University of Singapore and worked closely with various governmental agencies on issues related to employment and employability. Dr Chen received his PhD in Organisational Behaviour from NUS Business School, Singapore.

Alain Dehaze

Alain Dehaze is the Chief Executive Officer (CEO) of the Adecco Group since September 2015. A Belgian national, Mr Dehaze trained as a commercial engineer at the ICHEC Brussels Management School, Belgium.

From 1987 until 2000, Mr Dehaze held senior positions in a number of European countries at Henkel and ISS. In 2000 he became Managing Director of Creyf's Interim in Belgium (now Start People), and from 2002 to 2005 he was CEO of Solvus. Following the 2005 acquisition of Solvus by USG People, the Netherlands, he became the Chief Operating Officer of USG People, with overall responsibility for operations, including the integration of Solvus. From September 2007 until 2009 he was CEO of the staffing services company Humares, the Netherlands.

Mr Dehaze joined the Adecco Group in September 2009 as Regional Head of Northern Europe and a member of the Group's Executive Committee. He was appointed Regional Head of France in July 2011, leading the region until September 2015 when he took up the role of Adecco Group CEO.

Since January 2016, Alain Dehaze has been Chair of the Global Apprenticeship Network (GAN). He was Vice President of the Board of the European Confederation of Private Employment Agencies (Eurociett) and a member of the Board of the International Confederation of Private Employment Agencies (Ciett) between December 2010 and December 2015.

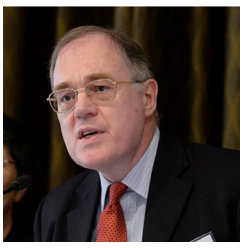
Marcos Domínguez-Torreiro

Marcos Domínguez-Torreiro is a Research Fellow at the Competence Centre on Composite Indicators and Scoreboards (COIN) of the Joint Research Centre of the European Commission (Italy), where he conducts research and policy support tasks in the field of econometrics and applied statistics. After his undergraduate studies in Economics and Business Administration, he completed his doctoral thesis in Applied Economics at the University of Vigo, Spain. His past work experience includes the private sector, universities, and public administration. He has co-authored books and research articles dealing with finance, consumer behaviour, environmental and natural resource economics, rural development, and institutional economics.

Paul Evans

Paul Evans is the Academic Director of the Global Talent Competitiveness Index, Emeritus Professor of Organisational Behaviour at INSEAD, and the Shell Chaired Professor of Human Resources and Organisational Development, Emeritus. His research and teaching focuses on three domains: (1) leadership and talent development, building on his pioneering research into executive lifestyles (*Must Success Cost So Much?,* translated into eight languages); (2) international human resource management, where his most recent book is *The Global Challenge: International Human Resource Management;* and (3) multinational organisational development. He has launched and directed many executive programmes at INSEAD and has taught courses as a visiting professor at universities in North America, Europe, Russia, Brazil, and China, winning awards for his teaching and research.

Dr Evans was titular professor at the European Institute for Advanced Studies in Management in Brussels in recognition for his work in building scholarly networks in human resources in Europe. He has a PhD in Management and Organisational Psychology from MIT, an MBA from INSEAD, and is a graduate in Law from Cambridge University. He has been chairman of INSEAD's Organisational Behaviour Area for successive periods, also heading Executive Education at INSEAD for two years. Dr Evans has been an advisor to 200 multinational organisations across the world, including in the public sector, has created numerous forums for top executive exchange, and is a frequent speaker at international conferences and conventions.



Bruno Lanvin

Bruno Lanvin is the Executive Director of INSEAD's Global Indices, comprising the Networked Readiness Index of the Global Information Technology Report (GITR), the Global Innovation Index (GII), and the Global Talent Competitiveness Index (GTCI). Before joining INSEAD, he worked for the World Bank, where he was inter alia Senior Advisor for E-strategies, Regional Coordinator (Europe and Central Asia) for ICT and e-government issues, and Chairman of the Bank's e-Thematic Group.

Since 2002 he has been co-authoring the *Global Information Technology Report* (INSEAD-World Economic Forum); he is currently the co-editor of the *Global Innovation Index Report* (INSEAD-WIPO-Cornell University).

From June 2001 to December 2003, he was the Manager of the Information for Development Program (infoDev) at the World Bank. In 2000, Dr Lanvin was appointed Executive Secretary of the G8-DOT Force. Until then, he occupied several high-level positions at the United Nations in Geneva and New York, including that of Chief of Cabinet of the Director General.

Dr Lanvin holds a BA in Mathematics and Physics from the University of Valenciennes (France), an MBA from Ecole des Hautes Etudes Commerciales (HEC) in Paris, and a PhD in Economics from the University of Paris I (La Sorbonne) in France. He is also an INSEAD alumnus (IDP-C). A frequent speaker at high-level meetings, he advises a number of global companies and governments and is a member of numerous boards, including those of IDA (Singapore) and ICANN.

Susan Lund

Susan Lund is a Partner at McKinsey & Company and a leader of the McKinsey Global Institute, based in Washington, DC. She conducts economic research on global financial markets, labour markets, and the global growth outlook. Her latest report focuses on how digital technologies are transforming globalisation: *Digital Globalization: A New Era of Global Flows*. Other recent research examines the continuing accumulation of global debt and potential risks; how digital platforms are transforming labour markets; and growth prospects for African economies in an era of lower commodity prices. Dr Lund has an active travel schedule discussing research findings with CEOs and other executives at global Fortune 500 companies, and she is a frequent speaker at global conferences. She has authored numerous articles in leading business publications, including the *Harvard Business Review, The Financial Times, The Wall Street Journal, The Washington Post,* and *Foreign Affairs*. Dr Lund is a member of the Council on Foreign Relations, the National Association of Business Economists, and the Conference of Business Economists. She holds a PhD from Stanford University and a BA from Northwestern University. She has lived and worked in Africa and Asia.

Jaana Remes

Jaana Remes is an Economist and a Partner at the McKinsey Global Institute (MGI), McKinsey & Company's business and economics research arm, based in San Francisco. Since 2003, Dr Remes has led MGI's research on productivity, competitiveness, and growth. Her recent research looks at global growth prospects in an era of demographic decline and the role of policy in determining industry competitiveness and growth. Dr Remes also leads MGI's Urban World research series that includes shifting economic power of cities, the rising urban consuming class, and mapping of the global company landscape. She advises global business and government leaders on related topics and frequently contributes to policy debates through articles and conference presentations. Dr Remes has a PhD in Applied Economics from Stanford University and an MSc degree in Economics and Philosophy from the University of Helsinki, Finland.

Béatrice Melin

Béatrice Melin is a Research Associate at INSEAD and was in charge of managing the publication of GTCI 2017. She oversaw project delivery, stakeholder collaboration and team leadership, and participated in data collection, management, and analysis.

Before joining the GTCI team, Ms Melin focused on the impact of ICT on business and learning, participating in several European projects. She also has extensive experience working on development topics, with a special focus on Latin America, including at the OECD Development Centre and as a consultant for the French Ministry of Foreign Affairs.

Beatrice Melin holds a Master's degree in Co-operation, a Bachelor's degree in Latin American Studies from the Institute of Advanced Studies on Latin America – University of La Sorbonne, and a Bachelor's degree in Political Science obtained jointly through studies at the Institute of Political Science in Grenoble and Berkeley University.

Eduardo Rodriguez-Montemayor

Eduardo Rodriguez-Montemayor is part of the Economics Department at INSEAD and a Senior Research Fellow of INSEAD's European Competitiveness Initiative. He leads, in partnership with global companies and policymakers, the intellectual approach and execution of projects related to economic policy, labour and organisational economics, and innovation/technology. He consults for the OECD, the United Nations Environment Programme, and the Inter-American Development Bank (working at the headquarters in Washington, DC) and has been actively involved in the European Commission's Digital Agenda Assembly.

Dr Rodriguez-Montemayor previously worked in the Mexican financial sector for the Pensions Commission, CONSAR (a regulatory body), and for the Inter-American Conference of Social Security.

He holds a PhD in Economics from the University of York in the United Kingdom and also obtained an MSc in Economics and Management from the University Pompeu Fabra in Spain and a degree in Economics from the Universidad Autonoma de Nuevo Leon in Mexico.

Michaela Saisana

Michaela Saisana leads the European Commission's Competence Centre on Composite Indicators and Scoreboards (COIN) at the Joint Research Centre in Italy. She conducts and coordinates research on the monitoring of multidimensional phenomena that feed into EU policy formulation and legislation. She collaborates, by auditing performance indices, with over 100 international organisations and world-class universities, including the United Nations, UNICEF, Transparency International, the World Economic Forum, INSEAD, the World Intellectual Property Organization, Yale University, Columbia University, and Harvard University. Her publications deal with composite indicators, multi-criteria analysis, multi-objective optimisation, data envelopment analysis, and sensitivity analysis (20 peer-reviewed articles, 2 books, and 60 working papers). She provides regular trainings/seminars on composite indicators (over 30 trainings and 60 invited lectures). In 2004 she was awarded the European Commission's JRC Young Scientist Prize in Statistics and Econometrics in recognition of her research on composite indicators. She has a PhD and an MSc in Chemical Engineering.

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Ludo Van der Heyden is Professor of Technology and Operations Management at INSEAD, holder of the Chair in Corporate Governance, and Academic Director of the INSEAD Corporate Governance Initiative. He directed the Advanced Management Program (2000–2008), the INSEAD Zentrum Leipzig (1994–1999), was Co-Dean (1990–1995), and Associate Dean for Research (1989–1990).

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He is a member of the supervisory boards of two start-ups, Seisquare and Celpax, of a not-for-profit Association, ADéPAM.

He is the first Honorary Professor of the recreated Handelshochschüle Leipzig and Honorary Vice-President of the Association Pôle Sud Paris, which fosters economic development in the South Paris area.

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