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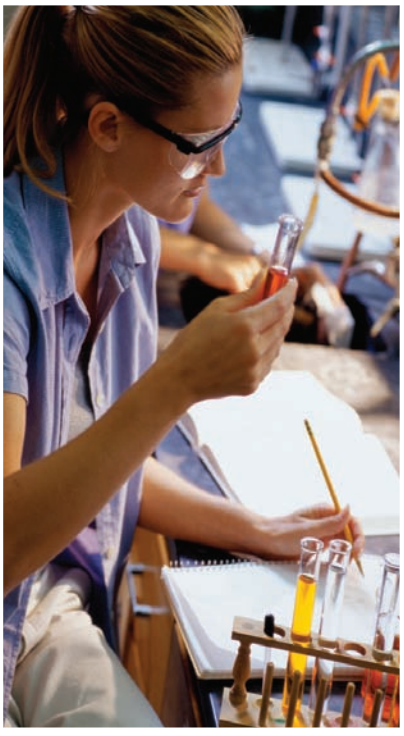
The Global Competitiveness Report 2010–2011

Highlights

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The Global Competitiveness Report 2010–2011: Highlights

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Executive Chairman, World Economic Forum

This year's *Global Competitiveness Report* is being published amid uncertainty in the global economy and a continuing shift in the balance of economic activity away from advanced economies and toward developing ones. Despite significant government stimulus spending aimed at dampening the recession, growth in advanced economies remains sluggish as they are mired in persistent unemployment and weak demand. Recent concerns about the sustainability of sovereign debt in Europe, and the stability and efficient functioning of financial markets more generally, have added to the list of concerns. The present situation emphasizes the importance of mapping out clear exit strategies to get economies back on a steady footing. Yet charting out such a process remains elusive in many countries for fear of a "double dip" as well as for political considerations. On the other hand, developing economies have for the most part fared comparatively well during the crisis: countries such as Brazil, China, and India are expected to grow at rates of between 5.5 and 10 percent in 2010, with growth holding up well over the next few years. Indeed, the world increasingly looks to the developing world as the major engine of the global economy.

Policymakers are struggling with ways of managing the present economic challenges while preparing their economies to perform well in a future economic landscape characterized by uncertainty and shifting balances. In such a global economic environment, it is more important than ever for countries to put into place the fundamentals underpinning economic growth and development. The World Economic Forum has, for more than 30 years, played a facilitating role in this process by providing detailed assessments of the productive potential of nations worldwide. The *Report* contributes to the understanding of the key factors determining economic growth, helps to explain why some countries are more successful than others in raising income levels and opportunities for their respective populations, and offers policymakers and business leaders an important tool in the formulation of improved economic policies and institutional reforms.

This year's *Report* features a record number of 139 economies, and thus continues to be the most comprehensive assessment of its kind. It contains a detailed profile for each of the economies featured in the study as well as an extensive section of data tables with global rankings covering over 100 indicators.

This *Report* remains the flagship publication within the Forum's Centre for Global Competitiveness and Performance, which produces a number of research studies that truly mirror the increased integration and complexity of the world economy. Additional regular publications include *The Global Enabling Trade Report, The Global Gender Gap Report, The Global Information Technology Report,* and *The Travel & Tourism Competitiveness Report,* as well as various regional and country studies.

The Global Competitiveness Report 2010–2011 could not have been put together without the thought leadership of Professor Xavier Sala-i-Martin at Columbia University, who has provided ongoing intellectual support for our competitiveness research. We have also received important feedback from our Advisory Board: Dr Kemal Dervis, Vice-President and Director, Global Economy and Development, Brookings Institution; Professor Ricardo Hausmann, Director, Center for International Development, John F. Kennedy School of Government, Harvard University; H.E. Dr Felipe Larraín Bascuñán, Minister of Finance of Chile; and H.E. Dr Mari Elka Pangestu, Minister of Trade of Indonesia. Appreciation also goes to Robert Greenhill, Chief Business Officer at the Forum, and Jennifer Blanke, Head of the Centre for Global Competitiveness and Performance, as well as the competitiveness team members Ciara Browne, Margareta Drzeniek Hanouz, Thierry Geiger, Irene Mia, Carissa Sahli, Pearl Samandari, and Eva Trujillo Herrera. We thank the Africa Commission and FedEx, our partners in this *Report,* for their support in this important venture. In addition, this *Report* would have not been possible without the commitment and enthusiasm of our network of over 150 Partner Institutes worldwide, who carry out the Executive Opinion Survey, which provides the basis of this *Report.* Finally, we would also like to convey our sincere gratitude to all the business executives around the world who took the time to participate in our Executive Opinion Survey, and whose valuable inputs made the publication of this *Report* possible.

CHAPTER 1.1

The Global Competitiveness Index 2010–2011: Looking Beyond the Global Economic Crisis

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The Global Competitiveness Report 2010–2011 is being released at a time when the global economy continues to be characterized by significant uncertainty. Growth has resumed following important injections, in many countries, of government stimulus spending aimed at counterbalancing the worst global recession in decades. Yet economies are advancing at different speeds and there is still the risk of a "double dip" in a number of countries. While emerging economies have, for the most part, bounced back to healthy growth, advanced economies face continuing difficulties such as persisting unemployment, weak demand, and spiraling debt, while still struggling with reforms in the financial and labor markets, among other challenges. The International Monetary Fund (IMF) predicts growth of 6.25 percent for emerging markets, compared with 2.25 percent for advanced economies in 2010.

In this context, policymakers are being confronted with difficult economic management challenges. Following their active stance in addressing the crisis and the ensuing recession, governments are struggling to unwind their deficit spending in an effort to control soaring debts. Indeed, fears of a double dip are hindering many governments from articulating clear exit strategies, a major topic of discussion in recent G-20 summits.[1] Yet without a clear commitment to getting spending under control in the medium term, countries will compromise their future ability to make pro-growth investments in areas such as infrastructure, health, and education, which are necessary for sustained development and competitiveness over the longer term.

Today's still-difficult economic environment requires not losing sight of long-term competitiveness fundamentals amid short-term urgencies. Indeed, any exit strategies must be complemented by competitiveness-enhancing efforts aimed at improving the potential for growth in the medium to longer run, which will in turn help to eliminate fiscal imbalances. Competitive economies are those that have in place factors driving the productivity enhancements on which their present and future prosperity is built. A competitiveness-supporting economic environment can help national economies to support high incomes and ensure that the mechanisms enabling solid economic performance going into the future are in place.

For more than three decades, the World Economic Forum's annual competitiveness reports have examined the many factors enabling national economies to achieve sustained economic growth and long-term prosperity. Our goal over the years has been to provide benchmarking tools for business leaders and policymakers to identify obstacles to improved competitiveness, thus stimulating discussion on the best strategies and policies to overcome them. In the current challenging economic environment, our work specifically serves as a critical reminder of the importance of taking into account the

consequences of our present actions on future prosperity based on sustained growth.

Since 2005, the World Economic Forum has based its competitiveness analysis on the Global Competitiveness Index (GCI), a highly comprehensive index for measuring national competitiveness, which captures the microeconomic and macroeconomic foundations of national competitiveness.[2]

We define *competitiveness* as *the set of institutions, policies, and factors that determine the level of productivity of a country.* The level of productivity, in turn, sets the sustainable level of prosperity that can be earned by an economy. In other words, more competitive economies tend to be able to produce higher levels of income for their citizens. The productivity level also determines the rates of return obtained by investments (physical, human, and technological) in an economy. Because the rates of return are the fundamental drivers of the growth rates of the economy, a more competitive economy is one that is likely to grow faster in the medium to long run.

The concept of competitiveness thus involves static and dynamic components: although the productivity of a country clearly determines its ability to sustain a high *level* of income, it is also one of the central determinants of the returns to investment, which is one of the key factors explaining an economy's *growth potential*.

The 12 pillars of competitiveness

There are many determinants driving productivity and competitiveness. Understanding the factors behind this process has occupied the minds of economists for hundreds of years, ranging from Adam Smith's focus on specialization and the division of labor to neoclassical economists' emphasis on investment in physical capital and infrastructure,[3] and, more recently, to interest in other mechanisms such as education and training, technological progress, macroeconomic stability, good governance, firm sophistication, and market efficiency, among others. While all of these ideas are likely to be important, they are not mutually exclusive—two or more of them can be true at the same time, and in fact that is what has been shown in the economic literature.[4]

This open-endedness is captured within the GCI by including a weighted average of many different components, each measuring a different aspect of competitiveness. These components are grouped into *12 pillars of economic competitiveness:*

First pillar: Institutions

The institutional environment is determined by the legal and administrative framework within which individuals, firms, and governments interact to generate income and wealth in the economy. The importance of a sound and fair institutional environment has become even more apparent during the economic crisis, given the increasingly direct role played by the state in the economy of many countries.

The quality of institutions has a strong bearing on competitiveness and growth.[5] It influences investment decisions and the organization of production and plays a key role in the ways in which societies distribute the benefits and bear the costs of development strategies and policies. For example, owners of land, corporate shares, or intellectual property are unwilling to invest in the improvement and upkeep of their property if their rights as owners are not protected.[6]

The role of institutions goes beyond the legal framework. Government attitudes toward markets and freedoms and the efficiency of its operations are also very important: excessive bureaucracy and red tape,[7] overregulation, corruption, dishonesty in dealing with public contracts, lack of transparency and trustworthiness, and the political dependence of the judicial system impose significant economic costs to businesses and slow the process of economic development.

In addition, proper management of public finances is also critical to ensuring trust in the national business environment. Indicators capturing the quality of government management of public finances are included here to complement the measures of macroeconomic stability captured in pillar 3 below.

Although the economic literature has focused mainly on public institutions, private institutions are also an important element in the process of creation of wealth. The recent global financial crisis, along with numerous corporate scandals, has highlighted the relevance of accounting and reporting standards and transparency for preventing fraud and mismanagement, ensuring good governance, and maintaining investor and consumer confidence. An economy is well served by businesses that are run honestly, where managers abide by strong ethical practices in their dealings with the government, other firms, and the public at large.[8] Private-sector transparency is indispensable to business, and can be brought about through the use of standards as well as auditing and accounting practices that ensure access to information in a timely manner.[9]

Second pillar: Infrastructure

Extensive and efficient infrastructure is critical for ensuring the effective functioning of the economy, as it is an important factor determining the location of economic activity and the kinds of activities or sectors that can develop in a particular economy. Well-developed infrastructure reduces the effect of distance between regions, integrating the national market and connecting it at low cost to markets in other countries and regions. In addition, the quality and extensiveness of infrastructure networks significantly impact economic growth and affect income inequalities and poverty in a variety of ways.[10] A well-developed transport and communications infrastructure network is a prerequisite for the access of less-developed

communities to core economic activities and services.

Effective modes of transport, including quality roads, railroads, ports, and air transport, enable entrepreneurs to get their goods and services to market in a secure and timely manner and facilitate the movement of workers to the most suitable jobs. Economies also depend on electricity supplies that are free of interruptions and shortages so that businesses and factories can work unimpeded. Finally, a solid and extensive telecommunications network allows for a rapid and free flow of information, which increases overall economic efficiency by helping to ensure that businesses can communicate and decisions are made by economic actors taking into account all available relevant information. This is an area where the crisis may prove to have positive longer-term effects, given the significant resources earmarked for infrastructure development by many national stimulus packages, including those of the United States and China.

Third pillar: Macroeconomic environment

The stability of the macroeconomic environment is important for business and, therefore, is important for the overall competitiveness of a country.[11] Although it is certainly true that macroeconomic stability alone cannot increase the productivity of a nation, it is also recognized that macroeconomic disarray harms the economy. The government cannot provide services efficiently if it has to make high-interest payments on its past debts. Running fiscal deficits limits the government's future ability to react to business cycles. Firms cannot operate efficiently when inflation rates are out of hand. In sum, the economy cannot grow in a sustainable manner unless the macroeconomic environment is stable. This issue has captured the attention of the public most recently through discussions on exit strategies to wind down deficit spending, and in the context of the recent buildup of sovereign debt.

It is important to note that this pillar evaluates the stability of the macroeconomic environment, so it does not directly take into account the way in which public accounts are managed by the government. This qualitative dimension is captured in the institutions pillar described above.

Box 1 discusses the relationship between fiscal imbalances and competitiveness, of particular relevance given recent fiscal stimulus spending and the discussions related to the importance of winding down spending and articulating clear exit strategies.

Fourth pillar: Health and primary education

A healthy workforce is vital to a country's competitiveness and productivity. Workers who are ill cannot function to their potential and will be less productive. Poor health leads to significant costs to business, as sick workers are often absent or operate at lower levels of efficiency. Investment in the provision of health services is thus critical for clear economic, as well as moral, considerations.[12]

In addition to health, this pillar takes into account the quantity and quality of basic education received by the population, which is increasingly important in today's economy. Basic education increases the efficiency of each individual worker. Moreover, workers who have received little formal education can carry out only simple manual work and find it much more difficult to adapt to more advanced production processes and techniques. Lack of basic education can therefore become a constraint on business development, with firms finding it difficult to move up the value chain by producing more sophisticated or value-intensive products.

For the longer term, it will be essential to avoid significant reductions in resource allocation to these critical areas, in spite of the fact that government budgets will need to be cut to reduce public debt brought about by the present stimulus spending.

Fifth pillar: Higher education and training

Quality higher education and training is crucial for economies that want to move up the value chain beyond simple production processes and products.[13] In particular, today's globalizing economy requires countries to nurture pools of well-educated workers who are able to adapt rapidly to their changing environment and the evolving needs of the production system. This pillar measures secondary and tertiary enrollment rates as well as the quality of education as evaluated by the business community. The extent of staff training is also taken into consideration because of the importance of vocational and continuous on-the-job training—which is neglected in many economies—for ensuring a constant upgrading of workers' skills.

Sixth pillar: Goods market efficiency

Countries with efficient goods markets are well positioned to produce the right mix of products and services given their particular supply-and-demand conditions, as well as to ensure that these goods can be most effectively traded in the economy. Healthy market competition, both domestic and foreign, is important in driving market efficiency and thus business productivity, by ensuring that the most efficient firms, producing goods demanded by the market, are those that thrive. The best possible environment for the exchange of goods requires a minimum of impediments to business activity through government intervention. For example, competitiveness is hindered by distortionary or burdensome taxes and by restrictive and discriminatory rules on foreign direct investment (FDI)—limiting foreign ownership—as well as on international trade. The recent economic crisis has highlighted the degree of interdependence of economies worldwide and the degree to which growth depends on open markets. Protectionist measures are counterproductive as they reduce aggregate economic activity.

Market efficiency also depends on demand conditions such as customer orientation and buyer sophistication.

Box 1: Fiscal policy and competitiveness

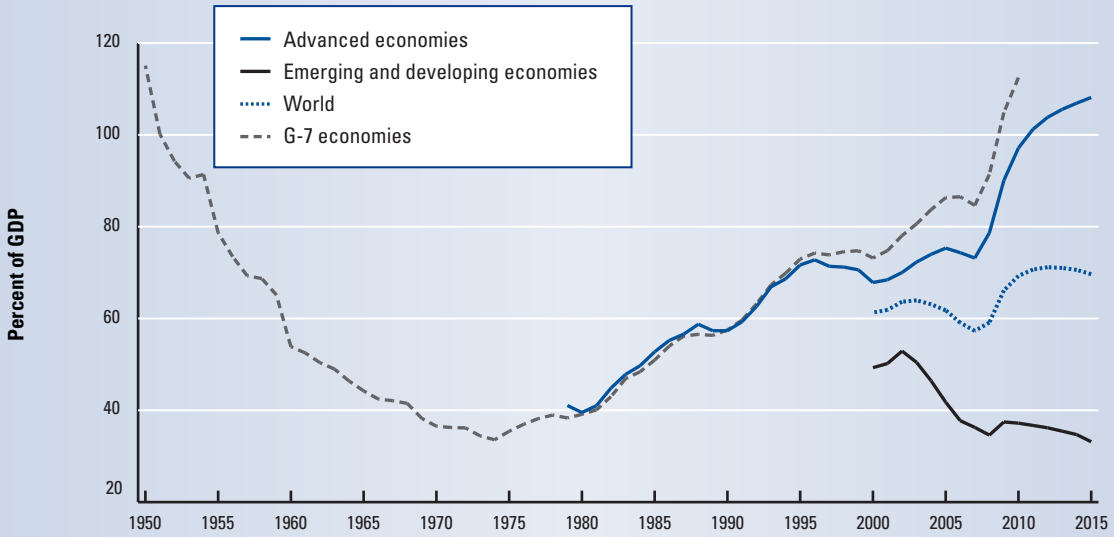
As the world emerges from the global recession, the full extent of the deterioration of fiscal accounts is becoming visible and is raising questions about the consequences for longer-term competitiveness. In the Global Competitiveness Index, fiscal policy is assessed by including the budget balance and public debt in the macroeconomic environment pillar, based on the belief that, although sound fiscal policy does not contribute directly to raising productivity and competitiveness, disarray can be very harmful.

Continued budget deficits and high public debt are likely to have a negative impact on productivity for a number of reasons. First, they reduce fiscal flexibility. Because of higher interest payments on debt, the government will have fewer funds available to invest in areas that are necessary to maintain future growth such as public health, education, or the upkeep of infrastructure. The government will also be unable to use fiscal stimulus in any new downturns. Second, because the government needs to finance spending by issuing new debt, interest rates across the economy will tend to rise, and the higher cost of capital for enterprises will stifle investment and future growth. These effects can be exacerbated by the fact that economic behavior is driven by expectations. Because taxes will most likely have to be raised in order to repay debt, economic agents will adapt their growth expectations, investing less and saving more. Taken together those factors may lower growth, making it even more difficult to repay debt in the future and potentially leading to a vicious cycle. In countries that are fiscally challenged, increases in debt could set off a different type of spiral, as recently seen in the case of Greece. Debt increases can lead to downgrades of sovereign risk ratings, thereby sharply raising the refinancing cost of short-term debt and, in the most extreme case, leading to sovereign default.

As the recession cut government revenues and automatic stabilizers kicked in, and many policymakers resorted to bank bailouts and stimulus packages, many developed countries have observed the largest weakening of fiscal accounts since World War II. This development is not new, however. It continues a trend that has been prevalent in G-7 countries over the past 40 years (see Figure 1).[1] Debt accumulated since the 1970s because fiscal policy was used to dampen the effect of cyclical downturns but was not cut back when the business cycle went up again. As a consequence, the debt-to-GDP ratio of G-7 economies is expected to break the 100 percent mark in 2011.

(Cont'd.)

Figure 1: The evolution of public debt in G-7 and other country groups, 1950–2015



Source: IMF, 2010a.
Note: Data are shown for the longest available period for each country group.

Box 1: Fiscal policy and competitiveness *(cont'd.)*

According to research by Reinhardt and Rogoff,[2] these levels will have a serious impact on future growth rates of these economies. They estimate that median GDP growth rates in developed economies fall by about one percentage point a year once a debt-to-GDP ratio of 90 percent is reached.[3]

In the medium to longer term, in order to maintain macroeconomic stability and competitiveness, fiscal policies—in particular in G-7 countries, but also in some European and G-20 economies—will have to be put on a sounder footing. Toward that end, at their summit in June 2010 in Toronto, G-20 leaders agreed on a strategy to cut fiscal deficits in half by 2013 and to stabilize the debt-to-GDP ratio by 2016. The challenge will be to implement fiscal adjustment without undermining the frail economic recovery in the shorter term. Although this may seem politically painful, recent research shows that governments that implement painful budgetary reforms tend to be rewarded politically.[4] Fiscal consolidation will have to be accompanied by structural reforms in order to increase overall competitiveness.[5] By sending a signal, these reforms can mitigate the negative effect of fiscal tightening on short-term growth, but they will also enhance growth in the longer term, which in turn will improve the fiscal position. Such reforms are of particular importance in the context of Greece, where weakening competitiveness over the past years has been a root cause of macroeconomic instability.[6]

Notes

1 The G-7 countries are Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States.

2 Reinhardt and Rogoff 2009.

3 In comparison to growth at low debt levels (below 30 percent of GDP), the average rate of growth is reduced by 4 percentage points.

4 Alesina et al. 2010.

5 Blanchard and Cotarelli 2010.

6 In the Global Competitiveness Index, the country has dropped from 61st in the 2006–2007 edition to 83rd this year.

For cultural or historical reasons, customers may be more demanding in some countries than in others. This can create an important competitive advantage, as it forces companies to be more innovative and customer oriented and thus imposes the discipline necessary for efficiency to be achieved in the market.

Seventh pillar: Labor market efficiency

The efficiency and flexibility of the labor market are critical for ensuring that workers are allocated to their most efficient use in the economy and provided with incentives to give their best effort in their jobs. Labor markets must therefore have the flexibility to shift workers from one economic activity to another rapidly and at low cost, and to allow for wage fluctuations without much social disruption.[14] The importance of the latter has been dramatically highlighted by the difficulties countries with particularly rigid labor markets—such as Spain—have encountered in recovering from the recent major economic downturn.

Efficient labor markets must also ensure a clear relationship between worker incentives and their efforts, as well as equity in the business environment between women and men.

Eighth pillar: Financial market development

The recent financial crisis has highlighted the central role of a sound and well-functioning financial sector for economic activities. An efficient financial sector allocates the resources saved by a nation's citizens, as well as those entering the economy from abroad, to their most productive uses. It channels resources to those entrepreneurial or investment projects with the highest expected rates of return rather than to the politically connected. A thorough and proper assessment of risk is therefore a key ingredient. Business investment is critical to productivity. Therefore economies require sophisticated financial markets that can make capital available for private-sector investment from such sources as loans from a sound banking sector, properly regulated securities exchanges, venture capital, and other financial products. The importance of such access to capital was recently underscored by the liquidity crunch experienced by businesses and the public sector in both developing and developed countries. In order to fulfill all those functions, the banking sector needs to be trustworthy and transparent, and—as has been made so clear recently—financial markets need appropriate regulation to protect investors and other actors in the economy at large.

Ninth pillar: Technological readiness

In today's globalized world, technology has increasingly become an important element for firms to compete and prosper. The technological readiness pillar measures the agility with which an economy adopts existing technologies to enhance the productivity of its industries, with specific emphasis on its capacity to fully leverage information and communication technologies (ICT) in daily activities and production processes for increased efficiency and competitiveness.[15] ICT has evolved into the "general purpose technology" of our time,[16] given the critical spillovers to the other economic sectors and

their role as industry-wide enabling infrastructure. Therefore ICT access and usage are key enablers of countries' overall technological readiness.

Whether the technology used has or has not been developed within national borders is irrelevant for its ability to enhance productivity. The central point is that the firms operating in the country have access to advanced products and blueprints and the ability to use them. Among the main sources of foreign technology, FDI often plays a key role. It is important to note that, in this context, the level of technology available to firms in a country needs to be distinguished from the country's ability to innovate and expand the frontiers of knowledge. That is why we separate technological readiness from innovation, which is captured in the 12th pillar below.

Tenth pillar: Market size

The size of the market affects productivity since large markets allow firms to exploit economies of scale. Traditionally, the markets available to firms have been constrained by national borders. In the era of globalization, international markets have become a substitute for domestic markets, especially for small countries. There is vast empirical evidence showing that trade openness is positively associated with growth. Even if some recent research casts doubts on the robustness of this relationship, the general sense is that trade has a positive effect on growth, especially for countries with small domestic markets.[17]

Thus exports can be thought of as a substitute for domestic demand in determining the size of the market for the firms of a country.[18] By including both domestic and foreign markets in our measure of market size, we give credit to export-driven economies and geographic areas (such as the European Union) that are broken into many countries but have a single common market.

Eleventh pillar: Business sophistication

Business sophistication is conducive to higher efficiency in the production of goods and services. This leads, in turn, to increased productivity, thus enhancing a nation's competitiveness. Business sophistication concerns the quality of a country's overall business networks as well as the quality of individual firms' operations and strategies. This is particularly important for countries at an advanced stage of development, when the more basic sources of productivity improvements have been exhausted to a large extent. The quality of a country's business networks and supporting industries, as measured by the quantity and quality of local suppliers and the extent of their interaction, is important for a variety of reasons. When companies and suppliers from a particular sector are interconnected in geographically proximate groups ("clusters"), efficiency is heightened, greater opportunities for innovation are created, and barriers to entry for new firms are reduced. Individual firms' operations and strategies (branding, marketing, the presence of a value chain, and the production of unique and sophisticated products) all lead to sophisticated and modern business processes.

Twelfth pillar: Innovation

The final pillar of competitiveness is technological innovation. Although substantial gains can be obtained by improving institutions, building infrastructure, reducing macroeconomic instability, or improving human capital, all these factors eventually seem to run into diminishing returns. The same is true for the efficiency of the labor, financial, and goods markets. In the long run, standards of living can be enhanced only by technological innovation. Innovation is particularly important for economies as they approach the frontiers of knowledge and the possibility of integrating and adapting exogenous technologies tends to disappear.[19]

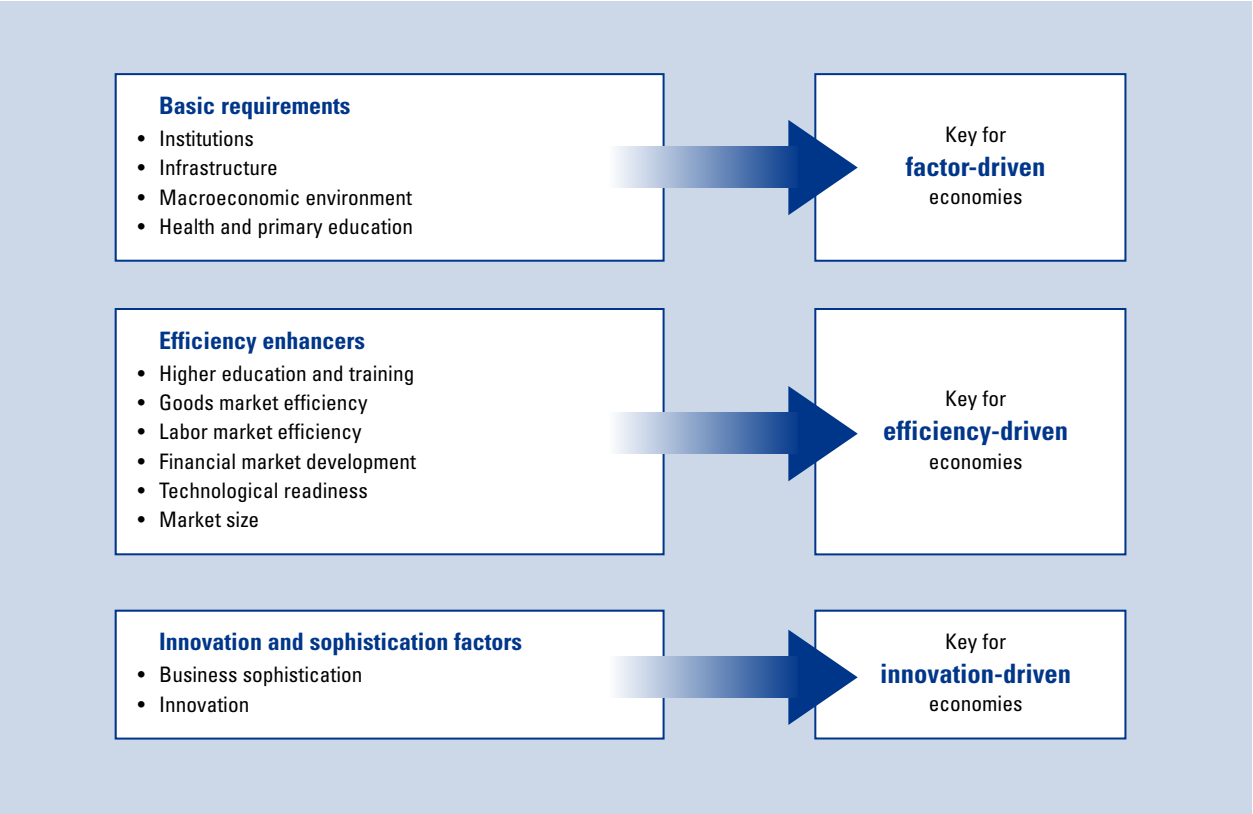
Although less-advanced countries can still improve their productivity by adopting existing technologies or making incremental improvements in other areas, for those that have reached the innovation stage of development, this is no longer sufficient for increasing productivity. Firms in these countries must design and develop cutting-edge products and processes to maintain a competitive edge. This requires an environment that is conducive to innovative activity, supported by both the public and the private sectors. In particular, it means sufficient investment in research and development (R&D), especially by the private sector; the presence of high-quality scientific research institutions; extensive collaboration in research between universities and industry; and the protection of intellectual property. Amid the present economic uncertainty, it will be important to resist pressures to cut back on R&D spending—both at the private and public levels—that will be so critical for sustainable growth going into the future.

The interrelation of the 12 pillars

While we report the results of the 12 pillars of competitiveness separately, it is important to keep in mind that they are not independent: they tend to reinforce each other, and a weakness in one area often has a negative impact on other areas. For example, innovation (pillar 12) will be very difficult without a well-educated and trained workforce (pillars 4 and 5) that are adept at absorbing new technologies (pillar 9), and without sufficient financing (pillar 8) for R&D or an efficient goods market that makes it possible to take new innovations to market (pillar 6). While the pillars are aggregated into a single index, measures are reported for the 12 pillars separately because such details provide a sense of the specific areas in which a particular country needs to improve.

Appendix A describes the exact composition of the GCI and technical details of its construction.

Figure 1: The 12 pillars of competitiveness



Stages of development and the weighted Index

While all of the pillars described above will matter to a certain extent for all economies, it is clear that they will affect them in different ways: the best way for Rwanda to improve its competitiveness is not the same as the best way for Germany to do so. This is because Rwanda and Germany are in different stages of development: as countries move along the development path, wages tend to increase and, in order to sustain this higher income, labor productivity must improve.

In line with the well-known economic theory of stages of development, the GCI assumes that, in the first stage, the economy is *factor-driven* and countries compete based on their factor endowments: primarily unskilled labor and natural resources.[20] Companies compete on the basis of price and sell basic products or commodities, with their low productivity reflected in low wages. Maintaining competitiveness at this stage of development hinges primarily on well-functioning public and private institutions (pillar 1), well-developed infrastructure (pillar 2), a stable macroeconomic environment (pillar 3), and a healthy workforce that has received at least a basic education (pillar 4).

As a country becomes more competitive, productivity will increase and wages will rise with advancing development. Countries will then move into the *efficiency-driven* stage of development, when they must begin to develop more efficient production processes and increase product quality because wages have risen and they cannot increase prices. At this point, competitiveness is increasingly driven by higher education and training (pillar 5), efficient goods markets (pillar 6), well-functioning labor markets (pillar 7), developed financial markets (pillar 8), the ability to harness the benefits of existing technologies (pillar 9), and a large domestic or foreign market (pillar 10).

Finally, as countries move into the *innovation-driven* stage, wages will have risen by so much that they are able to sustain those higher wages and the associated standard of living only if their businesses are able to compete with new and unique products. At this stage, companies must compete by producing new and different goods using the most sophisticated production processes (pillar 11) and through innovation (pillar 12).

The GCI takes the stages of development into account by attributing higher relative weights to those pillars that are more relevant for an economy given its particular stage of development. That is, although all 12 pillars matter to a certain extent for all countries, the relative importance of each one depends on a country's particular stage of development. To implement this concept, the pillars are organized into three subindexes, each critical to a particular stage of development.

The *basic requirements subindex* groups those pillars most critical for countries in the factor-driven stage. The *efficiency enhancers subindex* includes those pillars critical for countries in the efficiency-driven stage. And the

innovation and sophistication factors subindex includes the pillars critical to countries in the innovation-driven stage. The three subindexes are shown in Figure 1.

The weights attributed to each subindex in every stage of development are shown in Table 1. To obtain the weights, a maximum likelihood regression of GDP per capita was run against each subindex for past years, allowing for different coefficients for each stage of development.[21] The rounding of these econometric estimates led to the choice of weights displayed in Table 1.

Table 1: Weights of the three main subindexes at each stage of development

Subindex	Factor-driven stage (%)	Efficiency-driven stage (%)	Innovation-driven stage (%)
Basic requirements	60	40	20
Efficiency enhancers	35	50	50
Innovation and sophistication factors	5	10	30

Implementation of stages of development

Two criteria are used to allocate countries into stages of development. The first is the level of GDP per capita at market exchange rates. This widely available measure is used as a proxy for wages, because internationally comparable data on wages are not available for all countries covered. The thresholds used are shown in Table 2. A second criterion measures the extent to which countries are factor driven. This is measured by the share of exports of mineral goods in total exports (goods and services), assuming that countries that export more than 70 percent of mineral products (measured using a five-year average) are to a large extent factor driven.[22]

Table 2: Income thresholds for establishing stages of development

Stage of development	GDP per capita (in US$)
Stage 1: Factor driven	< 2,000
Transition from stage 1 to stage 2	*2,000–3,000*
Stage 2: Efficiency driven	3,000–9,000
Transition from stage 2 to stage 3	*9,000–17,000*
Stage 3: Innovation driven	> 17,000

Any countries falling in between two of the three stages are considered to be "in transition." For these countries, the weights change smoothly as a country develops, reflecting the smooth transition from one stage of development to another. This allows us to place increasingly more weight on those areas that are becoming more important for the country's competitiveness as the country develops, ensuring that the GCI can gradually "penalize" those countries that are not preparing for the next stage. The classification of countries into stages of development is shown in Table 3.

Adjustments to the GCI

Over the past year, the Global Competitiveness Index has been put through a rigorous analysis by the Joint Research Centre of the European Commission (JRC). The JRC is widely recognized as holding the world's leading expertise on composite indicators, such as the GCI. Overall the JRC found that the GCI is robust to changes in weights and is a solid index. Box 2 provides details of their findings.

In addition to this overall assessment, the JRC made some recommendations on how to further strengthen the GCI. Based on their findings, as well as the Forum's own analysis and changes in data availability, some minor adjustments to the structure of the GCI have been made, as follows:

In the *institutions* pillar (1st), a measure of the extent of bribery and irregular payments derived from the Executive Opinion Survey has been added under *ethics and corruption*. The index of the strength of investor protection compiled by the World Bank, previously in the *financial market development* pillar, is now included in the *private institutions* subpillar.

Within the *infrastructure* pillar (2nd), the indicators have been reorganized into two relevant subpillars, namely *transport infrastructure* and *energy and telephony infrastructure*. The latter now includes mobile telephone subscriptions. This variable is also part of the *technological readiness* pillar and therefore receives half weight in each pillar.

Within the *health and primary education* and the *higher education and training* pillars (4th and 5th), we have dropped the variable on education expenditure as it is no longer collected by UNESCO.

In the *goods market efficiency* pillar (6th), the variable used as a proxy for the tax rate is now given full weight. Previously, this variable was also included in the *labor market efficiency* pillar and in each instance it was given half weight.

The *technological readiness* pillar (9th) has been separated into two relevant subpillars: *technological adoption* and *ICT use*. The indicator on personal computers is no longer included as the data are no longer collected by the International Telecommunication Union. The density of fixed telephone lines is included in the *ICT use* category. Since it is also included in the *infrastructure pillar,* each instance is given half weight. Finally, the variable on the laws relating to ICT was dropped as it was deemed too specific, given the general scope of the Index. A new variable on Internet bandwidth, on the other hand, has been included because of the rising importance of this factor for competitiveness.

Table 3: List of countries/economies at each stage of development

Stage 1	Transition from 1 to 2	Stage 2	Transition from 2 to 3	Stage 3
Bangladesh	Algeria	Albania	Bahrain	Australia
Benin	Angola	Argentina	Barbados	Austria
Bolivia	Armenia	Bosnia and Herzegovina	Chile	Belgium
Burkina Faso	Azerbaijan	Brazil	Croatia	Canada
Burundi	Botswana	Bulgaria	Estonia	Cyprus
Cambodia	Brunei Darussalam	Cape Verde	Hungary	Czech Republic
Cameroon	Egypt	China	Latvia	Denmark
Chad	Georgia	Colombia	Lithuania	Finland
Côte d'Ivoire	Guatemala	Costa Rica	Oman	France
Ethiopia	Guyana	Dominican Republic	Poland	Germany
Gambia, The	Indonesia	Ecuador	Puerto Rico	Greece
Ghana	Iran, Islamic Rep.	El Salvador	Slovak Republic	Hong Kong SAR
Honduras	Jamaica	Jordan	Taiwan, China	Iceland
India	Kazakhstan	Lebanon	Trinidad and Tobago	Ireland
Kenya	Kuwait	Macedonia, FYR	Uruguay	Israel
Kyrgyz Republic	Libya	Malaysia		Italy
Lesotho	Morocco	Mauritius		Japan
Madagascar	Paraguay	Mexico		Korea, Rep.
Malawi	Qatar	Montenegro		Luxembourg
Mali	Saudi Arabia	Namibia		Malta
Mauritania	Sri Lanka	Panama		Netherlands
Moldova	Swaziland	Peru		New Zealand
Mongolia	Syria	Romania		Norway
Mozambique	Ukraine	Russian Federation		Portugal
Nepal	Venezuela	Serbia		Singapore
Nicaragua		South Africa		Slovenia
Nigeria		Thailand		Spain
Pakistan		Tunisia		Sweden
Philippines		Turkey		Switzerland
Rwanda				United Arab Emirates
Senegal				United Kingdom
Tajikistan				United States
Tanzania				
Timor-Leste				
Uganda				
Vietnam				
Zambia				
Zimbabwe				

The *business sophistication* pillar (11th) is no longer divided into two subpillars, but instead groups all variables together.

Finally, in order to deal with skewness of two of the hard data variables (4.10 Primary enrollment and 10.04 Imports as a percentage of GDP), we have employed a logarithmic transformation as one step in converting them to a 1-to-7 scale. All of the adjustments described above are reflected in Appendix A at the end of this chapter.

Country coverage

A number of new countries have been added this year. These include four African countries (Angola, Cape Verde, Rwanda, and Swaziland) and two Middle Eastern countries (the Islamic Republic of Iran and Lebanon). Moldova, a country that had been covered for several years but was excluded last year because of insufficient Executive Opinion Survey data, has now been reinstated. On the other hand, Suriname, which was covered last year, could not be included in this edition because of a lack of Survey data. This has led to an increase in coverage to a total of 139 economies this year.

The Global Competitiveness Index 2010–2011 rankings

Tables 4 through 8 provide the detailed rankings of this year's GCI. As Table 4 shows, all of the countries in the top 10 remain the same as last year, with some shifts in

Box 2: Testing the robustness of the Global Competitiveness Index

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Analyzing the robustness of the Global Competitiveness Index (GCI) and identifying how a country's performance improves or deteriorates under certain assumptions are necessary steps for ensuring the transparency and reliability of the Index and putting the results into a contextual framework. Every model depends on a set of assumptions. Changing these assumptions is likely to affect the inferences drawn from the model. Robustness analysis assesses the major drivers of uncertainty in model predictions, enabling policymakers to derive more accurate and meaningful conclusions. The Unit of Econometrics and Applied Statistics at the European Commission Joint Research Centre has longstanding experience in constructing and testing composite indicators. Together with the Organisation for Economic Co-operation and Development (OECD), the Unit developed the *Handbook on Constructing Composite Indicators: Methodology and User Guide,* which has become the international reference in the field.

The robustness analysis performed for the GCI challenges some of its key assumptions: the differentiated weighting scheme adjusted to the countries' development stage and the contribution to the final score of each of the 12 pillars, often populated by a different number of indicators.[1]

The robustness of the GCI with respect to its weighting scheme

As described in the main text of this chapter, the final GCI scores are computed as a weighted average of three subindexes, which describe *basic requirements, efficiency enhancers,* and *innovation and sophistication factors* as follows:

$$GCI_{ij} = w_{j1}\text{Basic}_i + w_{j2}\text{Effciency}_i + (1 - w_{j1} - w_{j2})\text{Innovation}$$

where i is the country index and j is the country development stage. The robustness of the GCI weighting scheme is tested by randomly sampling the set of weights w_{jk}, where k = 1,2,3 from uniform continuous distributions centered in the corresponding GCI reference value (see Table 1 in the main text of this chapter). The Monte Carlo simulation comprises 1,200 runs, each corresponding to a different set of weights of the three subindexes. For technical reasons, only the three major development stages (stages 1, 2, and 3) are considered for the robustness analysis. Countries in transition are assigned to the nearest development stage. The range of variation of the set of weights takes into account this simplification by overlapping uncertainty intervals (see Table 1). The choice of the range of variation has been driven by two opposite needs: on the one hand, the need to ensure a wide enough interval to have meaningful robustness checks; on the other hand, the need to keep the rationale of the GCI weighting scheme, originally designed to take into account intrinsic differences across countries. Considering this trade-off, limit values of uncertainty intervals have been defined as shown in Table 1.

Table 1: Uncertainty intervals of GCI weights

Stage of development	Weight	Reference value	Distribution assigned for the robustness analysis
Stage 1: Factor-driven	w_{11}	0.6	U[0.4,0.8]
	w_{12}	0.35	U[0.2,0.5]
	w_{13}	0.05	U[0.0,0.1]
Stage 2: Efficiency-driven	w_{21}	0.4	U[0.2,0.6]
	w_{22}	0.5	U[0.3,0.7]
	w_{23}	0.1	U[0.05,0.3]
Stage 3: Innovation-driven	w_{31}	0.2	U[0.1,0.4]
	w_{32}	0.5	U[0.3,0.7]
	w_{33}	0.3	U[0.1,0.4]

Sources: European Commission Joint Research Centre; World Economic Forum, 2009.

The main outcome of the robustness analysis is shown in Figure 1 with median scores and 90 percent confidence intervals computed across the 1,200 Monte Carlo simulations. Countries are ordered from best to worst according to their GCI reference score (black line), the blue dot being the median score. Error bars represent, for each country, the 90 percent confidence interval. GCI scores are rather robust: the median score is always close to the reference score. For only 7 countries out of 133 is the width of confidence interval slightly higher than 10 percent of the GCI reference value—these are Algeria, Bahrain, Brunei Darussalam, Namibia, Oman, Suriname, and Syria. Relatively higher volatility (longer error bars) is present in the middle part of the graph, where the black line of the reference score is less steep, meaning that higher volatility is associated with countries with similar scores. More on the robustness analysis of the weighting scheme is discussed in Appendix B.

Evaluating each pillar's contribution to the final score

Is the GCI framework well balanced across the 12 different dimensions that define country competitiveness? This is tested by assigning a zero weight to one pillar at a time and comparing the resulting score with the GCI values. The main results are shown in Figure 2. The black line is the median across all countries and the boxes include 75 percent of the cases. The whole distribution of the score differences is displayed by the vertical blue lines. A median close to zero with a small box and a short blue line indicates a pillar whose exclusion does not affect the final score in a significant manner. The most influential pillars are *institutions, infrastructure, macroeconomic environment, health and primary education,* and *market size.* All but the last belong to the *basic requirements* subindex. The influence is, however, moderate in absolute terms. Looking at the shift in ranks (see Appendix B), the maximum shift of a country is up to 5 positions for 75 percent of the cases. This demonstrates that almost all of the 12 pillars contribute to the GCI score in a balanced way.

(Cont'd.)

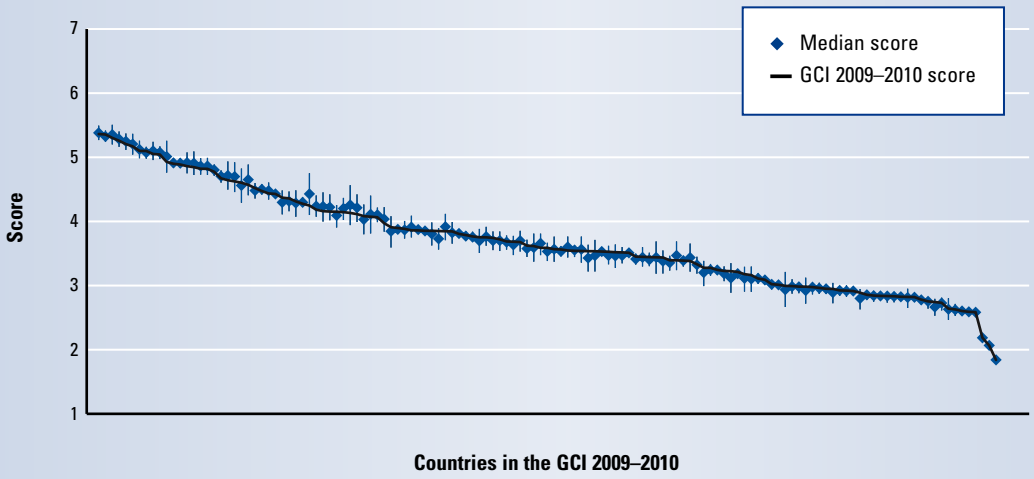
Box 2: Testing the robustness of the Global Competitiveness Index *(cont'd.)*

Overall, the GCI proved to be robust. Country scores and ranks are not significantly affected by different weighting schemes with only few exceptions. Almost all pillars contribute in a balanced way to the overall GCI score, with the most influential pillars being those of the *basic requirements* subindex.

Note

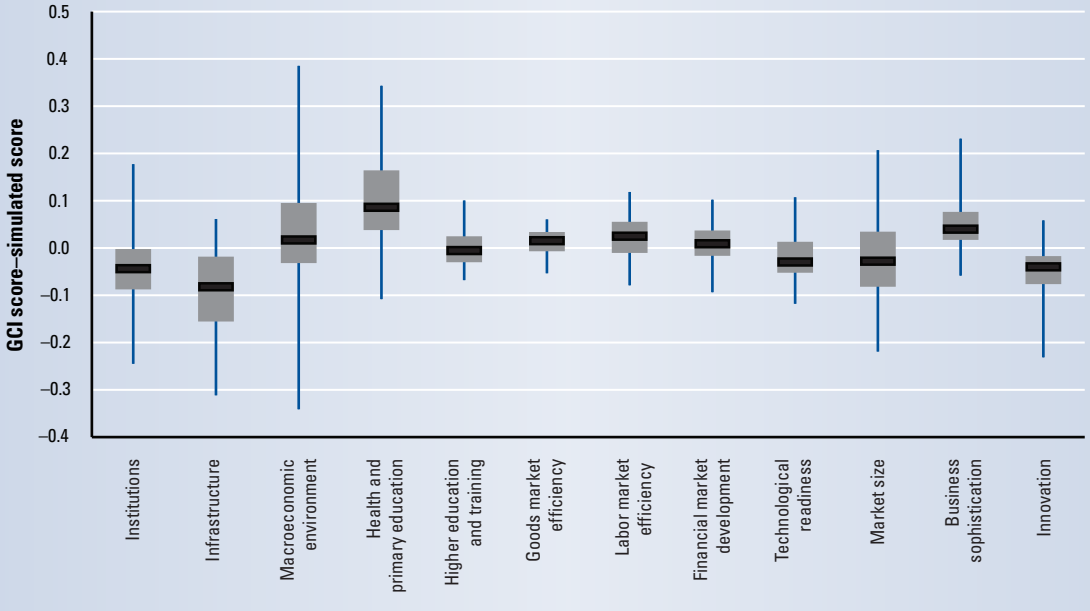
1 The analysis was carried out on the GCI from *The Global Competitiveness Report 2009–2010*. See World Economic Forum 2009.

Figure 1: Robustness analysis: Median scores and their confidence intervals



Sources: European Commission Joint Research Centre; World Economic Forum, 2009.

Figure 2: GCI framework balance of pillars: Score differences



Sources: European Commission Joint Research Centre; World Economic Forum, 2009.

rank, highlighting the stability among the top 10 performers. The following sections discuss the findings of the GCI 2010–2011 for the top 10 performers globally, as well as for a number of selected economies in each of the five following regions: Europe and Central Asia, Latin America and the Caribbean, Asia and the Pacific, the Middle East and North Africa, and sub-Saharan Africa.[23]

One trend worth noting is the slight decline on average among countries in the most advanced stage of development, the innovation-driven stage, while those countries in the first and second stages have seen a slight improvement in score. In other words, while the competitiveness of more industrialized economies is worsening, developing countries are improving, resulting in a small convergence in performance.

Top 10

The countries that constitute the top 10 remain the same as last year, with some changes in rank among them. **Switzerland** retains its 1st place position, characterized by an excellent capacity for innovation and a very sophisticated business culture, ranked 4th for its business sophistication and 2nd for its innovation capacity. Switzerland's scientific research institutions are among the world's best, and the strong collaboration between the academic and business sectors, combined with high company spending on R&D, ensures that much of this research is translated into marketable products and processes, reinforced by strong intellectual property protection and government support of innovation through its procurement processes. This strong innovative capacity is captured by the high rate of patenting (158.95 per million inhabitants) in the country, for which Switzerland ranks 7th worldwide on a per capita basis.

Public institutions in Switzerland are among the most effective and transparent in the world (5th), receiving an even better comparative assessment this year than in past years. Governance structures ensure a level playing field, enhancing business confidence; these include an independent judiciary, strong rule of law, and a highly accountable public sector. Competitiveness is also buttressed by excellent infrastructure (6th), a well-functioning goods market (4th), and a highly developed financial market (8th) as well as a labor market that is among the most efficient in the world (2nd, just behind Singapore's). And Switzerland's macroeconomic environment, after weakening slightly last year, has bounced back and is among the most stable in the world (ranked 5th) at a time when many countries are struggling in this area.

While Switzerland demonstrates many competitive strengths, the university enrollment rate of 49.4 percent continues to lag behind many other high-innovation countries, placing it 48th on this indicator. With an eye to the future, efforts should be made to boost higher education attainment to ensure sufficient national talent to continue contributing to productivity improvements.

Sweden has moved ahead of Singapore and the United States to claim 2nd position this year. The country benefits from the world's most transparent and efficient public institutions, with very low levels of corruption and undue influence and a government that is considered to be one of the most efficient in the world: public trust of politicians is ranked a high 3rd. Private institutions also receive excellent marks (ranked 3rd), with firms that demonstrate the utmost ethical behavior (ranked 1st), strong auditing and reporting standards, and well-functioning corporate boards. Goods and financial markets are also very efficient, although labor markets lack flexibility. Combined with a strong focus on education over the years (ranked 2nd for higher education and training) and the world's strongest technological adoption (ranked 1st in the technological readiness pillar), Sweden has developed a very sophisticated business culture (2nd) and is one of the world's leading innovators (ranked 5th). These characteristics come together to make Sweden one of the most productive and competitive economies in the world.

Singapore maintains its position at 3rd place, still the highest-ranked country from Asia. The country's institutions continue to be assessed as the best in the world, ranked 1st for both the lack of corruption in the country and government efficiency. Singapore places 1st for the efficiency of its goods and labor markets and 2nd for its financial market sophistication, ensuring the proper allocation of these factors to their best use. Singapore also has world-class infrastructure (ranked 5th), with excellent roads, ports, and air transport facilities. In addition, the country's competitiveness is buttressed by a strong focus on education, providing individuals with the skills needed for a rapidly changing global economy. In order to strengthen its competitiveness further, Singapore could encourage even stronger adoption of the latest technologies as well as policies that enhance the sophistication of its companies.

The **United States** continues the decline that began last year, falling two more places to 4th position. While many structural features that make its economy extremely productive, a number of escalating weaknesses have lowered the US ranking over the past two years.

US companies are highly sophisticated and innovative, supported by an excellent university system that collaborates strongly with the business sector in R&D. Combined with the scale opportunities afforded by the sheer size of its domestic economy—the largest in the world by far—these qualities continue to make the United States very competitive. Labor markets are ranked 4th, characterized by the ease and affordability of hiring workers and significant wage flexibility.

Table 4: Global Competitiveness Index 2010–2011 rankings and 2009–2010 comparisons

Country/Economy	GCI 2010–2011 Rank	GCI 2010–2011 Score	GCI 2010–2011 rank among 2009 countries	GCI 2009–2010 rank *
Switzerland	1	5.63	1	1
Sweden	2	5.56	2	4
Singapore	3	5.48	3	3
United States	4	5.43	4	2
Germany	5	5.39	5	7
Japan	6	5.37	6	8
Finland	7	5.37	7	6
Netherlands	8	5.33	8	10
Denmark	9	5.32	9	5
Canada	10	5.30	10	9
Hong Kong SAR	11	5.27	11	11
United Kingdom	12	5.25	12	13
Taiwan, China	13	5.21	13	12
Norway	14	5.14	14	14
France	15	5.13	15	16
Australia	16	5.11	16	15
Qatar	17	5.10	17	22
Austria	18	5.09	18	17
Belgium	19	5.07	19	18
Luxembourg	20	5.05	20	21
Saudi Arabia	21	4.95	21	28
Korea, Rep.	22	4.93	22	19
New Zealand	23	4.92	23	20
Israel	24	4.91	24	27
United Arab Emirates	25	4.89	25	23
Malaysia	26	4.88	26	24
China	27	4.84	27	29
Brunei Darussalam	28	4.75	28	32
Ireland	29	4.74	29	25
Chile	30	4.69	30	30
Iceland	31	4.68	31	26
Tunisia	32	4.65	32	40
Estonia	33	4.61	33	35
Oman	34	4.61	34	41
Kuwait	35	4.59	35	39
Czech Republic	36	4.57	36	31
Bahrain	37	4.54	37	38
Thailand	38	4.51	38	36
Poland	39	4.51	39	46
Cyprus	40	4.50	40	34
Puerto Rico	41	4.49	41	42
Spain	42	4.49	42	33
Barbados	43	4.45	43	44
Indonesia	44	4.43	44	54
Slovenia	45	4.42	45	37
Portugal	46	4.38	46	43
Lithuania	47	4.38	47	53
Italy	48	4.37	48	48
Montenegro	49	4.36	49	62
Malta	50	4.34	50	52
India	51	4.33	51	49
Hungary	52	4.33	52	58
Panama	53	4.33	53	59
South Africa	54	4.32	54	45
Mauritius	55	4.32	55	57
Costa Rica	56	4.31	56	55
Azerbaijan	57	4.29	57	51
Brazil	58	4.28	58	56
Vietnam	59	4.27	59	75
Slovak Republic	60	4.25	60	47
Turkey	61	4.25	61	61
Sri Lanka	62	4.25	62	79
Russian Federation	63	4.24	63	63
Uruguay	64	4.23	64	65
Jordan	65	4.21	65	50
Mexico	66	4.19	66	60
Romania	67	4.16	67	64
Colombia	68	4.14	68	69
Iran, Islamic Rep.	69	4.14	n/a	n/a
Latvia	70	4.14	69	68
Bulgaria	71	4.13	70	76
Kazakhstan	72	4.12	71	67
Peru	73	4.11	72	78
Namibia	74	4.09	73	74
Morocco	75	4.08	74	73
Botswana	76	4.05	75	66
Croatia	77	4.04	76	72
Guatemala	78	4.04	77	80
Macedonia, FYR	79	4.02	78	84
Rwanda	80	4.00	n/a	n/a
Egypt	81	4.00	79	70
El Salvador	82	3.99	80	77
Greece	83	3.99	81	71
Trinidad and Tobago	84	3.97	82	86
Philippines	85	3.96	83	87
Algeria	86	3.96	84	83
Argentina	87	3.95	85	85
Albania	88	3.94	86	96
Ukraine	89	3.90	87	82
Gambia, The	90	3.90	88	81
Honduras	91	3.89	89	89
Lebanon	92	3.89	n/a	n/a
Georgia	93	3.86	90	90
Moldova	94	3.86	n/a	n/a
Jamaica	95	3.85	91	91
Serbia	96	3.84	92	93
Syria	97	3.79	93	94
Armenia	98	3.76	94	97
Mongolia	99	3.75	95	117
Libya	100	3.74	96	88
Dominican Republic	101	3.72	97	95
Bosnia and Herzegovina	102	3.70	98	109
Benin	103	3.69	99	103
Senegal	104	3.67	100	92
Ecuador	105	3.65	101	105
Kenya	106	3.65	102	98
Bangladesh	107	3.64	103	106
Bolivia	108	3.64	104	120
Cambodia	109	3.63	105	110
Guyana	110	3.62	106	104
Cameroon	111	3.58	107	111
Nicaragua	112	3.57	108	115
Tanzania	113	3.56	109	100
Ghana	114	3.56	110	114
Zambia	115	3.55	111	112
Tajikistan	116	3.53	112	122
Cape Verde	117	3.51	n/a	n/a
Uganda	118	3.51	113	108
Ethiopia	119	3.51	114	118
Paraguay	120	3.49	115	124
Kyrgyz Republic	121	3.49	116	123
Venezuela	122	3.48	117	113
Pakistan	123	3.48	118	101
Madagascar	124	3.46	119	121
Malawi	125	3.45	120	119
Swaziland	126	3.40	n/a	n/a
Nigeria	127	3.38	121	99
Lesotho	128	3.36	122	107
Côte d'Ivoire	129	3.35	123	116
Nepal	130	3.34	124	125
Mozambique	131	3.32	125	129
Mali	132	3.28	126	130
Timor-Leste	133	3.23	127	126
Burkina Faso	134	3.20	128	128
Mauritania	135	3.14	129	127
Zimbabwe	136	3.03	130	132
Burundi	137	2.96	131	133
Angola	138	2.93	n/a	n/a
Chad	139	2.73	132	131

(Cont'd.)

* The 2009–2010 rank shown is the one published last year out of 133 countries. One country that was included last year, Suriname, has been excluded this year for lack of Survey data. Suriname's rank of 102 from last year is therefore not shown in the table.

Table 5: The Global Competitiveness Index 2010–2011

			SUBINDEXES					
	OVERALL INDEX		Basic requirements		Efficiency enhancers		Innovation and sophistication factors	
Country/Economy	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Switzerland	1	5.63	1	6.05	4	5.41	2	5.71
Sweden	2	5.56	3	5.98	5	5.32	3	5.67
Singapore	3	5.48	2	6.05	1	5.49	10	5.07
United States	4	5.43	32	5.21	3	5.46	4	5.53
Germany	5	5.39	6	5.89	13	5.11	5	5.51
Japan	6	5.37	26	5.35	11	5.17	1	5.72
Finland	7	5.37	4	5.97	14	5.09	6	5.43
Netherlands	8	5.33	9	5.82	8	5.24	8	5.16
Denmark	9	5.32	7	5.86	9	5.20	9	5.15
Canada	10	5.30	11	5.77	6	5.32	14	4.95
Hong Kong SAR	11	5.27	5	5.97	2	5.48	24	4.46
United Kingdom	12	5.25	18	5.58	7	5.28	12	4.98
Taiwan, China	13	5.21	19	5.58	16	5.05	7	5.23
Norway	14	5.14	17	5.65	12	5.13	17	4.83
France	15	5.13	16	5.67	15	5.09	16	4.83
Australia	16	5.11	12	5.74	10	5.20	22	4.54
Qatar	17	5.10	13	5.73	26	4.68	23	4.48
Austria	18	5.09	15	5.67	19	4.93	13	4.97
Belgium	19	5.07	22	5.45	17	5.01	15	4.91
Luxembourg	20	5.05	10	5.81	20	4.92	19	4.76
Saudi Arabia	21	4.95	28	5.32	27	4.67	26	4.41
Korea, Rep.	22	4.93	23	5.42	22	4.81	18	4.81
New Zealand	23	4.92	14	5.71	18	4.97	28	4.30
Israel	24	4.91	39	5.12	23	4.75	11	5.05
United Arab Emirates	25	4.89	8	5.82	21	4.82	27	4.37
Malaysia	26	4.88	33	5.19	24	4.72	25	4.45
China	27	4.84	30	5.27	29	4.63	31	4.13
Brunei Darussalam	28	4.75	20	5.48	67	4.05	72	3.42
Ireland	29	4.74	35	5.18	25	4.68	21	4.55
Chile	30	4.69	37	5.15	35	4.51	44	3.91
Iceland	31	4.68	41	5.05	31	4.57	20	4.61
Tunisia	32	4.65	31	5.25	50	4.28	34	4.09
Estonia	33	4.61	25	5.38	34	4.52	45	3.90
Oman	34	4.61	24	5.41	48	4.30	47	3.87
Kuwait	35	4.59	36	5.16	68	4.03	60	3.57
Czech Republic	36	4.57	44	4.91	28	4.66	30	4.19
Bahrain	37	4.54	21	5.48	33	4.54	55	3.67
Thailand	38	4.51	48	4.82	39	4.41	49	3.78
Poland	39	4.51	56	4.69	30	4.62	50	3.76
Cyprus	40	4.50	29	5.28	36	4.46	36	4.07
Puerto Rico	41	4.49	43	5.01	40	4.39	29	4.24
Spain	42	4.49	38	5.13	32	4.56	41	3.96
Barbados	43	4.45	27	5.34	52	4.22	52	3.69
Indonesia	44	4.43	60	4.62	51	4.24	37	4.06
Slovenia	45	4.42	34	5.18	46	4.33	35	4.08
Portugal	46	4.38	42	5.01	43	4.36	39	3.98
Lithuania	47	4.38	52	4.77	49	4.28	48	3.79
Italy	48	4.37	46	4.84	45	4.33	32	4.11
Montenegro	49	4.36	45	4.90	64	4.08	56	3.67
Malta	50	4.34	40	5.08	47	4.31	46	3.88
India	51	4.33	81	4.30	38	4.42	42	3.96
Hungary	52	4.33	59	4.65	41	4.38	51	3.71
Panama	53	4.33	49	4.79	62	4.08	54	3.68
South Africa	54	4.32	79	4.35	42	4.37	43	3.93
Mauritius	55	4.32	47	4.82	66	4.05	59	3.61
Costa Rica	56	4.31	62	4.59	58	4.13	33	4.11
Azerbaijan	57	4.29	58	4.67	75	3.97	66	3.50
Brazil	58	4.28	86	4.26	44	4.35	38	4.03
Vietnam	59	4.27	74	4.39	57	4.16	53	3.69
Slovak Republic	60	4.25	53	4.77	37	4.43	63	3.54
Turkey	61	4.25	68	4.49	55	4.18	57	3.63
Sri Lanka	62	4.25	73	4.42	69	4.01	40	3.97
Russian Federation	63	4.24	65	4.52	53	4.19	80	3.36
Uruguay	64	4.23	51	4.77	74	3.98	70	3.46
Jordan	65	4.21	57	4.67	73	3.98	65	3.50
Mexico	66	4.19	66	4.51	61	4.09	69	3.46
Romania	67	4.16	77	4.36	54	4.18	91	3.24
Colombia	68	4.14	78	4.35	60	4.09	61	3.56
Iran, Islamic Rep.	69	4.14	63	4.58	90	3.76	82	3.34

(Cont'd.)

Table 5: The Global Competitiveness Index 2010–2011 *(cont'd.)*

			SUBINDEXES					
	OVERALL INDEX		Basic requirements		Efficiency enhancers		Innovation and sophistication factors	
Country/Economy	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Latvia	70	4.14	61	4.60	63	4.08	77	3.37
Bulgaria	71	4.13	72	4.43	65	4.07	95	3.22
Kazakhstan	72	4.12	69	4.48	71	4.00	102	3.14
Peru	73	4.11	87	4.22	56	4.18	89	3.29
Namibia	74	4.09	54	4.70	91	3.76	92	3.24
Morocco	75	4.08	64	4.57	88	3.78	79	3.36
Botswana	76	4.05	76	4.37	85	3.80	93	3.24
Croatia	77	4.04	50	4.78	76	3.97	85	3.32
Guatemala	78	4.04	85	4.26	81	3.89	62	3.54
Macedonia, FYR	79	4.02	70	4.45	83	3.84	97	3.20
Rwanda	80	4.00	84	4.28	98	3.62	87	3.30
Egypt	81	4.00	89	4.19	82	3.85	68	3.48
El Salvador	82	3.99	71	4.44	87	3.78	96	3.20
Greece	83	3.99	67	4.49	59	4.12	73	3.41
Trinidad and Tobago	84	3.97	55	4.70	77	3.95	78	3.36
Philippines	85	3.96	99	4.02	78	3.93	75	3.38
Algeria	86	3.96	80	4.32	107	3.49	108	3.04
Argentina	87	3.95	82	4.29	86	3.78	71	3.42
Albania	88	3.94	75	4.38	89	3.77	104	3.09
Ukraine	89	3.90	102	3.92	72	3.98	88	3.30
Gambia, The	90	3.90	90	4.16	105	3.51	64	3.53
Honduras	91	3.89	91	4.15	104	3.55	98	3.20
Lebanon	92	3.89	106	3.87	70	4.00	74	3.41
Georgia	93	3.86	95	4.13	94	3.71	121	2.90
Moldova	94	3.86	97	4.10	99	3.59	123	2.89
Jamaica	95	3.85	103	3.92	80	3.90	86	3.31
Serbia	96	3.84	93	4.15	93	3.75	107	3.04
Syria	97	3.78	83	4.28	117	3.38	115	2.97
Armenia	98	3.76	94	4.14	106	3.51	114	2.98
Mongolia	99	3.75	100	3.97	109	3.47	119	2.95
Libya	100	3.74	88	4.20	127	3.19	135	2.62
Dominican Republic	101	3.72	107	3.82	92	3.75	99	3.17
Bosnia and Herzegovina	102	3.70	98	4.05	100	3.57	120	2.93
Benin	103	3.69	104	3.91	120	3.35	81	3.35
Senegal	104	3.67	108	3.80	108	3.49	67	3.48
Ecuador	105	3.65	92	4.15	115	3.41	124	2.89
Kenya	106	3.65	126	3.50	79	3.90	58	3.63
Bangladesh	107	3.64	114	3.71	97	3.62	109	3.01
Bolivia	108	3.64	101	3.96	125	3.20	125	2.88
Cambodia	109	3.63	113	3.72	103	3.56	106	3.06
Guyana	110	3.62	105	3.89	112	3.43	103	3.13
Cameroon	111	3.58	111	3.78	121	3.31	105	3.08
Nicaragua	112	3.57	109	3.80	122	3.29	126	2.88
Tanzania	113	3.56	116	3.66	114	3.42	94	3.22
Ghana	114	3.56	122	3.54	96	3.65	100	3.17
Zambia	115	3.55	121	3.56	101	3.56	90	3.28
Tajikistan	116	3.53	112	3.74	123	3.25	118	2.96
Cape Verde	117	3.51	96	4.13	129	3.16	128	2.84
Uganda	118	3.51	123	3.53	102	3.56	111	3.00
Ethiopia	119	3.51	119	3.63	118	3.38	117	2.96
Paraguay	120	3.49	115	3.69	119	3.37	132	2.71
Kyrgyz Republic	121	3.49	120	3.59	111	3.44	137	2.58
Venezuela	122	3.48	117	3.66	113	3.43	129	2.79
Pakistan	123	3.48	132	3.39	95	3.66	76	3.38
Madagascar	124	3.46	118	3.64	124	3.21	113	2.98
Malawi	125	3.45	129	3.46	110	3.45	84	3.32
Swaziland	126	3.40	110	3.79	126	3.20	131	2.77
Nigeria	127	3.38	136	3.11	84	3.83	83	3.33
Lesotho	128	3.36	124	3.53	132	3.12	116	2.96
Côte d'Ivoire	129	3.35	133	3.36	116	3.38	110	3.01
Nepal	130	3.34	125	3.52	131	3.14	133	2.67
Mozambique	131	3.32	130	3.43	128	3.16	101	3.14
Mali	132	3.28	128	3.47	135	2.99	112	3.00
Timor-Leste	133	3.23	127	3.49	136	2.87	136	2.60
Burkina Faso	134	3.20	134	3.29	133	3.08	127	2.87
Mauritania	135	3.14	131	3.39	138	2.79	134	2.63
Zimbabwe	136	3.03	137	3.05	134	3.01	122	2.89
Burundi	137	2.96	135	3.24	139	2.53	138	2.56
Angola	138	2.93	138	2.84	130	3.15	139	2.50
Chad	139	2.73	139	2.68	137	2.81	130	2.79

Table 6: The Global Competitiveness Index: Basic requirements

			PILLARS							
	BASIC REQUIREMENTS		1. Institutions		2. Infrastructure		3. Macroeconomic environment		4. Health and primary education	
Country/Economy	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Albania	75	4.38	63	3.96	89	3.46	101	4.21	56	5.87
Algeria	80	4.32	98	3.46	87	3.49	57	4.75	77	5.56
Angola	138	2.84	119	3.22	136	1.88	122	3.61	139	2.66
Argentina	82	4.29	132	2.99	77	3.63	54	4.76	60	5.79
Armenia	94	4.14	97	3.50	90	3.46	99	4.23	93	5.37
Australia	12	5.74	14	5.49	22	5.44	16	5.55	13	6.49
Austria	15	5.67	15	5.42	20	5.56	23	5.30	17	6.41
Azerbaijan	58	4.67	71	3.86	76	3.69	12	5.62	83	5.50
Bahrain	21	5.48	27	5.02	27	5.08	10	5.65	36	6.17
Bangladesh	114	3.71	115	3.24	133	2.15	80	4.49	106	4.96
Barbados	27	5.34	22	5.20	23	5.37	91	4.30	14	6.48
Belgium	22	5.45	29	4.98	21	5.53	72	4.56	1	6.75
Benin	104	3.91	87	3.64	113	2.71	82	4.47	108	4.83
Bolivia	101	3.96	136	2.85	100	3.04	59	4.72	100	5.21
Bosnia and Herzegovina	98	4.05	126	3.13	98	3.16	81	4.48	89	5.43
Botswana	76	4.37	32	4.84	84	3.54	74	4.52	114	4.58
Brazil	86	4.26	93	3.58	62	4.02	111	4.00	87	5.45
Brunei Darussalam	20	5.48	36	4.77	52	4.33	1	6.62	32	6.20
Bulgaria	72	4.43	114	3.29	80	3.57	42	5.00	58	5.85
Burkina Faso	134	3.29	90	3.60	134	2.13	98	4.25	135	3.20
Burundi	135	3.24	138	2.77	132	2.19	121	3.63	120	4.37
Cambodia	113	3.72	94	3.56	114	2.70	116	3.81	110	4.80
Cameroon	111	3.78	107	3.39	126	2.42	53	4.81	116	4.49
Canada	11	5.77	11	5.55	9	5.80	35	5.14	6	6.60
Cape Verde	96	4.13	56	4.06	109	2.81	102	4.20	88	5.44
Chad	139	2.68	135	2.89	137	1.83	134	3.10	138	2.90
Chile	37	5.15	28	5.01	40	4.69	26	5.24	71	5.66
China	30	5.27	49	4.37	50	4.44	4	6.11	37	6.16
Colombia	78	4.35	103	3.43	79	3.59	50	4.85	79	5.55
Costa Rica	62	4.59	51	4.35	78	3.62	108	4.07	22	6.33
Côte d'Ivoire	133	3.36	133	2.97	99	3.05	94	4.27	136	3.14
Croatia	50	4.78	86	3.65	41	4.63	51	4.82	48	6.02
Cyprus	29	5.28	30	4.91	26	5.10	67	4.60	12	6.50
Czech Republic	44	4.91	72	3.86	39	4.78	48	4.90	43	6.10
Denmark	7	5.86	5	5.84	13	5.69	15	5.56	20	6.36
Dominican Republic	107	3.82	117	3.23	107	2.83	88	4.36	107	4.86
Ecuador	92	4.15	128	3.05	96	3.18	55	4.76	75	5.61
Egypt	89	4.19	57	4.03	64	3.97	129	3.35	91	5.42
El Salvador	71	4.44	101	3.44	59	4.13	64	4.66	81	5.52
Estonia	25	5.38	31	4.91	32	4.94	18	5.40	29	6.26
Ethiopia	119	3.63	59	4.03	115	2.65	127	3.48	119	4.37
Finland	4	5.97	4	5.96	17	5.59	14	5.58	2	6.75
France	16	5.67	26	5.04	4	6.24	44	4.98	16	6.42
Gambia, The	90	4.16	37	4.76	69	3.83	117	3.78	124	4.25
Georgia	95	4.13	69	3.87	73	3.75	130	3.26	73	5.64
Germany	6	5.89	13	5.50	2	6.43	22	5.32	25	6.32
Ghana	122	3.54	67	3.93	106	2.87	136	3.00	122	4.34
Greece	67	4.49	84	3.67	42	4.57	123	3.61	40	6.13
Guatemala	85	4.26	124	3.15	66	3.90	63	4.69	96	5.33
Guyana	105	3.89	95	3.54	103	2.92	126	3.52	78	5.55
Honduras	91	4.15	108	3.37	85	3.51	100	4.23	82	5.50
Hong Kong SAR	5	5.97	8	5.73	1	6.77	39	5.07	28	6.29
Hungary	59	4.65	79	3.76	51	4.36	69	4.59	57	5.87
Iceland	41	5.05	18	5.27	12	5.69	138	2.59	4	6.66
India	81	4.30	58	4.03	86	3.49	73	4.53	104	5.16
Indonesia	60	4.62	61	3.98	82	3.56	34	5.15	62	5.78
Iran, Islamic Rep.	63	4.58	82	3.74	74	3.75	45	4.96	54	5.89
Ireland	35	5.18	24	5.14	38	4.80	95	4.26	10	6.51
Israel	39	5.12	33	4.84	34	4.89	60	4.71	46	6.05
Italy	46	4.84	92	3.58	31	4.94	76	4.52	26	6.30
Jamaica	103	3.92	85	3.66	65	3.91	137	2.93	102	5.19
Japan	26	5.35	25	5.08	11	5.69	105	4.12	9	6.52
Jordan	57	4.67	41	4.64	61	4.11	103	4.19	66	5.73
Kazakhstan	69	4.48	91	3.58	81	3.57	25	5.27	85	5.48
Kenya	126	3.50	123	3.16	102	2.99	128	3.48	121	4.36
Korea, Rep.	23	5.42	62	3.98	18	5.59	6	5.76	21	6.34
Kuwait	36	5.16	46	4.45	60	4.11	2	6.42	68	5.68
Kyrgyz Republic	120	3.59	131	3.01	124	2.47	119	3.66	101	5.21
Latvia	61	4.60	75	3.79	55	4.26	84	4.47	55	5.88

(Cont'd.)

Table 6: The Global Competitiveness Index: Basic requirements *(cont'd.)*

			PILLARS							
	BASIC REQUIREMENTS		1. Institutions		2. Infrastructure		3. Macroeconomic environment		4. Health and primary education	
Country/Economy	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Lebanon	106	3.87	113	3.33	123	2.47	125	3.58	44	6.08
Lesotho	124	3.53	100	3.45	120	2.56	77	4.50	131	3.61
Libya	88	4.20	111	3.34	95	3.22	7	5.72	115	4.53
Lithuania	52	4.77	60	3.99	43	4.56	71	4.56	52	5.95
Luxembourg	10	5.81	9	5.73	19	5.56	9	5.67	27	6.29
Macedonia, FYR	70	4.45	80	3.75	91	3.45	47	4.91	69	5.67
Madagascar	118	3.64	129	3.05	130	2.35	112	3.99	103	5.17
Malawi	129	3.46	52	4.27	131	2.26	135	3.08	125	4.23
Malaysia	33	5.19	42	4.62	30	4.97	41	5.01	34	6.18
Mali	128	3.47	109	3.36	121	2.56	65	4.63	134	3.32
Malta	40	5.08	34	4.83	48	4.45	52	4.82	30	6.23
Mauritania	131	3.39	116	3.23	122	2.52	118	3.70	127	4.11
Mauritius	47	4.82	43	4.61	58	4.18	62	4.69	59	5.81
Mexico	66	4.51	106	3.40	75	3.74	27	5.24	70	5.66
Moldova	97	4.10	102	3.43	97	3.18	90	4.31	84	5.50
Mongolia	100	3.97	122	3.17	117	2.61	49	4.90	98	5.22
Montenegro	45	4.90	45	4.46	67	3.85	36	5.09	33	6.19
Morocco	64	4.57	66	3.94	71	3.78	30	5.21	94	5.37
Mozambique	130	3.43	99	3.46	119	2.56	104	4.17	133	3.54
Namibia	54	4.70	38	4.76	54	4.26	40	5.04	112	4.75
Nepal	125	3.52	130	3.03	139	1.81	86	4.41	109	4.81
Netherlands	9	5.82	12	5.54	7	5.93	24	5.29	8	6.53
New Zealand	14	5.71	3	6.00	37	4.82	19	5.40	5	6.64
Nicaragua	109	3.80	127	3.10	111	2.73	110	4.01	95	5.36
Nigeria	136	3.11	121	3.18	135	2.02	97	4.25	137	3.00
Norway	17	5.65	6	5.82	29	5.00	17	5.43	24	6.33
Oman	24	5.41	16	5.37	33	4.94	3	6.11	99	5.22
Pakistan	132	3.39	112	3.34	110	2.75	133	3.19	123	4.27
Panama	49	4.79	73	3.81	44	4.53	29	5.22	76	5.60
Paraguay	115	3.69	137	2.85	125	2.46	93	4.28	105	5.16
Peru	87	4.22	96	3.53	88	3.47	75	4.52	92	5.38
Philippines	99	4.02	125	3.14	104	2.92	68	4.60	90	5.42
Poland	56	4.69	54	4.18	72	3.76	61	4.70	39	6.13
Portugal	42	5.01	48	4.37	24	5.30	96	4.26	41	6.13
Puerto Rico	43	5.01	44	4.58	49	4.44	38	5.07	51	5.95
Qatar	13	5.73	10	5.55	25	5.24	8	5.71	15	6.43
Romania	77	4.36	81	3.74	92	3.44	78	4.50	63	5.77
Russian Federation	65	4.52	118	3.22	47	4.46	79	4.49	53	5.92
Rwanda	84	4.28	19	5.26	101	2.99	106	4.07	111	4.80
Saudi Arabia	28	5.32	21	5.22	28	5.07	21	5.35	74	5.64
Senegal	108	3.80	76	3.77	112	2.71	89	4.34	118	4.37
Serbia	93	4.15	120	3.19	93	3.39	109	4.05	50	5.95
Singapore	2	6.05	1	6.13	5	6.22	32	5.20	3	6.67
Slovak Republic	53	4.77	89	3.60	57	4.19	31	5.20	45	6.07
Slovenia	34	5.18	50	4.37	36	4.83	33	5.19	23	6.33
South Africa	79	4.35	47	4.38	63	3.98	43	4.99	129	4.06
Spain	38	5.13	53	4.25	14	5.67	66	4.60	49	6.01
Sri Lanka	73	4.42	55	4.06	70	3.82	124	3.60	35	6.18
Swaziland	110	3.79	70	3.86	94	3.26	92	4.28	130	3.73
Sweden	3	5.98	2	6.12	10	5.76	13	5.61	18	6.41
Switzerland	1	6.05	7	5.77	6	6.09	5	5.81	7	6.56
Syria	83	4.28	78	3.76	105	2.88	58	4.75	64	5.74
Taiwan, China	19	5.58	35	4.82	16	5.63	20	5.36	11	6.50
Tajikistan	112	3.74	77	3.76	116	2.63	131	3.25	97	5.32
Tanzania	116	3.66	83	3.74	128	2.37	115	3.87	113	4.67
Thailand	48	4.82	64	3.95	35	4.84	46	4.93	80	5.55
Timor-Leste	127	3.49	110	3.35	138	1.81	28	5.22	132	3.56
Trinidad and Tobago	55	4.70	68	3.89	45	4.53	70	4.59	61	5.78
Tunisia	31	5.25	23	5.19	46	4.50	37	5.09	31	6.23
Turkey	68	4.49	88	3.61	56	4.21	83	4.47	72	5.65
Uganda	123	3.53	104	3.42	127	2.40	114	3.89	117	4.42
Ukraine	102	3.92	134	2.96	68	3.83	132	3.20	67	5.70
United Arab Emirates	8	5.82	20	5.25	3	6.26	11	5.65	38	6.14
United Kingdom	18	5.58	17	5.28	8	5.88	56	4.76	19	6.40
United States	32	5.21	40	4.67	15	5.65	87	4.39	42	6.12
Uruguay	51	4.77	39	4.72	53	4.29	107	4.07	47	6.02
Venezuela	117	3.66	139	2.43	108	2.82	113	3.90	86	5.47
Vietnam	74	4.39	74	3.80	83	3.56	85	4.47	65	5.74
Zambia	121	3.56	65	3.95	118	2.59	120	3.64	128	4.06
Zimbabwe	137	3.05	105	3.41	129	2.36	139	2.26	126	4.16

Table 7: The Global Competitiveness Index: Efficiency enhancers

	EFFICIENCY ENHANCERS		PILLARS											
			5. Higher education and training		6. Goods market efficiency		7. Labor market efficiency		8. Financial market development		9. Technological readiness		10. Market size	
Country/Economy	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Albania	89	3.77	84	3.86	63	4.19	63	4.46	100	3.74	72	3.53	103	2.84
Algeria	107	3.49	98	3.59	126	3.57	123	3.74	135	2.82	106	2.98	50	4.26
Angola	130	3.15	138	2.13	133	3.33	87	4.22	134	2.88	130	2.59	64	3.76
Argentina	86	3.78	55	4.46	135	3.14	128	3.56	126	3.15	73	3.52	24	4.85
Armenia	106	3.51	91	3.66	113	3.72	47	4.61	110	3.60	108	2.96	116	2.50
Australia	10	5.20	14	5.53	18	5.02	11	5.13	3	5.45	23	4.97	18	5.12
Austria	19	4.93	16	5.38	19	5.00	32	4.75	23	4.74	18	5.09	33	4.59
Azerbaijan	75	3.97	77	3.96	93	3.92	25	4.82	71	4.12	70	3.55	76	3.46
Bahrain	33	4.54	44	4.64	9	5.13	28	4.78	20	4.90	27	4.88	98	2.94
Bangladesh	97	3.62	126	2.77	102	3.83	108	3.98	66	4.18	126	2.65	47	4.32
Barbados	52	4.22	27	4.97	55	4.27	49	4.60	38	4.61	22	4.98	133	1.91
Belgium	17	5.01	7	5.71	16	5.08	43	4.64	34	4.64	13	5.22	27	4.77
Benin	120	3.35	112	3.18	100	3.84	85	4.23	95	3.84	122	2.71	124	2.32
Bolivia	125	3.20	100	3.58	136	3.13	136	3.26	118	3.36	127	2.65	86	3.22
Bosnia and Herzegovina	100	3.57	88	3.80	127	3.56	94	4.17	113	3.47	85	3.36	93	3.10
Botswana	85	3.80	94	3.64	58	4.23	61	4.47	47	4.49	99	3.13	102	2.86
Brazil	44	4.35	58	4.29	114	3.71	96	4.14	50	4.44	54	3.92	10	5.60
Brunei Darussalam	67	4.05	64	4.21	78	4.06	10	5.25	55	4.29	49	4.00	118	2.48
Bulgaria	65	4.07	67	4.14	82	4.00	58	4.51	91	3.95	48	4.01	63	3.79
Burkina Faso	133	3.08	135	2.45	120	3.59	91	4.19	128	3.11	124	2.66	119	2.47
Burundi	139	2.53	139	2.03	137	2.98	81	4.25	139	2.34	137	2.31	137	1.29
Cambodia	103	3.56	122	2.92	81	4.04	51	4.59	92	3.93	115	2.87	96	3.01
Cameroon	121	3.31	117	3.00	119	3.65	99	4.10	123	3.25	118	2.75	91	3.11
Canada	6	5.32	8	5.66	11	5.11	6	5.42	12	5.16	16	5.14	14	5.46
Cape Verde	129	3.16	109	3.25	111	3.76	122	3.75	104	3.67	79	3.44	139	1.08
Chad	137	2.81	136	2.33	138	2.88	95	4.16	137	2.75	138	2.28	120	2.46
Chile	35	4.51	45	4.63	28	4.80	44	4.63	41	4.59	45	4.09	46	4.34
China	29	4.63	60	4.24	43	4.40	38	4.70	57	4.28	78	3.44	2	6.71
Colombia	60	4.09	69	4.09	103	3.83	69	4.40	79	4.01	63	3.61	32	4.60
Costa Rica	58	4.13	43	4.64	48	4.35	45	4.62	85	3.98	57	3.85	82	3.32
Côte d'Ivoire	116	3.38	116	3.02	118	3.65	105	4.00	112	3.50	102	3.05	94	3.07
Croatia	76	3.97	56	4.35	110	3.78	113	3.90	88	3.96	39	4.23	70	3.62
Cyprus	36	4.46	29	4.91	20	4.97	42	4.64	15	5.01	38	4.40	104	2.82
Czech Republic	28	4.66	24	5.11	35	4.58	33	4.75	48	4.49	32	4.55	42	4.47
Denmark	9	5.20	3	5.84	13	5.10	5	5.47	18	4.94	6	5.62	52	4.25
Dominican Republic	92	3.75	99	3.59	109	3.79	89	4.20	99	3.76	66	3.58	71	3.61
Ecuador	115	3.41	92	3.65	132	3.36	137	3.24	115	3.42	107	2.97	61	3.81
Egypt	82	3.85	97	3.59	90	3.94	133	3.43	82	4.00	87	3.32	26	4.80
El Salvador	87	3.78	101	3.52	53	4.32	88	4.21	78	4.02	81	3.41	87	3.19
Estonia	34	4.52	22	5.17	29	4.71	17	4.91	45	4.50	24	4.94	101	2.89
Ethiopia	118	3.38	129	2.72	92	3.93	72	4.38	121	3.27	133	2.51	79	3.44
Finland	14	5.09	1	6.06	24	4.92	22	4.85	4	5.38	15	5.17	56	4.15
France	15	5.09	17	5.36	32	4.69	60	4.47	16	4.96	12	5.28	7	5.76
Gambia, The	105	3.51	103	3.50	66	4.17	16	4.94	76	4.02	97	3.16	138	1.29
Georgia	94	3.71	90	3.74	64	4.18	31	4.75	108	3.62	98	3.14	107	2.80
Germany	13	5.11	19	5.33	21	4.97	70	4.40	36	4.62	10	5.36	5	6.01
Ghana	96	3.65	108	3.27	75	4.09	93	4.17	60	4.24	117	2.85	83	3.25
Greece	59	4.12	42	4.67	94	3.91	125	3.71	93	3.88	46	4.06	39	4.52
Guatemala	81	3.89	104	3.47	61	4.21	101	4.06	44	4.55	67	3.57	75	3.48
Guyana	112	3.43	81	3.91	95	3.88	100	4.08	102	3.70	103	3.05	131	1.96
Honduras	104	3.55	106	3.35	83	4.00	134	3.41	67	4.16	94	3.23	90	3.13
Hong Kong SAR	2	5.48	28	4.94	2	5.57	3	5.82	1	5.85	5	5.96	28	4.74
Hungary	41	4.38	34	4.81	67	4.16	62	4.46	68	4.16	37	4.41	49	4.27
Iceland	31	4.57	6	5.74	30	4.71	7	5.39	122	3.25	4	5.99	122	2.37
India	38	4.42	85	3.85	71	4.13	92	4.18	17	4.95	86	3.33	4	6.10
Indonesia	51	4.24	66	4.18	49	4.35	84	4.23	62	4.23	91	3.25	15	5.21
Iran, Islamic Rep.	90	3.76	87	3.80	98	3.85	135	3.37	120	3.29	96	3.19	20	5.09
Ireland	25	4.68	23	5.17	14	5.09	20	4.87	98	3.79	21	4.99	54	4.20
Israel	23	4.75	33	4.82	37	4.58	19	4.88	14	5.07	26	4.89	53	4.24
Italy	45	4.33	47	4.60	68	4.16	118	3.81	101	3.70	43	4.12	9	5.63
Jamaica	80	3.90	80	3.92	80	4.04	83	4.23	46	4.49	60	3.76	99	2.94
Japan	11	5.17	20	5.28	17	5.06	13	5.08	39	4.61	28	4.87	3	6.11
Jordan	73	3.98	57	4.32	46	4.36	112	3.92	54	4.31	62	3.71	84	3.25
Kazakhstan	71	4.00	65	4.20	86	3.98	21	4.86	117	3.39	82	3.40	55	4.16
Kenya	79	3.90	96	3.62	88	3.96	46	4.62	27	4.69	101	3.06	74	3.49
Korea, Rep.	22	4.81	15	5.42	38	4.55	78	4.27	83	3.99	19	5.05	11	5.56
Kuwait	68	4.03	83	3.87	54	4.32	64	4.45	63	4.22	77	3.46	59	3.88
Kyrgyz Republic	111	3.44	86	3.83	121	3.58	65	4.42	111	3.54	119	2.75	115	2.53
Latvia	63	4.08	35	4.81	72	4.13	52	4.58	86	3.98	51	3.96	95	3.04

(Cont'd.)

Table 7: The Global Competitiveness Index: Efficiency enhancers *(cont'd.)*

	EFFICIENCY ENHANCERS		PILLARS											
			5. Higher education and training		6. Goods market efficiency		7. Labor market efficiency		8. Financial market development		9. Technological readiness		10. Market size	
Country/Economy	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Lebanon	70	4.00	48	4.57	42	4.44	103	4.01	53	4.33	92	3.24	80	3.41
Lesotho	132	3.12	124	2.85	84	3.99	86	4.22	114	3.46	129	2.59	135	1.61
Libya	127	3.19	95	3.63	134	3.20	139	2.81	130	2.99	114	2.87	69	3.64
Lithuania	49	4.28	25	5.07	73	4.12	48	4.61	89	3.95	33	4.51	77	3.45
Luxembourg	20	4.92	41	4.68	3	5.49	37	4.71	6	5.35	2	6.11	89	3.16
Macedonia, FYR	83	3.84	72	4.04	57	4.24	71	4.38	87	3.97	64	3.60	106	2.80
Madagascar	124	3.21	128	2.76	107	3.80	67	4.41	131	2.94	123	2.70	110	2.68
Malawi	110	3.45	120	2.92	85	3.98	50	4.59	64	4.21	121	2.71	127	2.26
Malaysia	24	4.72	49	4.55	27	4.81	35	4.74	7	5.34	40	4.19	29	4.70
Mali	135	2.99	132	2.56	124	3.57	121	3.78	133	2.92	128	2.64	117	2.50
Malta	47	4.31	37	4.79	36	4.58	98	4.10	11	5.22	29	4.85	125	2.31
Mauritania	138	2.79	137	2.15	131	3.45	114	3.89	138	2.66	132	2.55	130	2.04
Mauritius	66	4.05	70	4.09	31	4.70	59	4.49	29	4.68	61	3.73	112	2.63
Mexico	61	4.09	79	3.94	96	3.86	120	3.80	96	3.82	71	3.55	12	5.54
Moldova	99	3.59	78	3.95	104	3.83	68	4.41	103	3.68	89	3.28	121	2.40
Mongolia	109	3.47	89	3.76	99	3.84	29	4.78	129	3.07	105	3.03	123	2.33
Montenegro	64	4.08	52	4.51	44	4.39	39	4.69	28	4.68	44	4.09	129	2.10
Morocco	88	3.78	102	3.51	77	4.08	130	3.47	74	4.07	75	3.49	57	4.04
Mozambique	128	3.16	134	2.47	112	3.75	116	3.87	116	3.39	113	2.89	113	2.62
Namibia	91	3.76	111	3.21	56	4.25	55	4.53	24	4.73	88	3.31	114	2.54
Nepal	131	3.14	131	2.62	122	3.58	126	3.58	106	3.64	134	2.50	100	2.93
Netherlands	8	5.24	10	5.63	8	5.17	23	4.83	26	4.71	3	5.99	19	5.10
New Zealand	18	4.97	13	5.55	7	5.20	12	5.10	10	5.23	25	4.93	60	3.82
Nicaragua	122	3.29	113	3.17	116	3.68	110	3.95	109	3.60	125	2.66	109	2.68
Nigeria	84	3.83	118	2.99	87	3.97	74	4.35	84	3.99	104	3.04	30	4.65
Norway	12	5.13	12	5.59	23	4.95	15	4.97	5	5.35	9	5.56	44	4.34
Oman	48	4.30	63	4.22	25	4.83	36	4.73	30	4.67	59	3.79	73	3.57
Pakistan	95	3.66	123	2.91	91	3.94	131	3.45	73	4.09	109	2.94	31	4.63
Panama	62	4.08	82	3.87	50	4.35	106	4.00	21	4.88	41	4.17	85	3.22
Paraguay	119	3.37	119	2.98	101	3.84	124	3.74	97	3.80	116	2.86	97	3.00
Peru	56	4.18	76	4.00	69	4.15	56	4.52	42	4.59	74	3.51	48	4.31
Philippines	78	3.93	73	4.02	97	3.86	111	3.93	75	4.04	95	3.20	37	4.54
Poland	30	4.62	26	5.00	45	4.38	53	4.58	32	4.66	47	4.02	21	5.08
Portugal	43	4.36	39	4.76	52	4.32	117	3.85	59	4.26	31	4.63	45	4.34
Puerto Rico	40	4.39	38	4.77	34	4.59	41	4.64	40	4.60	52	3.94	62	3.80
Qatar	26	4.68	32	4.84	12	5.10	14	5.03	19	4.91	36	4.44	66	3.75
Romania	54	4.18	54	4.47	76	4.08	76	4.32	81	4.01	58	3.82	43	4.41
Russian Federation	53	4.19	50	4.55	123	3.58	57	4.51	125	3.18	69	3.56	8	5.74
Rwanda	98	3.62	121	2.92	70	4.14	9	5.29	69	4.15	100	3.09	128	2.11
Saudi Arabia	27	4.67	51	4.55	10	5.11	66	4.42	22	4.83	42	4.17	22	4.97
Senegal	108	3.49	110	3.23	79	4.06	109	3.97	107	3.62	93	3.24	105	2.80
Serbia	93	3.75	74	4.01	125	3.57	102	4.06	94	3.84	80	3.41	72	3.60
Singapore	1	5.49	5	5.77	1	5.65	1	5.92	2	5.76	11	5.35	41	4.51
Slovak Republic	37	4.43	53	4.49	51	4.34	40	4.66	37	4.61	34	4.48	58	3.97
Slovenia	46	4.33	21	5.27	39	4.52	80	4.26	77	4.02	35	4.45	78	3.45
South Africa	42	4.37	75	4.01	40	4.48	97	4.13	9	5.30	76	3.48	25	4.82
Spain	32	4.56	31	4.85	62	4.20	115	3.88	56	4.28	30	4.64	13	5.47
Sri Lanka	69	4.01	62	4.24	47	4.36	104	4.01	52	4.36	84	3.37	68	3.70
Swaziland	126	3.20	125	2.81	106	3.80	90	4.19	80	4.01	136	2.46	132	1.91
Sweden	5	5.32	2	5.90	5	5.30	18	4.89	13	5.15	1	6.12	34	4.58
Switzerland	4	5.41	4	5.79	4	5.31	2	5.92	8	5.34	7	5.60	36	4.54
Syria	117	3.38	107	3.31	115	3.69	132	3.43	124	3.19	111	2.92	65	3.75
Taiwan, China	16	5.05	11	5.63	15	5.09	34	4.74	35	4.63	20	5.04	17	5.15
Tajikistan	123	3.25	105	3.41	128	3.54	73	4.38	127	3.14	120	2.74	126	2.30
Tanzania	114	3.42	133	2.54	108	3.80	77	4.28	90	3.95	131	2.59	81	3.37
Thailand	39	4.41	59	4.25	41	4.46	24	4.82	51	4.43	68	3.56	23	4.95
Timor-Leste	136	2.87	130	2.66	105	3.82	75	4.32	136	2.78	139	2.23	136	1.39
Trinidad and Tobago	77	3.95	61	4.24	89	3.94	82	4.25	43	4.57	53	3.92	108	2.78
Tunisia	50	4.28	30	4.89	33	4.68	79	4.26	58	4.27	55	3.86	67	3.72
Turkey	55	4.18	71	4.04	59	4.21	127	3.57	61	4.23	56	3.85	16	5.17
Uganda	102	3.56	127	2.76	117	3.67	27	4.80	72	4.11	112	2.92	92	3.11
Ukraine	72	3.98	46	4.61	129	3.53	54	4.54	119	3.31	83	3.37	38	4.53
United Arab Emirates	21	4.82	36	4.80	6	5.22	26	4.81	33	4.66	14	5.19	51	4.26
United Kingdom	7	5.28	18	5.34	22	4.96	8	5.29	25	4.73	8	5.58	6	5.80
United States	3	5.46	9	5.64	26	4.81	4	5.63	31	4.67	17	5.10	1	6.93
Uruguay	74	3.98	40	4.68	74	4.09	119	3.80	70	4.13	50	4.00	88	3.18
Venezuela	113	3.43	68	4.10	139	2.83	138	2.91	132	2.93	90	3.27	40	4.51
Vietnam	57	4.16	93	3.64	60	4.21	30	4.76	65	4.21	65	3.58	35	4.56
Zambia	101	3.56	114	3.17	65	4.18	107	3.98	49	4.49	110	2.92	111	2.64
Zimbabwe	134	3.01	115	3.07	130	3.52	129	3.51	105	3.64	135	2.48	134	1.84

Table 8: The Global Competitiveness Index: Innovation and sophistication factors

	INNOVATION AND SOPHISTICATION FACTORS		PILLARS			
			11. Business sophistication		12. Innovation	
Country/Economy	Rank	Score	Rank	Score	Rank	Score
Albania	104	3.09	87	3.61	121	2.57
Algeria	108	3.04	108	3.33	107	2.75
Angola	139	2.50	139	2.64	133	2.36
Argentina	71	3.42	75	3.80	73	3.05
Armenia	114	2.98	109	3.33	116	2.63
Australia	22	4.54	29	4.67	21	4.41
Austria	13	4.97	6	5.46	20	4.48
Azerbaijan	66	3.50	72	3.84	61	3.16
Bahrain	55	3.67	55	4.14	59	3.21
Bangladesh	109	3.01	105	3.42	119	2.61
Barbados	52	3.69	59	4.07	53	3.32
Belgium	15	4.91	11	5.24	15	4.59
Benin	81	3.35	99	3.49	60	3.20
Bolivia	125	2.88	117	3.26	127	2.50
Bosnia and Herzegovina	120	2.93	115	3.27	120	2.59
Botswana	93	3.24	104	3.44	74	3.04
Brazil	38	4.03	31	4.51	42	3.55
Brunei Darussalam	72	3.42	77	3.75	69	3.08
Bulgaria	95	3.22	95	3.52	92	2.91
Burkina Faso	127	2.87	137	2.80	90	2.93
Burundi	138	2.56	138	2.78	134	2.35
Cambodia	106	3.06	106	3.38	108	2.75
Cameroon	105	3.08	116	3.27	95	2.90
Canada	14	4.95	16	5.03	11	4.87
Cape Verde	128	2.84	131	3.05	117	2.63
Chad	130	2.79	133	2.94	115	2.64
Chile	44	3.91	43	4.33	43	3.50
China	31	4.13	41	4.34	26	3.92
Colombia	61	3.56	61	4.00	65	3.11
Costa Rica	33	4.11	32	4.50	35	3.72
Côte d'Ivoire	110	3.01	112	3.29	109	2.74
Croatia	85	3.32	92	3.56	70	3.08
Cyprus	36	4.07	33	4.47	38	3.66
Czech Republic	30	4.19	34	4.47	27	3.92
Denmark	9	5.15	7	5.41	10	4.89
Dominican Republic	99	3.17	82	3.72	118	2.62
Ecuador	124	2.89	107	3.34	130	2.43
Egypt	68	3.48	63	3.98	83	2.97
El Salvador	96	3.20	68	3.90	126	2.50
Estonia	45	3.90	56	4.13	37	3.68
Ethiopia	117	2.96	123	3.17	105	2.76
Finland	6	5.43	10	5.29	3	5.56
France	16	4.83	12	5.18	19	4.48
Gambia, The	64	3.53	65	3.93	62	3.14
Georgia	121	2.90	111	3.29	125	2.51
Germany	5	5.51	3	5.82	8	5.19
Ghana	100	3.17	97	3.50	99	2.84
Greece	73	3.41	74	3.83	79	3.00
Guatemala	62	3.54	54	4.15	89	2.93
Guyana	103	3.13	86	3.61	114	2.65
Honduras	98	3.20	85	3.64	106	2.76
Hong Kong SAR	24	4.46	17	5.01	29	3.91
Hungary	51	3.71	69	3.87	41	3.55
Iceland	20	4.61	28	4.69	17	4.53
India	42	3.96	44	4.30	39	3.62
Indonesia	37	4.06	37	4.40	36	3.71
Iran, Islamic Rep.	82	3.34	91	3.56	66	3.11
Ireland	21	4.55	20	4.85	22	4.25
Israel	11	5.05	26	4.79	6	5.30
Italy	32	4.11	23	4.81	50	3.40
Jamaica	86	3.31	81	3.72	93	2.90
Japan	1	5.72	1	5.92	4	5.52
Jordan	65	3.50	66	3.91	68	3.10
Kazakhstan	102	3.14	102	3.47	101	2.81
Kenya	58	3.63	62	3.99	56	3.27
Korea, Rep.	18	4.81	24	4.81	12	4.81
Kuwait	60	3.57	58	4.12	76	3.03
Kyrgyz Republic	137	2.58	130	3.05	139	2.12
Latvia	77	3.37	80	3.73	77	3.02
Lebanon	74	3.41	53	4.16	112	2.65
Lesotho	116	2.96	114	3.28	113	2.65
Libya	135	2.62	136	2.86	131	2.38
Lithuania	48	3.79	49	4.21	51	3.38
Luxembourg	19	4.76	18	4.98	16	4.53
Macedonia, FYR	97	3.20	96	3.52	97	2.88
Madagascar	113	2.98	124	3.16	102	2.80
Malawi	84	3.32	89	3.59	72	3.06
Malaysia	25	4.45	25	4.79	24	4.10
Mali	112	3.00	128	3.08	91	2.92
Malta	46	3.88	40	4.34	48	3.43
Mauritania	134	2.63	134	2.90	132	2.36
Mauritius	59	3.61	47	4.24	82	2.98
Mexico	69	3.46	67	3.91	78	3.01
Moldova	123	2.89	113	3.28	129	2.49
Mongolia	119	2.95	127	3.10	100	2.81
Montenegro	56	3.67	70	3.86	45	3.48
Morocco	79	3.36	78	3.75	81	2.98
Mozambique	101	3.14	110	3.31	84	2.96
Namibia	92	3.24	88	3.60	96	2.89
Nepal	133	2.67	132	3.04	137	2.29
Netherlands	8	5.16	5	5.55	13	4.77
New Zealand	28	4.30	30	4.59	25	4.01
Nicaragua	126	2.88	118	3.24	124	2.52
Nigeria	83	3.33	76	3.79	98	2.87
Norway	17	4.83	14	5.17	18	4.49
Oman	47	3.87	45	4.27	47	3.46
Pakistan	76	3.38	79	3.73	75	3.03
Panama	54	3.68	46	4.25	64	3.11
Paraguay	132	2.71	122	3.21	138	2.21
Peru	89	3.29	71	3.85	110	2.73
Philippines	75	3.38	60	4.04	111	2.73
Poland	50	3.76	50	4.20	54	3.31
Portugal	39	3.98	51	4.19	32	3.77
Puerto Rico	29	4.24	27	4.74	33	3.74
Qatar	23	4.48	21	4.85	23	4.11
Romania	91	3.24	93	3.55	87	2.94
Russian Federation	80	3.36	101	3.47	57	3.25
Rwanda	87	3.30	94	3.53	71	3.07
Saudi Arabia	26	4.41	19	4.91	28	3.92
Senegal	67	3.48	84	3.66	55	3.30
Serbia	107	3.04	125	3.15	88	2.93
Singapore	10	5.07	15	5.10	9	5.04
Slovak Republic	63	3.54	57	4.12	85	2.95
Slovenia	35	4.08	36	4.42	34	3.73
South Africa	43	3.93	38	4.37	44	3.49
Spain	41	3.96	35	4.46	46	3.47
Sri Lanka	40	3.97	39	4.36	40	3.58
Swaziland	131	2.77	121	3.22	135	2.33
Sweden	3	5.67	2	5.88	5	5.45
Switzerland	2	5.71	4	5.81	2	5.60
Syria	115	2.97	103	3.45	128	2.49
Taiwan, China	7	5.23	13	5.17	7	5.29
Tajikistan	118	2.96	126	3.13	103	2.79
Tanzania	94	3.22	98	3.50	86	2.95
Thailand	49	3.78	48	4.23	52	3.34
Timor-Leste	136	2.60	135	2.89	136	2.31
Trinidad and Tobago	78	3.36	73	3.83	94	2.90
Tunisia	34	4.09	42	4.34	31	3.85
Turkey	57	3.63	52	4.16	67	3.10
Uganda	111	3.00	120	3.23	104	2.76
Ukraine	88	3.30	100	3.48	63	3.11
United Arab Emirates	27	4.37	22	4.84	30	3.91
United Kingdom	12	4.98	9	5.32	14	4.65
United States	4	5.53	8	5.40	1	5.65
Uruguay	70	3.46	83	3.70	58	3.21
Venezuela	129	2.79	129	3.06	123	2.53
Vietnam	53	3.69	64	3.98	49	3.40
Zambia	90	3.28	90	3.57	80	3.00
Zimbabwe	122	2.89	119	3.24	122	2.55

(Cont'd.)

On the other hand, there are some weaknesses in particular areas that have deepened since our last assessment. The evaluation of institutions has continued to decline, falling from 34th to 40th this year. The public does not demonstrate strong trust of politicians (54th), and the business community remains concerned about the government's ability to maintain arms-length relationships with the private sector (55th) and considers that the government spends its resources relatively wastefully (68th). There is also increasing concern related to the functioning of private institutions, with a measurable weakening of the assessment of auditing and reporting standards (down from 39th last year to 55th this year), as well as corporate ethics (down from 22nd to 30th). Measures of financial market development have also continued to decline, dropping from 9th two years ago to 31st overall this year in that pillar.

A lack of macroeconomic stability continues to be the United States' greatest area of weakness (ranked 87th). Prior to the crisis, the United States had been building up large macroeconomic imbalances, with repeated fiscal deficits leading to burgeoning levels of public indebtedness; this has been exacerbated by significant stimulus spending. In this context it is clear that mapping out a clear exit strategy will be an important step in reinforcing the country's competitiveness going into the future.

Germany has moved up two places to 5th position. The macroeconomic environment has improved compared with other advanced economies (up from 30th to 22nd in this pillar). Germany is ranked 2nd for the quality of its infrastructure, with particularly good marks for its transport and telephony and electricity infrastructure. Its goods market is efficient (21st), with intense local competition (2nd) and effective antitrust policy. Germany has very sophisticated businesses, ranked 3rd, just behind Japan and Sweden; German businesses are also aggressive in adopting technologies for productivity enhancements (10th). These attributes allow Germany to benefit greatly from its significant market size (5th). On the other hand, Germany's labor market remains rigid (126th for the labor market flexibility subpillar), where a lack of flexibility in wage determination and the high cost of firing provide a hindrance to job creation (although this has admittedly helped to keep unemployment down during the crisis).

Japan moves up two places to 6th overall, maintaining its performance compared with last year, while some other countries in the top 10 have weakened (its score since last year remains unchanged). Japan continues to enjoy a major competitive edge in the areas of business sophistication and innovation, and is ranked 1st and 4th, respectively, in these two pillars. Company spending on R&D remains high and the country benefits from the availability of many scientists and engineers buttressing a strong capacity for innovation. Indeed, in terms of innovation "output," this pays off with a rate of patenting per capita (279.1 per million inhabitants) that is 2nd worldwide, just behind the United States. The country's overall competitive performance, however, continues to be dragged down by its macroeconomic weaknesses, with high budget deficits over several years (ranked 134th), which have led to the buildup of one of the highest public debt levels in the world (217.6 percent of GDP in 2009, corresponding to a 137th rank, or second to last on this indicator). Japan's rise in the rankings can in large part be traced to the fact that its main areas of weakness, linked to macroeconomic instability and weaknesses in the banking sector, for example, have now become concerns for many other countries.

Finland and **Denmark,** while placed a bit further behind Sweden this year, continue to be ranked among the most competitive economies in the world, at 7th and 9th positions, respectively. Their macroeconomic environments are healthy, with government budgets approximately in balance through 2009, narrow interest rate spreads (especially in Finland), and excellent country credit ratings. Similar to Sweden, they have among the best-functioning and most transparent institutions in the world, as in past years. They also continue to occupy top positions in the higher education and training pillar, the positive result of a strong focus on education over recent decades. This has provided the workforce with the skills needed to adapt rapidly to a changing environment and has laid the ground for their high levels of technological adoption and innovation. A marked difference among the Nordic countries relates to labor market flexibility. Denmark (ranked 5th in this pillar) continues to distinguish itself as having one of the most efficient labor markets internationally, with more flexibility in setting wages, firing, and therefore hiring workers than in the other Nordics and in most European countries more generally.

The Netherlands moves up two positions to 8th place. Dutch businesses are highly sophisticated (ranked 5th) and are among the most aggressive internationally in absorbing new technologies for productivity enhancements (ranked 3rd for their technological readiness). The country's excellent educational system (ranked 8th and 10th for the two related pillars) and efficient factor markets, especially goods markets (ranked 8th), are highly supportive of business activity. The Netherlands is also characterized by a comparatively stable macroeconomic environment, improving on a relative basis compared with last year. The country's competitiveness would be further enhanced by introducing more flexibility into the labor market (ranked 80th on this subpillar).

Canada has dropped one place this year to 10th, with a stable performance and rounding out the top 10. Canada benefits from highly efficient markets (with goods, labor, and financial markets ranked 11th, 6th, and 12th, respectively), well-functioning and transparent institutions (11th), and excellent infrastructure (9th). In addition, the country has been successful in nurturing its

human resources: it is ranked 6th for health and primary education and 8th for higher education and training. Improving the sophistication and innovative potential of the private sector, with greater R&D spending and producing higher on the value chain, would enhance Canada's competitiveness and productive potential going into the future.

Europe and Central Asia

The global economic crisis has hit a number of European countries particularly hard, leading to rising unemployment, plunging demand, and, in some cases, concerns about the sustainability of sovereign debt. However, overall Europe continues to feature prominently among the most competitive regions in the world. As described above, six European countries are among the top 10, and twelve are among the top 20, as follows: Switzerland (1st), Sweden (2nd), Germany (5th), Finland (7th), the Netherlands (8th), Denmark (9th), the United Kingdom (12th), Norway (14th), France (15th), Austria (18th), Belgium (19th), and Luxembourg (20th). European Commissioner Joaquín Almunia explores the differences in competitiveness performance across the EU27 members in Box 3.

After having fallen four positions over the past two years, the **United Kingdom** moves up one spot to 12th place this year, with a stable performance. The country benefits from clear strengths, such as the efficiency of its labor market (8th), standing in contrast to the rigidity of many other European countries. The country continues to have sophisticated and innovative businesses that are highly adept at harnessing the latest technologies for productivity improvements and operating in a very large market (ranked 6th for market size). These are all characteristics that are important for spurring productivity enhancements. While somewhat improved since last year, the macroeconomic environment remains the country's greatest competitive weakness, with deficit spending that must be reined in to provide a more sustainable economic footing going into the future.

France is ranked 15th, moving up one place since last year and demonstrating a number of competitive strengths. The country's infrastructure is among the best in the world (ranked 4th), with outstanding transport links, energy infrastructure, and communications. The health of the workforce and the quality and quantity of education provision are other clear strengths (ranked 16th for health and primary education and 17th for higher education and training), providing the economy with a healthy and educated workforce. These elements have provided the basis for a business culture that is aggressive in adopting new technologies for productivity enhancements (ranked 12th for technological readiness). In addition, the sophistication of its business culture (12th in the business sophistication pillar) and its leadership in the area of innovation (19th in the innovation pillar), buttressed by a highly developed financial market (ranked 16th), are important attributes that have helped to boost the country's growth potential. On the other hand, France's competitiveness would be enhanced by injecting more flexibility into its labor market, ranked a low 105th because of the strict rules on firing and hiring as well as the poor labor-employer relations in the country.

Ireland declines in the rankings for the second year in a row, to 29th position this year. The country continues to benefit from a number of strengths, including excellent health and primary education (ranked 10th) and strong higher education and training (23rd), as well as well-functioning goods and labor markets, ranked 14th and 20th, respectively. These attributes have fostered a sophisticated and innovative business culture (ranked 20th for business sophistication and 22nd for innovation). On the other hand, the decline in rank is attributable to a weakening macroeconomic environment as well as continuing concerns related to financial markets (with a precipitous fall from 7th two years ago to 45th last year and 98th position this year in this pillar).

After already falling six places last year, **Iceland** drops a further five places to 31st position, mainly because of a continuing deterioration in the macroeconomic environment (from 119th to 138th) and weaker financial markets (down from 20th two years ago to 85th last year and 122nd this year). Yet despite these concerns, Iceland also benefits from a number of clear competitive strengths in moving to a more sustainable economic situation. These include the country's top-notch educational system at all levels (4th and 6th in the health and primary education and higher education and training pillars, respectively) coupled with an innovative business sector (17th) that is highly adept at adopting new technologies for productivity enhancements (4th). Business activity is further supported by an extremely flexible labor market (7th) and well-developed infrastructure (12th).

Despite the fallout of the economic crisis, **Estonia** and the **Czech Republic** remain the best performers within Eastern Europe, ranking 33rd and 36th, respectively. As in previous years, the countries' competitive strengths are based on a number of common features. They rely on excellent education and highly efficient and well-developed markets for goods, labor, and financial services, as well as a strong commitment to advancing technological readiness, particularly in the case of Estonia. In addition, Estonia's lead reflects solid institutions and improving macroeconomic stability, which is particularly commendable given that the region has been strongly affected by the economic crisis.

The largest country among the new European Union (EU) members, **Poland** moves up by seven positions to 39th. This significant improvement for a second year in a row reflects the country's relatively stronger resistance to the economic crisis as a result of more pru-

Box 3: How competitive is the European Union?

JOAQUÍN ALMUNIA, Vice-President and Commissioner for Competition Policy, European Commission

The economic performance of the European Union (EU) has been the subject of much political unease in past few years. There has been a concern that Europe is not sufficiently equipped to face new global challenges such as the rise of large competitive economies, the need for energy efficiency and security, or the rapid pace of technological innovation. These worries seem exaggerated because European economies are generally faring well in relative terms. But many will agree that Europe is not living up to its full potential and that the current crisis is imposing unprecedented stress on the most traditional parts of the economy. The European Union has proposed a new strategy—*Europe 2020*—for smart, sustainable, and inclusive growth. The strategy consists of consolidating public finances while promoting economic integration, investing in pan-European energy and transport infrastructure, and developing further information and communication technologies. A strong emphasis is also put on upgrading skills and promoting innovation.

Even as the *Europe 2020* strategy was being adopted, a confidence crisis triggered by the severe financial difficulties of the Greek government put the financial and monetary stability of the entire euro zone into question. The public perception was that a few southern countries—notably Greece, Italy, Portugal, and Spain—were facing unsustainable public deficits that endangered their growth prospects to the point of potential insolvency.

The market appreciation was not accurate, given that the situation of Greece was particular. It did, nonetheless, remind us of the fact that the European Union is not a homogeneous area and that Member States vary in the nature and degree of their competitive advantage. The Global Competitiveness Index provides a useful tool for disaggregating these differences to better understand the strengths and weaknesses of individual EU members and of Europe as a whole. The table shows the global competitiveness ranking of EU Member States. Overall, the Scandinavian countries, Germany, the United Kingdom, France, and the Benelux (Belgium, Netherlands, and Luxembourg) top the list and are all in the top 20 most competitive economies in the world. But the sources of their strength vary somewhat. The Benelux and the Scandinavian countries compensate for the lack of market size with excellent skill sets, sound institutions, and, particularly in the case of the Scandinavian countries, a strong capacity for innovation.

Most of the other EU Members States are among the top 50 performers globally, but there are five Member States well below this mark. Greece shows a dismal performance in 2010 due to the severe deterioration of its macroeconomic environment, adding to a particularly poor institutional setup and low efficiency of markets. It is notable that the group of countries in the middle ground distinguish themselves from the front-runners particularly in that they have substantially less innovation and a much poorer institutional environment. On the other hand, their performance with respect to macroeconomic stability and their population's basic skills is similar. But Member States within this middle group also have different strengths. Member States from Eastern Europe have bet more heavily on open and flexible markets for both goods and labor, while Italy and Spain have relied instead on the economies of scale their markets can provide. Spain has also made a notable effort of investment in infrastructure.

Although the differences in situation seem to argue against a one-size-fits-all strategy, it is clear that Europe as a whole faces common challenges. There is still scope for increasing structural reforms to increase market flexibility. More importantly, Europe stands to gain a lot from greater market integration because this would increase the size of markets easily accessible to businesses. Also, except for a small subset of countries, Europe does not provide an environment that is sufficiently conducive to innovation. Market size, flexible labor markets, and strong innovation are at the core of the US competitive advantage; Europe as a group lags in all three. China shares with mid-range European countries the relative handicap of rigid institutions and very low innovation. But the country is quickly catching up on infrastructure and market efficiency and will increasingly benefit from its expanding market size.

As infrastructure and market efficiency levels converge among the main global players, Europe cannot afford to lose out

(Cont'd.)

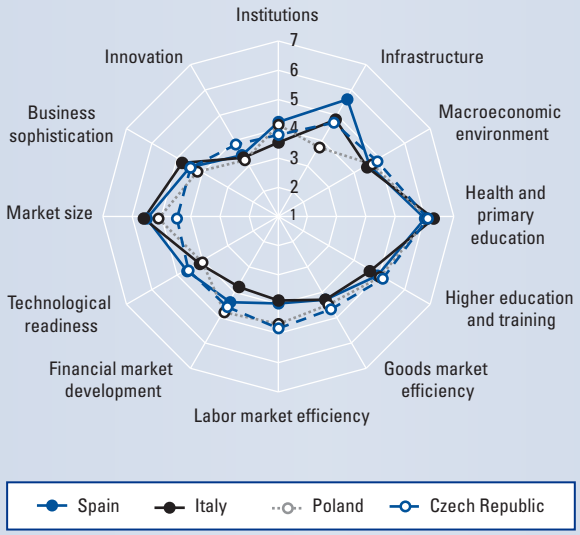
Table 1: Rankings of the EU27 in the Global Competitiveness Index 2010–2011

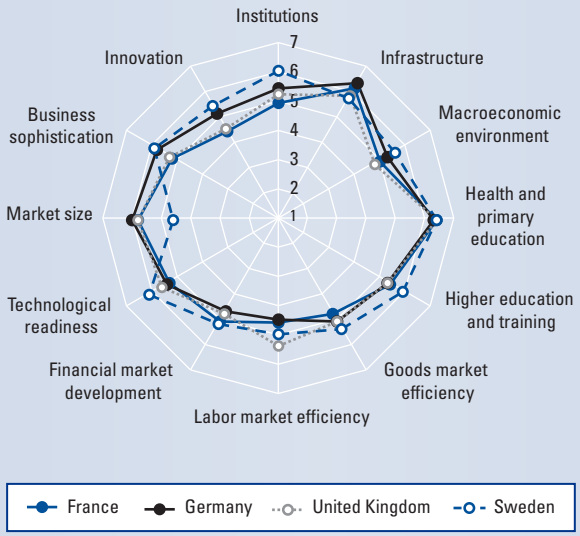
Economy	Rank	Score
Sweden	2	5.56
Germany	5	5.39
Finland	7	5.37
Netherlands	8	5.33
Denmark	9	5.32
United Kingdom	12	5.25
France	15	5.13
Austria	18	5.09
Belgium	19	5.07
Luxembourg	20	5.05
Ireland	29	4.74
Estonia	33	4.61
Czech Republic	36	4.57
Poland	39	4.51
Cyprus	40	4.50
Spain	42	4.49
Slovenia	45	4.42
Portugal	46	4.38
Lithuania	47	4.38
Italy	48	4.37
Malta	50	4.34
Hungary	52	4.33
Slovak Republic	60	4.25
Romania	67	4.16
Latvia	70	4.14
Bulgaria	71	4.13
Greece	83	3.99

Box 3: How competitive is the European Union? *(cont'd.)*

on the potential of scale economies and innovation. The priorities of the Europe 2020 strategy should contribute to European competitiveness by eliminating further barriers to the European Single Market, encouraging investment in better skills, and supporting innovation. But the data highlight the fact that many countries still need to take measures to improve basic competitive requirements, such as their institutional setting and infrastructure levels; they must also improve their market efficiency, technological readiness, and level of skills. It will take the combined effort of all European and national authorities to improve the economic potential of the European Union so that it remains a prominent player in the 21st century.

Figure 1: Comparative performance of selected EU countries





dent economic policies and its growing domestic market size. In fact, Poland was the only European economy to register positive growth in 2009. The country displays fairly even performance across all 12 pillars of competitiveness. Notable strengths include its large market size (21st) and high educational standards, in particular its high enrollment rates (18th). The financial sector is well developed (32nd), and the increased confidence in the banking sector (18th) has contributed to Poland's very good performance over the past years. Maintaining its improved position will necessitate significant upgrading of transport infrastructure, which lags behind international standards by a significant margin, ranked 108th. The quality of roads in Poland is particularly poor. And although its institutional framework has improved significantly this year, the business sector remains very critical of the efficiency of the government (103rd). As Poland transitions to the innovation-driven stage of development, it will have to focus more strongly on developing capacities in innovation and business sophistication. Stronger clusters, more R&D orientation of companies, and intensified collaboration between universities and the private sector would help the country to move toward a more future-oriented development path.

Spain has dropped nine ranks this year to 42nd place. The decline is in large part attributable to an increasingly negative assessment of the labor and financial markets as well as the level of sophistication of the country's businesses. On a more positive note, Spain's competitiveness performance continues to be boosted by the large market (13th) available to its national companies, strong technological adoption (30th in the technological readiness pillar), first-class infrastructure (14th), and good higher education and training (31st). Overall, the greatest area of concern remains the highly inflexible labor market (130th on the related subpillar), which discourages job creation—a matter of particular concern considering the high and persistent unemployment in the country.

Italy remains stable at 48th place this year, still by far the lowest-ranked G-7 member country. The country continues to do well in more complex areas measured by the GCI, particularly the sophistication of its businesses environment, where it is ranked 23rd, producing goods high on the value chain and with the world's top business clusters (1st). Italy also benefits from its large market size—the 9th largest in the world—which allows for significant economies of scale. However, Italy's overall competitiveness performance continues to be held back by some critical structural weaknesses in the economy. The labor market remains highly rigid, ranked 118th for its labor market efficiency, hindering job creation. Financial markets are not sufficiently developed to provide needed finance for business development (ranked 101st). Other institutional weaknesses include high levels of corruption and organized crime and a perceived lack of independence within the judicial system, which increase business costs and undermine investor confidence, with Italy ranked 92nd overall for its institutional environment.

Turkey remains stable at 61st position. Turkey benefits from its large market, which is characterized by intense local competition (15th) and reasonably sophisticated business practices (52nd). The country also benefits from reasonably developed infrastructure (56th), particularly roads and air transport infrastructure, although ports and the electricity supply require upgrading. In order to further enhance its competitiveness, Turkey must focus on improving its human resources base through better primary education and better healthcare (72nd), addressing the inefficiencies in the labor market (127th), and reinforcing the efficiency and transparency of public institutions (90th).

After a significant slide in the rankings last year, the **Russian Federation** maintains its 63rd position, reflecting the fact that the deterioration in macroeconomic stability has been somewhat balanced by improvements in other areas, notably infrastructure, health, and education, as well as technological readiness. At the same time, Russia's competitiveness continues to worsen in what is one of the major areas of concern, the efficiency of goods markets. Competition, both domestic and foreign, is stifled by inefficient anti-monopoly policies as well as restrictions on trade and foreign ownership. These inefficiencies in goods markets reduce the country's ability to take advantage of some of its strengths, in particular its high innovation potential and its solid performance in terms of higher education and training. A particular challenge for Russia is related to its very weak institutions. Ranked 118th in this area, the country suffers from insufficient protection of property rights (126th), undue influence (114th), and weak corporate governance standards (119th).

Ukraine's performance over the past year reflects the daunting challenges the country has faced during the global economic crisis. The country drops by seven positions to 89th (or by five positions in a constant sample). A particularly severe weakening of its already poor macroeconomic stability contributed to this slide, as has a more negative assessment across many of the areas measured by the GCI. The country nevertheless maintains the characteristics that made up its competitive strengths in the past years. A well-educated population, flexible and efficient labor markets, and a large market size continue to set a good base for the country's future growth performance. The new government announced an ambitious reform agenda that, according to the GCI, should address as a priority the country's weak institutional framework (134th) and the highly inefficient markets for goods and services (129th), which stifles competition and prevents entrepreneurship from flourishing. In this context, the country's recent accession to the World Trade Organization (WTO) should contribute to intensifying competition in the country, through reducing both trade barriers and domestic obstacles such

as ineffective anti-monopoly policies (126th). Priority should also be given to fostering the development of the financial sector (119th), the major weaknesses of which exacerbated the effects of the crisis on Ukraine. Both financial market efficiency and trustworthiness have continued to deteriorate since the past edition of the *Report,* down to ranks 123rd and 115th, respectively.

Greece falls 12 places in the rankings to 83rd (or by 10 positions in a constant sample) and is the lowest-ranked country within the European Union. The decline follows the well-publicized revision to the government's fiscal spending numbers, and the ensuing sovereign debt crisis, with Greece falling from 103rd to 123rd in the macroeconomic environment and also declining by 10 places to 93rd place in measures of financial market development. Given the recent turmoil it is perhaps not surprising that the evaluation of public institutions (e.g., government efficiency, corruption, undue influence) has also suffered since last year, ranked a low 82nd overall. Another major area of concern is the country's inefficient labor market (125th), which will make it more difficult to emerge from the crisis, demonstrating the importance of recent efforts to increase the retirement age and increase labor market flexibility. In working to overcome the present difficulties, Greece has a number of strengths to build upon, including a reasonably well educated workforce that is adept at adopting new technologies for productivity enhancements.

The remaining countries from the region place below Greece. The regional ranking closes with **Tajikistan** at 116th and the **Kyrgyz Republic** at 121st.

Asia and the Pacific

For the third consecutive year, **Hong Kong SAR** retains its position at 11th overall, with a slight improvement in score. Hong Kong maintains its leadership in measures of financial market development and, for the first time, tops the infrastructure pillar. The quality of transport, energy, and telephony infrastructure is simply outstanding, with a score of 6.8 out of 7 in the pillar. In total, Hong Kong appears in the top 10 of six of the twelve GCI pillars. One of the world's major trade hubs, the crisis hit Hong Kong quickly and strongly, with its economy growing at a subdued rate in the second half of 2008 and contracting by 2.7 percent in 2009. But Hong Kong's economy has proved resilient and the IMF predicts a growth rate of about 5 percent for 2010. It offers one of the world's most business friendly environments thanks to world-class institutions, infrastructure, market efficiency, and the dynamism of its financial sector, and even slightly improves in each these dimensions. In particular, Hong Kong ranks behind only Singapore for government efficiency.

Taiwan, China ranks 13th, one place lower than last year. Taiwan ranks among the top 20 economies in nine pillars, but its performance in three of them holds the economy back from its full competitiveness potential: institutions, financial market development, and labor market efficiency. The quality of the institutional framework continues to improve although by small increments, now standing at 35th position, up from 40th in 2008. Thanks to greater efficiency, Taiwan has improved by 19 positions in the financial market development pillar to 35th, a category where it used to place below the 50th mark. The third area of relative weakness is its labor market (34th), where the situation continues to deteriorate with respect to the flexibility. Given its many strengths, improvements in these areas would make Taiwan an even more competitive economy.

Down by one position, **Australia** now ranks 16th, with a stable performance overall, ranking no lower than 29th in any of the 12 pillars. The results confirm the continued dynamism and high level of development of Australia's financial market. While credit access conditions deteriorated during the financial crisis, the banking sector held out remarkably well. Australia remains a prime location for doing business, with high efficiency in both the goods market (18th) and the labor market (11th), and excellent public (14th) and private (11th) institutions. To progress even further, the country will need to increase the sophistication of its businesses (29th) and strengthen its innovation capacity (21st).

The **Republic of Korea** falls by three places to 22nd position. The country continues to do very well in most categories. It possesses world-class transport infrastructure (12th), a healthy macroeconomic environment at a time when many industrialized countries are struggling in this area (6th, up five positions), and excellent higher education (15th), with the highest rate of tertiary education enrollment in the world. Finally, Korea remains one of the world's innovation powerhouses (12th in the innovation pillar).

Yet Korea continues to suffer from weaknesses that represent a major drag on its competitiveness. The country ranks a dismal 124th with respect to labor market flexibility. Business leaders express dismay at the difficulty of hiring and firing employees (115th), also reflected in the World Bank's Rigidity of employment index (90th). What's more, the World Bank estimates that the average severance pay for dismissing an employee is equivalent to 91 weeks worth of salary (placing Korea 114th on this indicator). This leads companies to resort extensively to temporary employment, thus creating precarious working conditions and giving rise to tensions—Korea ranks 138th, ahead only of Venezuela, for the difficult relations between employers and workers. The second area of concern is the country's financial market (83rd), where the assessment has considerably worsened over the past year. Access to credit and financing has become more difficult, and the business community continues to express doubts as to the soundness of the banking sector (99th) and complains about the limited availability (98th) and high costs (82nd) of financial services. Finally,

Korea has not improved its institutional framework, losing further ground at 62nd. Within this pillar, the lack of trust of politicians (105th) and the perceived inefficiency of the government (91st), complaints about excessive regulation (108th), and low transparency of policymaking (111th) are particularly worrisome.

Despite losing three positions and a small worsening in its score, **New Zealand** (23rd) posts a performance largely in line with last year. The country possesses some of the best-functioning institutions in the world, ranking 3rd, behind only Singapore and Hong Kong in this pillar. Specifically, it ranks 4th for the quality of public institutions while it retains its leadership in the private institutions component. Overall, the environment is extremely conducive to business, supported by efficient goods (7th) and labor markets (12th) and by one of the soundest banking systems in the world (2nd). Notwithstanding the relatively small size of its domestic and export markets (60th), the area with the most room for improvement remains infrastructure (37th), in particular roads and railroads (45th in both dimensions).

Up two positions to 27th place, **China** has reinforced its position within the top 30. It is the only BRIC country to improve in the rankings this year, thus increasing the gap with the other three.[24] China's performance remains stable in most areas measured with the Index compared with last year, with its main strengths its large and growing market size, macroeconomic stability, and relatively sophisticated and innovated businesses. The two-rank improvement is almost entirely attributable to a better assessment of its financial market (up 24 places to 57th), which has historically been a notable weak point. This is the result of easier access to credit and financing through equity markets, banks, and venture capital, which has been accompanied by a slight improvement in the perceived soundness of the banking sector (60th, up six places). Technological readiness is another area where China has traditionally underperformed (78th), with low ICT penetration, although rates are surging. In 2009 alone, China added over 100 million mobile telephone subscriptions and some 86 million new Internet users. Mobile penetration has reached more than 50 percent, and about a quarter of the population uses the Internet on a regular basis. Other areas for improvement are related to its human resources base. China has made small strides in the quality of higher education and training (60th), but there remains considerable room for improvement in what constitutes an important area going forward. In addition, although the labor market is indeed quite efficient, a lack of flexibility (96th) constitutes a major challenge.

Brunei Darussalam continues to move up the rankings to 28th this year, with improvements across many areas measured by the GCI. The economy is categorized as one in transition from stage 1 to stage 2 because of its economy's dependency on oil and gas (accounting for some 83 percent of exports). Brunei continues to do well in the categories that matter the most given its stage of development, namely institutions (36th), health and primary education (32nd), and the macroeconomic environment (1st). While the basic requirements are in place, the overall environment for doing business remains challenging. Goods markets are improving but continue to lack efficiency (78th) and financial markets could be further developed (55th). Competitiveness would also be enhanced through improvements of the higher education system (64th).

Indonesia (44th) posts an impressive gain of 10 places, mainly driven by a healthier macroeconomic environment and improved education indictors. Indonesia managed to maintain a relatively healthy macroeconomic environment (34th, up 18) throughout the crisis. While most other countries saw their budget deficits surge, Indonesia kept its deficit under control. Public debt remains low at 31 percent of GDP, and savings rose to 33 percent of GDP. In addition, inflation in 2009 slowed down to 4.8 percent, half the rate of 2008. Moreover, Indonesia has improved across all education-related indicators included in the GCI. Yet ample room for improvement remains in this and other areas. Of particular concern is the quality of Indonesia's infrastructure (82nd), specifically ports (96th), roads (84th), and the electricity supply (97th). Additionally, several indicators highlight the worrisome health situation: tuberculosis and malaria incidence, as well as infant mortality rates, remain among the highest in the world. A third area of concern relates to technological readiness (91st). Despite rapid uptake in recent years, ICT use remains low in international comparison (103rd).

India's performance remains quite stable, falling two positions to 51st but with a small improvement in score. India's competitiveness is based on its large market size and good results in more complex areas including financial markets (17th), business sophistication (44th), and innovation (39th). On the other hand, India has failed to improve significantly on any of the basic drivers of its competitiveness. It ranks 104th in the health and primary education pillar, with high rates of communicable diseases and high infant mortality. Indeed, life expectancy in India is 10 years shorter than in Brazil and China. And although primary enrollment is becoming universal, the quality of primary education remains fairly poor (98th). Higher education also remains a weak point, with low enrollment rates at the secondary and tertiary levels. Infrastructure (86th) is in need of upgrade, especially with respect to quality of roads, ports, and the electricity supply, with India falling 10 places in this area this year. The macroeconomic environment continues to be characterized by persistent budget deficits, high public debt, and high inflation. Labor markets are also in need of greater efficiency and flexibility (92nd).

Malaysia drops two places to 26th position this year, with a relatively stable performance since last year. The country has a well-developed financial market (7th)

and an efficient goods market (27th). Malaysia also does relatively well in more complex categories, which matter the most for advanced economies, namely business sophistication (25th) and innovation (24th), boding well for the future. The four-year decline in the quality of institutions that pushed Malaysia from 17th in to 43rd has finally come to a halt, with the country remaining stable at 42nd place this year. The main drag within this pillar remains the security situation (80th, up five). In order to improve its competitiveness further, Malaysia will need to improve its higher education system, with particularly low enrollment rates at the secondary and tertiary levels. It would also be well served by encouraging greater technological adoption, particularly the use of ICTs, for productivity enhancements.

Thailand, at 38th position, has fallen 2 places this year and 10 ranks since 2006. The assessment of public institutions continues to deteriorate (70th) after a drop of 30 places over the past four years, likely related to recent problems of social unrest and political instability in the country. However, Thailand continues to benefit from its relatively large domestic and export markets (23rd), its excellent transport infrastructure (23rd), the efficiency of its labor market (24th), and a relatively well functioning goods market (ranked 41st). In addition, the country's business environment is relatively sophisticated with developed clusters (34th) and companies operating across the value chain. Going forward, in addition to urgently improving its institutional framework, the country needs to step up its efforts to improve its health and educational systems and encourage wider adoption of new technologies for productivity enhancements. Such efforts will then buttress the country's innovation potential, which will become increasingly important as it moves toward the most advanced stage of economic development.

Up 16 positions, **Vietnam** (59th) has improved in 10 of the 12 GCI pillars. Among the country's competitive strengths are its efficient labor market (30th) and its impressive innovation potential given its stage of development (49th), including its relatively large market size (35th) with a particularly large export market. However, trade remains hindered by very high import tariffs (8.2 percent, 90th), other trade barriers (112th), and burdensome customs procedures (106th).

Following a hectic period marked by high inflation, a dramatic fall in the dong, and large swings in interest rates, the macroeconomic situation improved sharply (85th, up 27). Yet the government budget deficit remains one of the highest in the world, contributing to rising public debt and pointing to a need to continue efforts toward macroeconomic stability. In addition, infrastructure, strained by rapid economic growth, remains a major challenge for the country despite some improvement in recent years, with particular concerns about the quality of roads (117th) and ports (97th). And while there is a sense that the quality of education is improving, enrollment rates at all levels remain low (ranked 71st, 102nd, and 109th for primary, secondary, and tertiary enrollments, respectively). In order to further improve its competitiveness, Vietnam must also continue to strengthen its institutional environment. Regulation is perceived as burdensome (120th), with the number of procedures (11, 110th) and time (50 days, 118th) required to start a business making this a daunting process. In addition, there are concerns regarding the level of intellectual property protection (109th) and to a lesser extent the respect of property rights (81st). Corruption is considered frequent and pervasive (107th). On the corporate governance side, the private sector is not seen as being sufficiently accountable (124th), partly because of the weakness of investor protection in the country (133rd—third to last).

Sri Lanka moves up to 62nd position this year, a rise attributable to improvements across the board. Between 2003 and 2008, annual GDP growth exceeded 5 percent (slowing to 3.5 percent in 2009). As a result of this healthy growth, Sri Lanka's GDP is rising and the country is now transitioning from the factor-driven to the efficiency-driven stage in the GCI framework. Sri Lanka needs to bolster the foundations of its competitiveness, while improving on efficiency-enhancing factors, which are becoming increasingly important given this level of development. And this year's performance indicates that the country is making some important improvements to this end.

Sri Lanka achieves higher scores this year in every measure of the public institutions category, improving its position from 73rd to 55th in the institutions pillar. Among other things, the perceived level of security is increasing (106th), although threat of terrorism remains a serious concern (134th). Other areas of improvement include health and primary education (35th, up 12) and financial markets (52nd, up 13). Sri Lanka also continues to benefit from impressive business sophistication (39th) and innovation (40th), particularly for a country at its stage of development. Against this largely positive background, three notable areas of weakness persist. The macroeconomic environment has worsened considerably, with debt and deficits going up, the savings rate declining, and a poor credit rating (111th). The labor market is another area of major concern (104th), crippled by rigidities and high redundancy costs. Finally, ICT use remains low (101st), indicating that these tools are not yet being sufficiently employed for productivity enhancements in the country.

Lower in the rankings, **Mongolia** moves up to 99th place, while **Bangladesh** and **Cambodia** remain quite stable at 107th and 109th, respectively. **Pakistan** falls to 123rd place, weakening across most areas measured by the GCI. Still at an early stage of development, the country will require efforts in particular to improve the basic determinants of its competitiveness, namely its institutions (112th), infrastructure (110th), and macro-

economic environment (133rd) as well as education at all levels. The regional ranking closes with **Nepal** (130th) and **Timor-Leste** (133rd), two countries that require improvements across virtually all areas captured within the GCI.

Latin America and the Caribbean

Reflecting the strong resilience within Latin America and the Caribbean in the face of the recent severe global economic downturn, the GCI assessment for the region for this year points to the important progress made by several countries in improving and reinforcing their competitiveness fundamentals. While Bolivia, Panama, and Paraguay post the largest improvements, many other regional economies improve slightly or remain stable; these include Brazil, Chile, Costa Rica, and Uruguay. These results confirm the important strides the region has made in recent decades toward sounder fiscal management, increased market efficiency and openness, and export diversification, among other areas. All of the above, beyond setting the region on a more sustainable growth path in the long run, have helped it weather the global economic crisis that began in 2008. In particular, the reduced debt levels (with longer maturity profiles) of most countries in the region, coupled with their increased foreign reserves, have been instrumental in reinforcing their resilience and ability to support their economy with stimulus measures. Although regional GDP contracted by 1.8 percent in 2009, it is expected to grow by 4 percent in 2010, driven by increased domestic consumption and better external conditions—a satisfactory performance by historical standards and more solid than that projected for advanced economies, which is considerably lower at 2.3 percent.[25]

At the same time, when compared with the rest of the world, the region must improve significantly in order to catch up with international best practices and fully leverage its competitiveness potential. Only Chile (30th) and the two small Caribbean islands of Puerto Rico (41st) and Barbados (43rd) feature within the top 50 most competitive economies in the world. Panama (53rd), Costa Rica (56th), Brazil (58th), and Uruguay (64th) are also included among the top half of the rankings, together with Mexico (66th), Colombia (68th), and Peru (73rd). Also a large number of regional economies continue to appear in the bottom part of the rankings, trailing behind most of the world in competitiveness—these include Ecuador (105th), Bolivia (108th), Nicaragua (112th), Paraguay (120th), and Venezuela (122nd).

Stable at 30th, **Chile** remains the most competitive country in Latin America and the Caribbean, with a very convincing performance resting notably on solid basic requirements (37th) and efficiency enhancers (35th). The country has been at the forefront of market liberalization and opening, resulting in very efficient goods and labor markets (28th and 44th, respectively), one of the most sophisticated financial markets (41st), and the largest pension industry in the region. The liberalization process took place in the context of sound macroeconomic policies (26th for macroeconomic stability) and transparent institutions (28th in the institutions pillar). These attributes have not only spurred growth over the last 20 years, but also have provided the country with the resources needed to stimulate the economy in recent times of crisis and to address the pressing reconstruction challenges brought about by the tragic 2009 earthquake. Indeed, a part of the US$8.4 reconstruction plan envisaged by the government in the next four years is expected to come from the Economic and Stabilization Fund—one of the main tools used by the country in its counter-cyclical policies.[26]

On a more negative note, although Chile's business sector is fairly efficient and sophisticated (43rd), improving its innovation potential is increasingly becoming a priority as the country approaches the most advanced, innovation-driven stage of development. An important element of the problem is the country's still-unsatisfactory quality of its educational system at all levels (ranked 101st for primary education and 45th for higher education and training), despite rising educational attainment rates and government efforts to improve educational quality, including through increased spending.[27] Further efforts should be made to improve teaching quality and training as well as secondary and tertiary enrollment rates (90.6 percent and 52.6 percent, corresponding to 56th and 43rd place, respectively). Additionally, some of the components of an innovation-conducive environment—including the quality of the research institutions (ranked 55th) and the collaboration between academia and industry (currently ranked 39th)—should be strengthened.

Up one place since last year, **Puerto Rico** (41st) confirms its strong position in the region, displaying a dynamic and sophisticated business sector (27th), producing all along the value chain (31st), with an important capacity for innovation (33rd). Also notable competitive strengths are the island's quality higher education and training system (38th) and its well-functioning goods markets (34th).

Closely following Puerto Rico and ranked 3rd in the region, **Barbados** consolidates its competitiveness standing in the rankings at 43rd, thanks to its excellent institutional environment (22nd), a first-class educational system (ranked 7th and 27th for primary education and higher education and training, respectively), and well-developed infrastructure (23rd). Beyond its tiny market size (133rd), the GCI highlights a number of areas in need of improvement, including the country's macroeconomic stability (91st), with notably high deficit and debt levels (8.4 and 100.6 percent of GDP, respectively, in 2009), and, to a lesser extent, the sophistication and innovation potential of its business sector (59th

and 53rd, respectively, for business sophistication and innovation).

Panama posts one of the largest improvements in the region, climbing to 53rd this year thanks in large part to a more positive assessment of infrastructure quality (44th, up 21 places from last year), increased macroeconomic stability (29th, up 17 places) and technological readiness (41st, up 18 places). This advance reflects the country's recent important investment in upgrading its infrastructure, its sound macroeconomic management in recent times of crisis, its prowess in absorbing technology (ranked 7th for the variable on FDI and technology transfer), and its increase in ICT penetration rates. The country also continues to benefit from well-developed financial markets (21st). Strengthening the quality of its educational system (ranked 89th and 82nd for primary education and higher education and training, respectively) and increasing the flexibility of its labor market and the efficient use of talent (107th for the efficiency of the labor market) are crucial to further reinforce Panama's long-term growth potential going into the future.

Despite losing the top position in Central America to Panama, **Costa Rica** remains quite stable at 56th position, after having climbed 13 ranks from 2006 to 2009. The country's strong position rests on first-class quality education (ranked 23rd and 43rd for primary education and higher education and training, respectively), fairly transparent institutions (51st), and a sophisticated and innovative business sector (ranked 32nd and 35th, respectively), which operates high on the value chain (ranked 28th in the variable measuring value chain breadth). Leveraging its well-educated labor force, good governance standards, and strategic geographic position, the country has been very successful in recent years in diversifying its production and export structure toward higher value-added (notably high tech) and niche (eco-tourism) sectors. Further, the focus on new technologies (including biotech and aerospace) has been highlighted as a priority of the new Chinchilla administration. However, the soundness of the macroeconomic environment (108th) remains a problematic area amid increasing security concerns in the country (81st). In addition, the quality of the country's infrastructure (78th) and the development of the financial market (85th) may represent potential bottlenecks going forward.[28]

Brazil is fairly stable at 58th, with a slight improvement in score (4.3 vs. 4.2 in 2009), after following an impressive upward trend for the last couple of years (up 16 positions between 2007 and 2009). The country's recent dynamism in the rankings has reflected the remarkable strides made in the past 20 years toward macroeconomic stability, liberalizing and opening the economy, and reducing income inequality, among other dimensions.[29] These efforts have been instrumental in putting the economy on a much sounder competitiveness foundation and in providing a markedly more business friendly environment for private-sector development. Moreover, this has allowed Brazil to successfully react to the impact of the recent global economic crisis: while the country's GDP contracted slightly in 2009 (GDP's growth rate was –0.18 percent in 2009), the economy has started to grow again in 2010, with an expected annual growth rate of 5.5 percent.

Notwithstanding these strengths, the competitiveness picture for Brazil remains mixed, with important strengths accompanied by worrisome weaknesses and challenges that must be tackled for Brazil to fully tap its enormous competitive potential. Among its solid competitive advantages are its large market size (10th), providing the efficient and dynamic business sector (ranked 31st for business sophistication) with important economies of scale, and a large basis on which to absorb and introduce process and product innovation (ranked 44th and 42nd for technological adoption and innovation, respectively). Moreover, Brazil displays one of the most developed and sophisticated financial sectors in the region (50th), coupled with fairly efficient infrastructure by regional standards (ranked 62nd, up 12 places from 2009) and a relatively well functioning higher education system (58th), notably in its on-the-job training component (38th). Box 4 examines more in depth the infrastructure challenge for Brazil and Latin America at large.

On the other hand, despite the progress made toward fiscal sustainability, the macroeconomic environment in the country remains worrisome, with notably low savings rates (15 percent, 101st), a high interest rate spread (35.4 percent, 136th), and relatively high public indebtedness (48 percent of GDP, 84th). Goods and labor markets display important rigidities that hinder the allocation of resources to their most efficient use (ranked 114th and 96th, respectively). In addition, the quality of institutions remains poorly assessed at 93rd, with limited trust of politicians and in the rule of law. Last but not least, further focus and efforts are required to improve the quality of the educational system at all levels (ranked 106th for primary education and 97th for the quality of the higher education) and to reduce regional disparities in educational access and attainment.

At 64th, **Uruguay** overtakes Mexico for the first time in the rankings. The country's good showing rests on its strong institutions and governance standards (39th), its fairly developed infrastructure (53rd), and a strong educational system (ranked 47th for health and primary education and 40th for higher education and training). An important capacity to leverage technology (ranked 50th for technological readiness), notably via FDI (12th for the FDI and technology transfer variable) coupled with an increasing ICT adoption (57th) as a key lever in the competitiveness strategy are also notable competitive strengths. On a more negative note, insufficient macroeconomic stability (at 107th) remains a cause of concern, with increasing levels of public debt and a widening

Box 4: The infrastructure challenge in Latin America: The case of Brazil

The Global Competitiveness Index highlights the key importance of well-developed and efficient infrastructure networks for countries' long-term growth, placing infrastructure among the basic requirements of competitiveness. The quality of infrastructure appears to be a shared concern for Latin America and the Caribbean, with few exceptions. Public investment in infrastructure was the main victim of the stabilization programs implemented in the 1990s in most countries, because cutting this type of investment spending proved easier than cutting current expenditures to cover salaries and pensions, among others: according to the World Bank, public investment in infrastructure in the region fell from 3 percent of GDP in 1988 to 1 percent of GDP in 1998.[1] The adjustment was particularly dramatic because Brazil had increased its current expenditures, and therefore needed to make even deeper cuts in long-term investment. The idea that the private sector could step in and fill the financing gap did not fully materialize. Although Latin America was the recipient of half of the US$786 billion infrastructure investment in the developing world through public-private partnerships (PPP) between 1990 and 2003, the private funds did not fully compensate for the shortfalls in public investment. Furthermore, these investments were concentrated in a few selected countries (Argentina, Brazil, Chile, Colombia, Peru, and Mexico) and sectors (telecommunications, energy, and transport).[2]

As a consequence, infrastructure development in the region has lagged behind that of the East Asian tigers or even China over the last two decades,[3] with severe implications in terms of economic growth and poverty reduction. Calderón and Servén estimate that upgrading regional infrastructure to Korea's levels could increase annual GDP growth rates by 1.4 to 1.8 percent while reducing inequality by 10 to 20 percent.[4]

Table 1 displays the rankings and scores of regional economies in the GCI infrastructure pillar this year, together with those of selected relevant comparators, including the regional and BRIC averages, Korea, China, and India. The rather large gap between the regional average (3.75) and top-ranked Hong Kong (6.77) or Korea (5.59, ranked 18th) confirms the magnitude of the challenge facing Latin America and the Caribbean in upgrading regional infrastructure to international best standards.

This challenge is particularly relevant for large emerging markets such as Brazil, which are increasingly playing a key

Table 1: Infrastructure: Latin America and the Caribbean and selected comparators

	Infrastructure 2010–2011		A. Transport infrastructure 2010–2011		B. Electricity and telephony infrastructure 2010–2011	
Country/Economy	Rank	Score	Rank	Score	Rank	Score
Hong Kong SAR	**1**	6.77	**1**	6.69	**1**	6.85
Korea, Rep.	**18**	**5.59**	**12**	**5.73**	**30**	**5.44**
Barbados	23	5.37	29	4.82	15	5.93
Chile	40	4.69	37	4.56	48	4.83
Panama	44	4.53	46	4.15	44	4.92
Trinidad and Tobago	45	4.53	58	3.94	38	5.12
Puerto Rico	49	4.44	30	4.76	70	4.12
China	**50**	**4.44**	**31**	**4.73**	**69**	**4.14**
Uruguay	53	4.29	75	3.54	42	5.03
El Salvador	59	4.13	66	3.78	56	4.49
BRIC average	**n/a**	**4.10**	**n/a**	**4.27**	**n/a**	**3.93**
Brazil	**62**	**4.02**	**67**	**3.76**	**65**	**4.28**
Jamaica	65	3.91	51	4.05	86	3.76
Guatemala	66	3.9	76	3.48	64	4.31
Latin America & Caribbean average	**n/a**	**3.75**	**n/a**	**3.48**	**n/a**	**4.01**
Mexico	75	3.74	57	3.96	92	3.51
Argentina	77	3.63	89	3.17	73	4.08
Costa Rica	78	3.62	111	2.78	59	4.45
Colombia	79	3.59	101	2.94	68	4.24
Honduras	85	3.51	82	3.30	88	3.73
India	**86**	**3.49**	**39**	**4.50**	**115**	**2.49**
Peru	88	3.47	94	3.08	84	3.86
Ecuador	96	3.18	99	2.96	95	3.39
Bolivia	100	3.04	122	2.59	94	3.49
Guyana	103	2.92	100	2.95	102	2.90
Dominican Republic	107	2.83	79	3.38	121	2.28
Venezuela	108	2.82	123	2.58	98	3.06
Nicaragua	111	2.73	102	2.90	112	2.55
Paraguay	125	2.46	138	2.10	104	2.82

(Cont'd.)

Box 4: The infrastructure challenge in Latin America: The case of Brazil *(cont'd.)*

role in the global economy and for which poor infrastructure quality results in higher logistics costs and inefficient patterns of interregional and international trade.[5] Table 2 provides an overview of Brazil's infrastructure as assessed within the GCI infrastructure pillar. Although the country has improved eight places since 2008 for the overall quality of its infrastructure, it still ranks a middling 62nd in this pillar, with a similar showing for its transport (67th) and electricity and telephony infrastructure (65th). The most problematic areas, as highlighted by the GCI, are the quality of port infrastructure (123rd), roads (105th), air transport infrastructure (93rd), and, to a lesser extent, railroad infrastructure (87th) and mobile telephony (76th). This assessment reflects the appalling state of transport infrastructure in the country, its underdeveloped railroads, the unexploited potential of its 48,000 kilometers of navigable waterways, its congested ports and airports, and its costly and underdeveloped telephone infrastructure.[6]

Table 2: An assessment of infrastructure quality in Brazil

	Rank	Score
2nd pillar: Infrastructure	**62**	**4.02**
A. Transport infrastructure	**67**	**3.76**
Quality of overall infrastructure	84	3.79
Quality of roads	105	2.93
Quality of railroad infrastructure	87	1.94
Quality of port infrastructure	123	2.94
Quality of air transport infrastructure	93	3.98
Available airline seat kilometers	9	3,001.79
B. Electricity and telephony infrastructure	**65**	**4.28**
Quality of electricity supply	63	5.06
Fixed telephone lines	62	21.42
Mobile telephone subscriptions	76	89.79

Experiences over the past decade or so, such as the energy blackout of 2001, have raised awareness among both the public and the government of the importance of quality infrastructure for competitiveness, trade, and balanced development across Brazilian states. It was estimated that investment in infrastructure needed to reach 5 percent of GDP to keep it from becoming a bottleneck for the country's capacity to achieve sustained growth rates going into the future.

Upgrading infrastructure has been a key element of the Lula administration's ambitious Growth Acceleration Program (PAC), launched in 2007, earmarking a total of R$504 billion in investment for the 2007–10 period, distributed as follows: R$171 billion for social infrastructure, R$275 billion for energy-related projects, and R$58 billion for logistics.[7] PAC was conceived as an integrated approach to infrastructure improvement, aimed at increasing the coverage and quality of infrastructure networks together with better access to water, sanitation, housing, electricity, transport, and energy. Yet, three years after the launch of PAC, fewer than half of its targets have been met, with much of the financing going to housing (notably to first-time home owners) rather than to the improvement of physical infrastructure.[8]

What is more, private investment in physical infrastructure has been limited and has failed to make up for scarce public resources and attention. Although PAC has been a significant step in the right direction, it has been said that better coordination of responsibilities among federal and state authorities is necessary to achieve higher investment in infrastructure.

Greater private investment in infrastructure should also be promoted in Brazil, notably through friendlier and more predictable regulations, risk-mitigation mechanisms, and protected returns on investment. The Infrastructure Private Investment Attractiveness Index (IPIAI), developed by the World Economic Forum in 2007 and benchmarking 12 Latin American economies for their friendliness to private investment in infrastructure, ranked Brazil 2nd in the sample. Among Brazil's notable competitive advantages underscored by the IPIAI in this regard were: a very low political risk, with little unrest or expropriation risk; a fairly well developed local capital market; a fairly good track record in private investment in infrastructure, with few projects cancelled or in distress; and a relatively high level of private investment in infrastructure projects over the 1994–2005 period (2.2 percent of GDP).[9] Figure 1 shows Brazil's performance in the IPIAI, with respect to the best performer in that index, Chile, and the sample average excluding Chile.

This bodes well for the country's capacity to increasingly involve the private sector in financing and managing infrastructure networks, thus complementing public funding and ensuring that infrastructure can truly support Brazil's competitiveness in the years to come. Brazil's experience in infrastructure development is an example of the challenges countries can face in enhancing this critical competitiveness driver.

Notes

1 The drop contrasts sharply with the amount of public resources invested in health and education (8 percent of GDP) that resulted from an increased focus on poverty reduction.

2 See Fay and Morrison 2005.

3 According to Fay and Morrison (2005), the region should increase investment in infrastructure to 4–6 percent of GDP over 20 years in order to attain Korea's infrastructure coverage and not to lose further ground with respect to China.

4 Calderón and Servén 2004.

5 Resende 2009.

6 See Resende 2009 for a detailed analysis of Brazil's state of infrastructure and main flaws.

7 PAC also comprised a number of measures/policies to limit regulatory risks and develop risk mitigation mechanisms as well as to improve the framework for PPP. On March 29, 2010, the Brazilian government announced a PAC 2, with a total budget of R$1.59 trillion to be invested in the 2011–14 period with emphasis on high social sensitivity areas, including housing and health, public transit, energy, transportation, logistics, and roads (see Olson 2010).

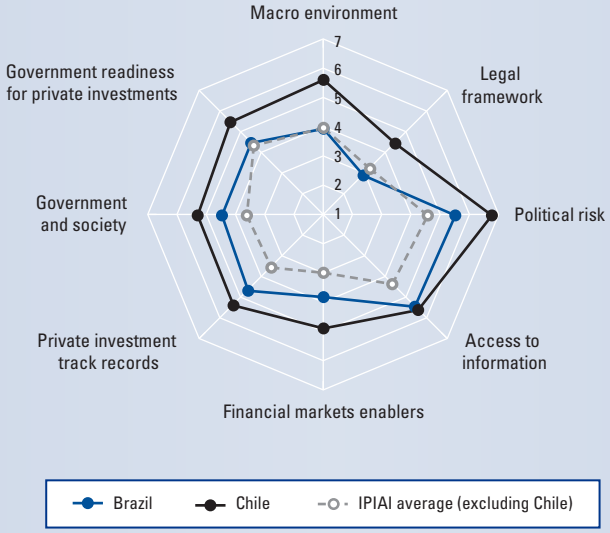
8 See HSBC 2010.

9 See Mia et al. 2007 for more information on the IPIAI's methodology and Brazil's performance.

(Cont'd.)

Box 4: The infrastructure challenge in Latin America: The case of Brazil *(cont'd.)*

Figure 1: Brazil in the IPIAI



Source: Mia et al., 2007.

public deficit (2.3 percent of GDP in 2009 as opposed to 0.1 percent in 2008), while worrisome rigidities persist in factor markets, especially labor market inefficiencies (119th).

With an unchanged score of 4.19, **Mexico** drops six places from 2008 to 66th, clearly demonstrating the need for continuous improvement in order not to lose ground in competitiveness vis-à-vis the rest of the world. Mexico has been among the countries in the region worst hit by the global economic downturn, in large part attributable to its close association with the US business cycle (including links through financing, trade, and remittances). Thanks in particular to the remarkably sound fiscal policies implemented in the past two decades (27th for macroeconomic stability), the country has shown a certain degree of resilience to the pernicious consequences of the crisis and has been able to stimulate its economy with a number of anti-cyclical policies.[30] Although Mexico's GDP shrank significantly in 2009 (–6.5 percent), it is estimated to grow by 4.2 percent in 2010. Mexico also has a number of important competitive strengths that are similar to those of Brazil, such as the large size of the market available for local companies (12th) and a sophisticated and innovative private sector (ranked 67th for business sophistication and 78th for innovation) with well-developed clusters (50th) and companies operating throughout the value chain (49th for the variable on value chain breadth).

Notwithstanding these strong attributes and the liberalization and steps undertaken in recent years to improve the business climate and make the economy more efficient, Mexico's factor markets remain rigid and represent a structural impediment for the country's growth prospects over the long term. In particular, the labor market is ranked at a dismal 120th place, with burdensome regulations, high payroll taxes and social contributions (ranked 103rd for flexibility), and a less-than-efficient use of talent (122nd). The reliability and quality of institutions continue to receive a poor assessment at 106th, with increasing security concerns (134th, down nine places from last year) among the business community, likely related to recent spiraling drug-related violence and civil unrest. Finally, reform of the educational system to boost its quality is necessary to meet the needs

of an economy moving toward the most advanced stage of development. In particular, the poorly rated higher education and training system (79th) does not seem to be producing a highly skilled labor force, notably scientists and engineers (89th), and is not sufficiently conducive to technology adoption and innovation. Although the current administration has adopted, or plans to adopt, a number of competitiveness-enhancing reforms addressing many of these shortcomings, further action is sorely required to reinforce Mexico's competitiveness fundamentals.

Fairly stable at 68th, **Colombia** displays competitive strengths in the quality of its macroeconomic environment (50th), large market size (32nd), and fairly sophisticated businesses (61st), successfully adopting technology and enhancing innovation (ranked 63rd and 65th for technological readiness and innovation, respectively). On the other hand, notwithstanding the important strides realized by the last administration in social pacification, the institutional environment is still characterized by weaknesses at 103rd, with continuing concerns over security (138th). Further investment is required to upgrade infrastructure networks to first-class standards (ranked now at 79th), while factor markets continue to suffer from extensive inefficiencies and rigidities, particularly the goods market (103rd).

Peru continues its upward march in the rankings with another five-place progression to 73rd place (up by six places in a constant sample), with improvements notably in labor market efficiency (up twenty-one places, to 56th) and, to a lesser extent, in infrastructure quality (up nine places to 88th) and higher education and training (up five places to 76th). The country has improved a total of thirteen places since 2007, mirroring its impressive growth performance in recent years (an average of 6.7 percent GDP growth between 2002 and 2009). Peru was one of the few countries whose economy did not contract in 2009 but continued to grow moderately at 0.9 percent. The economy is expected to grow strongly again in 2010 and beyond, with an estimated 6.3 percent rate for this year.

Among the elements underpinning Peru's strong competitiveness showing is the competent macroeconomic policy pursued over the last decade, with moderate public indebtedness levels (26.6 percent of GDP in 2009, placing it 41st in the sample), coupled with liberalization of its goods and labor markets, efforts to encourage trade and FDI, and efficient use of the revenues from the country's rich natural and mineral resources. The country can notably count on flexible goods and labor markets (ranked 69th and 56th, respectively), well-developed financial market (42nd), and access to foreign markets (59th), complementing its relatively large domestic market (44th). On the other hand, Peru faces a number of competitiveness challenges that must be addressed going forward, including improving the poor institutional environment (96th), upgrading the quality of and access to the educational system at all levels (111th for primary education and 76th for higher education and training), and reinforcing the capacity to absorb technology and generate innovation (ranked 74th and 110th for technological readiness and innovation, respectively).

Argentina is fairly stable at 87th, continuing to feature in the bottom part of the rankings despite its many and diverse competitive advantages and the strong growth rates experienced by the country after its 2001 economic crisis (an average of 8.5 percent between 2002 and 2008). The competitiveness picture provided by the GCI is rather mixed: important strengths, such as its extensive market size (24th) and fairly good educational system at the primary and higher levels (ranked 60th and 55th for health and primary education and higher education and training, respectively), do not seem to compensate for the serious and enduring shortcomings undermining Argentina's long-term growth potential. In particular, its institutional environment is among the worst in the world at 132nd, with little public trust of politicians and deep concerns about the rule of law. This may reflect a number of discretionary policies adopted by the last two administrations—including the nationalization of the private pension system and the recent ousting of the central bank governor following his refusal to let the government tap the central bank's reserves to finance growing public spending and pay its debts—and an erosion in investors' confidence in government transparency and even-handedness in its dealings with the private sector. On a related note, factor markets continue to suffer from worrisome rigidities, red tape, and lack of competition, which all hinder their efficient functioning (ranked 135th, 128th, and 126th, respectively, for goods market efficiency, labor market efficiency, and financial market development). Improving the flexibility of factor markets as well as ensuring a more predictable business environment and a greater respect of the rule of law by the government remain the priorities going forward to restore investors' confidence and lay the foundations for sustained long-term competitiveness.

Venezuela (122nd) continues its fall in the rankings, and is now behind all other Latin American and Caribbean countries and featuring among the least competitive countries of the world. Venezuela's competitiveness landscape appears to be worsening every year, with a notably dismal assessment of the institutional environment (139th, the worst in the entire sample) and factor markets efficiency (139th, 138th, and 132nd for goods market, labor market efficiency, and financial market development, respectively). Despite important investment in education and basic services, infrastructure remains underdeveloped (108th) and educational standards at all levels are low (86th and 68th for health and primary education and higher education and training, respectively), while the macroeconomic environment

continues to deteriorate (now ranked 113th) despite windfall oil revenues in recent years. Finally, the country lacks companies that demonstrate sufficient sophistication and innovation potential (129th and 123rd for business sophistication and innovation, respectively).

Despite posting important improvements since last year, **Bolivia** (108th, up sixteen places in a constant sample), **Nicaragua** (112th, seven places up in a constant sample), and **Paraguay** (120th, nine places up in a constant sample) continue to feature in the very bottom of the rankings, trailing behind most of the world in competitiveness. Major common flaws in the quality of their institutional environment, including rampant crime and violence, widespread red tape, poor educational standards and infrastructure, and inefficient factor markets weaken these countries' competitiveness fundamentals and should be addressed as a priority going forward.

Middle East and North Africa

Following a relatively prosperous period, the Middle East and North African (MENA) region experienced a downturn during the global economic crisis, with average growth rates falling from 6.1 in 2008 to 2.2 percent in 2009. However, MENA was less affected by the downturn than some other regions because it maintained weak interlinkages with global markets. Further, many countries put massive stimulus packages into place, which helped to dampen the recession and in many cases also led to improvements in infrastructure. Overall, the global economic crisis has highlighted some of the vulnerabilities to which the economies of the region were exposed and led to a widening gap between Gulf economies and the rest of the region, a trend that has been observed over recent years. While all the Gulf countries except for the United Arab Emirates (UAE) move up in the rankings, all remaining countries in the region with the exception of Tunisia (and new entrants Iran and Lebanon) decline.

Qatar, ranked 17th, enters the top 20 this year and reaffirms its position as the most competitive country in the MENA region. With a projected growth rate of 18.5 percent for 2010, the country is the fastest-growing economy in the world, as well as one of the wealthiest. Its strong competitiveness rests on solid foundations made up of a high-quality institutional framework, ranked 10th overall, a stable macroeconomic environment (8th), and an efficient goods market (12th). Low levels of corruption and undue influence on government decisions, high government efficiency, and excellent security are the cornerstones of the country's solid institutional framework. Compared with many other economies, the country was relatively unharmed by the global economic crisis, with its growth rate slowing to 9 percent in 2009, down from 16.4 in 2008. This high growth, combined with prudent government support for the financial sector, contributed to maintaining macroeconomic and financial stability. In international comparison, the country's macroeconomic environment emerged stronger from the crisis, moving from 13th to 8th place. Going forward, reducing the country's vulnerability to commodity price fluctuations will require diversification into other sectors of the economy and improving some of the areas of competitiveness. Despite efforts to strengthen its financial sector, its trustworthiness and confidence is assessed as low by the business community (62nd), with soundness of banks ranked 46th and legal rights of borrowers and lenders underprotected (103rd). Given its high wage level, the country will also have to foster the use of latest technologies (36th) as well as business sophistication and innovation.

Saudi Arabia moves up by seven places to take the second-highest place in the region at 21st. The country has witnessed a number of improvements to its competitiveness in recent years, which resulted in a strong a solid institutional framework, efficient markets, and sophisticated businesses. Improvements to the institutional framework (up by 11 places to 21st), in particular a better assessment of the security situation by business (19th) and a stronger corporate governance framework (26th), have contributed to this year's better positioning. Additionally, the government enacted a massive stimulus package, improving infrastructure in the country, although it led to a deterioration of macroeconomic stability as the budget balance moved into deficit. As much as the recent improvements are commendable, the country faces important challenges going forward. Health and education do not meet the standards of countries at similar income levels. While some progress is visible in health outcomes as well as in the assessment of the quality of education, improvements are taking place from a low level. As a result, the country continues to occupy low ranks in the health and primary education (74th) and higher education and training (51st) pillars. Both these areas, in addition to a more efficient labor market (66th), are of high importance to Saudi Arabia given the growing numbers of its young people who will enter the labor market over the next years. Last but not least, some room for improvement remains with respect to the use of latest technologies (42nd).

Israel ranks 24th in this year's GCI, up three positions after having suffered losses in competitiveness over the past years. The country's main strength remains the excellent—and improving—capacity for innovation (6th), which rests not only on highly innovative businesses but also on the availability of high-quality research institutions and is reflected in a high number of patents. The favorable financial environment (14th) and, in particular, the availability of venture capital (10th) have further contributed to making Israel an innovation powerhouse. Future challenges to maintaining and improving national competitiveness relate to continued upgrading of institutions (33rd) and a renewed focus on raising the bar in terms of the quality of education. Low educational out-

comes, in particular in the area of math and science, could, over the longer term, undermine the country's innovation-driven competitiveness strategy if not addressed. As in previous years, the security situation remains fragile and imposes a high cost on business (73rd); room for improvement also remains with respect to macroeconomic stability (60th).

Following a difficult year, the **United Arab Emirates** loses two places in this year's GCI to take the 25th position. The country's overall competitiveness reflects recent investments in infrastructure, where it ranks an excellent 3rd; high penetration rates of new technologies (14th); and highly efficient goods markets (6th). Macroeconomic stability and some positive aspects of the country's institutions, such as high public trust of politicians and efficient government, round up the list of competitive advantages. Over the past year, there has been a deterioration in the assessment of institutions overall, and in particular of private institutions, where accountability standards and the efficacy of corporate boards are evaluated less positively than before. This lower assessment is likely related to the difficulties that Dubai World, a state-owned company, faced in paying back debt toward the end of 2009. The difficulties of Dubai World raised doubts about the sustainability of the development model of Dubai, which has since been re-oriented toward the more traditional role of commercial and logistics hub and away from property development. Going forward, a continuation of competitiveness-enhancing structural reforms will be necessary to keep the economy growing, most notably in the areas of health and education.

Tunisia retains the lead within North Africa, moving up by eight places to 32nd. The country's efficient government institutions remain its main strength, along with a high level of security (14th) and an educational system that ensures a good quality of education (22nd), although enrollment rates in secondary and tertiary institutions are fairly low—53rd and 69th, respectively. At the same time, Tunisia boasts relatively efficient domestic markets for goods and services. Despite the crisis, the country improved its macroeconomic stability since the last assessment. Inflation has been lowered and the savings rate increased while the budget deficit remained stable at around 3 percent. And, although public debt increased, it remains manageable. This result is commendable in light of the recent global deterioration of macroeconomic stability during the recession.

Two areas with room for improvement emerge from the GCI results. First, Tunisia will have to address inefficiencies related to its labor market. The low ranking of 79th, although improving with respect to the last edition, reflects in particular rigid employment regulations and wage-setting processes, high taxes, and the low participation of women in the labor force. And second, within the country's financial markets, the low confidence in the stability of the banking system (90th) will need to be addressed and the legal protection of investors' rights improved. Some progress has been made with respect to the efficiency of financial markets (35th). Different forms of finance are more easily available to the private sector, but restrictions on capital flows are still considered burdensome by the business community.

The **Islamic Republic of Iran** enters the Global Competitiveness Index for the first time at 69th position, which reflects a number of pronounced strengths as well as important challenges. Transitioning from the first to the second stage of development, the country should focus on developing its basic requirements as well as its efficiency enhancers to prepare for the future. Currently, Iran boasts a relatively stable macroeconomic environment (45th), reflecting a high national savings rate (26th) and low public debt (17th). It equally benefits from its large market size (20th), which enables businesses to reap economies of scale in the domestic market. This advantage could be further strengthened by removing barriers to trade, which shield the country from foreign competition. Lower tariffs (135th) and more foreign ownership (139th) would also raise the efficiency of markets for goods and services (98th). Other priorities for reform include labor markets, which are among the most restrictively regulated worldwide (135th), reflecting high brain drain (109th) and incentive structures that are not based only on meritocracy (121 for reliance on professional management and 111th in terms of the link between pay and productivity). It will also be important to foster a more trustworthy and efficient financial sector (120th). The limited access to finance (129th) across different financial products as well as low confidence in the banking sector (114th) significantly limit private-sector growth in the country. Improvements in productivity could also be achieved by leveraging the latest technologies available from abroad. Presently, the capacity of Iranian firms to absorb new technologies is very low (116th) and access to these technologies is limited (123rd). In this respect, progress could be achieved by fostering the use of mobile telephony (95th) and access to broadband (101st).

Egypt moves down to 81st in this year's GCI rankings. The country's main competitive strengths are the sheer size of its market (26th) that allows businesses to exploit economies of scale, the fairly well developed private institutions (60th) that ensure good governance, and its satisfactory transport infrastructure (56th overall). The challenges, on the other hand, are numerous. The labor market continues to be overregulated, which reduces its ability to property allocate and employ human resources. Although some progress has been achieved, the continuing labor market rigidities are worrisome because of the widespread unemployment among young people. The country is among the poorest performers in the GCI sample with respect to the efficiency of using talent (133rd). Additionally, the participation of women in the labor force continues to be low (130th), although

the government is aiming at increasing women's participation in the economy and has achieved some preliminary positive results in this respect. As in previous years, Egypt continues to struggle with serious challenges related to macroeconomic stability, but, unlike in other countries, these were not exacerbated in a major way during the crisis. Government debt has been reduced to about 80 percent of GDP, following the downward trend of previous years, and the budget deficit remained stable, at 6.6 percent of GDP in 2009 (6.8 percent in 2008), although inflation has been rising from an already high level (16.2 percent, which corresponds to the 135th rank, compared with 11.7 percent in the GCI 2009–2010). Furthermore, the solvency of Egypt's banking system, despite some improvements, continues to raise concerns, as reflected in its 99th position overall.

Included for the first time in the GCR, **Lebanon** occupies the 92nd position in the rankings. Following its low growth performance toward the middle of the decade, growth rates rebounded to 9 percent in 2008 and remained unaffected by the economic crisis in 2009. Competitiveness-enhancing reforms could help sustain its growth momentum. The GCI results point to a number of strengths upon which Lebanon could build. The country can depend on a healthy and well-educated population with advantages in the quality of education, which stands out positively in regional comparison. Lebanon ranks an excellent 16th for the quality of education, with a particular strength in math and science education, where it achieves 7th place, and in the quality of primary education (12th). At the same time, this excellent educational system should be put at the disposal of an even larger share of the population, as enrollment rates in primary and secondary education remain low (105th and 86th, respectively). Furthermore, the lack of meritocracy in the labor market limits employment opportunities for young talent and is one of the factors that fuel a brain drain from the country. Other strengths include efficient goods markets, reflecting a high intensity of local competition, and a well-developed financial sector, which provides easy access to loans (36th) and other financial services (39th) and is buttressed by a solvent banking sector (4th). Challenges to be addressed include dismal infrastructure for transport, electricity, and telephony (128th), as well as a fragile macroeconomic environment characterized by poorly managed public finances. Yet the biggest challenges are associated with reforming the institutional environment related to both public institutions and corporate governance. Presently, the country is affected by lack of transparency (129th), high undue influence (130th), and low efficiency of government operations (122nd). Lebanon's inclusion into the GCR will provide a first step toward creating reform momentum in the country for the benefit of the population.

The regional ranking closes with **Syria** (97th) and **Libya** (100th). Although both countries have stable macroeconomic environments (especially Libya), they face numerous challenges related to the inefficiency of their goods, labor, and financial markets, as well as underdeveloped infrastructures and low levels of technological adoption, among others.

Sub-Saharan Africa

Africa has experienced impressive growth over the past decade, and has weathered the recent global economic turmoil relatively well. Indeed, coming out of the crisis, the IMF predicts GDP growth of 4.7 percent in 2010 and well above 5 percent for the next few years for sub-Saharan Africa.[31] Yet an assessment of the competitiveness of African economies raises questions about how sustainable this growth will be over the longer term and highlights areas in need of urgent attention to allow Africa to achieve its full economic potential. However, despite such concerns, some African countries continue to fare quite well. South Africa and Mauritius remain in the top half of the rankings, and there have been measurable improvements across specific areas in a number of other African countries. On the other hand, there have been some significant declines registered in countries that were previously making strides ahead. More generally, sub-Saharan Africa as a whole lags behind the rest of the world in competitiveness, requiring efforts across many areas to place the region on a firmly sustainable growth and development path going forward.

South Africa, at 54th overall, remains the highest-ranked country in sub-Saharan Africa. While it has dropped somewhat in rank since last year, its performance has in fact remained stable and the decline reflects improvements in other countries. South Africa still benefits from the large size of its economy, particularly by regional standards (it is ranked 25th in the market size pillar). It also does well on measures of the quality of institutions and factor allocation, such as intellectual property protection (27th), property rights (29th), the accountability of private institutions (3rd), and goods market efficiency (40th). Particularly impressive is the country's financial market development (ranked 9th), indicating high confidence in South Africa's financial markets at a time when trust has been eroded in many other parts of the world. South Africa also does reasonably well in more complex areas such as business sophistication (38th) and innovation (44th), benefiting from good scientific research institutions (ranked 29th) and strong collaboration between universities and the business sector in innovation (ranked 24th).

While a number of attributes therefore make South Africa the most competitive economy in the region, in order to further enhance its competitiveness it will need to address some weaknesses. The country ranks 97th in labor market efficiency, with inflexible hiring and firing practices (135th), a lack of flexibility in wage determination by companies (131st), and poor labor-employer

relations (132nd). Efforts must also be made to increase the university enrollment rate of only 15 percent, which places the country 99th overall, in order to better develop the country's innovation potential. In addition, South Africa's infrastructure, although good by regional standards, requires upgrading (ranked 63rd) beyond what has been achieved in the preparations for the 2010 World Cup. The poor security situation remains another important obstacle to doing business in South Africa. The business costs of crime and violence (137th) and the sense that the police are unable to provide protection from crime (104th) do not contribute to an environment that fosters competitiveness. Another major concern remains the health of the workforce, ranked 127th out of 139 countries, the result of high rates of communicable diseases and poor health indicators more generally. Improvements in these areas will enhance South Africa's productivity and competitiveness.

Mauritius is ranked 55th this year, up two places since last year, and directly following South Africa. The country benefits from strong and transparent public institutions, with clear property rights, strong judicial independence, and an efficient government (ranked 29th). Private institutions are rated as highly accountable and improving (ranked 14th), with effective auditing and accounting standards and strong investor protection. The country's infrastructure is developed by regional standards, particularly roads, air transport, and fixed telephony. Health standards are also impressive compared with other sub-Saharan African countries. Further, both goods and financial markets are effective in allocating resources (ranked 31st and 29th, respectively).

However, efforts continue to be required in the area of education. Educational enrollment rates remain low at all levels, and the educational system gets mediocre marks for quality. Beyond the educational weaknesses, labor markets could be made more efficient, with stringent hiring and firing laws (74th) and wages that are not flexibly determined (99th), although there have been measurable improvements in the assessment of this area since last year.

Namibia remains in 74th place, the same rank as last year, although up by one place in a constant sample. The country benefits from a strong institutional environment (ranked 38th). Property rights are well protected (ranked 24th), the judiciary is perceived as independent from undue influence (23rd), and there is strong public trust of politicians (30th). The country's transport infrastructure is also excellent by regional standards (ranked 35th). Goods (56th) and labor markets (55th) function fairly well, and both have seen improvements since last year. Financial markets are well developed by international standards (24th), with strong confidence in financial institutions. The country also continues to be characterized by good macroeconomic management, particularly by today's standards (ranked 40th).

With regard to weaknesses, as in much of the region, Namibia's health and education indicators are worrisome. The country is ranked a low 113th on the health subpillar, with high infant mortality and low life expectancy—the result in large part of the high rates of communicable diseases. On the educational side, enrollment rates remain low, and the quality of the educational system remains poor, ranked 124th. In addition, Namibia could do more to harness new technologies to improve its productivity levels, with low penetration rates of new technologies such as mobile phones and the Internet.

Although **Botswana** falls to 76th place, it remains one of the four most competitive economies in the region. Among the country's strengths are its reliable and legitimate institutions (32nd), ranked 15th worldwide for the efficiency of government spending, 21st for public trust of politicians, and 30th for judicial independence. Botswana is characterized by extremely low levels of corruption (ranked 32nd overall, on a par with countries such as France and Japan). While still better rated than in a number of industrialized countries, there has been a deterioration in its macroeconomic environment, dropping from 41st to 74th over the past year.

Botswana's primary weaknesses continue to be related to the country's human resources base. Educational enrollment rates at all levels remain low by international standards (ranked 111th, 88th, and 114th for primary, secondary, and tertiary enrollment, respectively), and the quality of the educational system receives mediocre marks. Yet it is clear that by far the biggest obstacle facing Botswana in its efforts to improve its competitiveness remains the health situation in the country. The rates of diseases remain very high (the rates of HIV, malaria, and tuberculosis are ranked 110th, 100th, and 135th, respectively), although on a positive note these rates are for the most part coming down. Continuing to improve the health and education levels of the workforce remain the key priorities for improving Botswana's competitiveness.

Rwanda enters the GCI for the first time this year at 80th position, among the top five countries in the sub-Saharan African region. As do the other comparatively successful African countries, Rwanda benefits from strong and well-functioning institutions, with very low levels of corruption (certainly related to the government's non-tolerance policy) and an excellent security environment. Labor markets are highly efficient, financial markets are relatively well developed, and Rwanda is characterized by a high capacity for innovation for a country at its stage of development. The greatest challenges facing Rwanda in improving its competitiveness are the state of the country's infrastructure (especially electricity and telephony), low secondary and university enrollment rates, and the poor health of its workforce (life expectancy is only 50 years, placing the country 130th on this indicator).

Kenya (ranked 106th overall) has fallen four places this year, not counting the new countries that have entered the Index above it. Kenya's key strengths continue to be found in the more complex areas measured by the GCI. For example, Kenya's innovative capacity is ranked an impressive 56th, with high company spending on R&D and good scientific research institutions collaborating well with the business sector in research activities. Supporting this innovative potential is an educational system that—although educating a relatively small proportion of the population compared with most other countries—gets relatively good marks for quality (56th) as well as for on-the-job training (58th). The economy is also supported by financial markets that are well developed by international standards (27th) and a relatively efficient labor market (46th).

On the other hand, Kenya's overall competitiveness is held back by a number of factors. Health is an area of serious concern (ranked 122nd), with a high prevalence of communicable diseases contributing to the low life expectancy of just over 54 years and reducing the productivity of the workforce. Further, there has been a continued weakening in the assessment of its institutional environment, with large and increasing concerns about corruption and aspects of government efficiency. The security situation in Kenya is also worrisome, particularly crime and violence (124th), the potential of terrorism (133rd), and the prevalence of organized crime (123rd). It is hoped that the reforms in the context of the new constitution will bring about improvements in several of these areas.

Tanzania is ranked 113th, falling by nine positions in a constant sample of countries included last year. The country's performance remains quite stable and the change in rank is mainly related to other countries improving more quickly. Tanzania benefits from public institutions characterized by reasonable public trust of politicians (ranked 62nd) and relative evenhandedness in the government's dealings with the private sector (ranked 50th). In addition, some aspects of the labor markets lend themselves to efficiency, such as the high female participation in the labor force (ranked 6th) and reasonable taxation and redundancy costs.

However, there are many areas that must be addressed in order to make Tanzania competitive. Infrastructure in the country is underdeveloped (ranked 128th), with poor-quality roads, ports, and electricity supply and few telephone lines. And although primary education enrollment is commendably high, providing universal access (13th), enrollment rates at the secondary and university levels are among the lowest in the world (ranked 131st and 136th, respectively). In addition, the quality of the educational system requires upgrading. This relates to another area of concern, which is the low level of technological readiness in Tanzania (ranked 131st), with very low uptake of ICTs such as the Internet and mobile telephony. In addition, the basic health of the workforce is a serious concern; the country is ranked 119th in this area, with poor health indicators and high levels of diseases such as malaria, tuberculosis, and HIV.

Ghana is ranked 114th this year, the same position as last year, although gaining four positions in a constant sample. Ghana continues to display strong public institutions and governance indicators with relatively high government efficiency, particularly by regional standards. Some aspects of the country's infrastructure are also good by regional standards, particularly ports (ranked 59th). Financial markets are also relatively well developed (ranked 60th). On the other hand, education levels continue to lag behind international standards at all levels, labor markets continue to be characterized by inefficiencies, and the country is not harnessing new technologies for productivity enhancements (ICT adoption rates are very low). Finally, the country is characterized by macroeconomic instability, with the government running high fiscal deficits and building up significant debt, and with high interest rate spreads pointing to inefficiencies in the financial system.

Nigeria has plunged in the rankings this year to 127th position, the result of a weakening across many aspects of the Index, most notably in the assessment of the institutional environment and the country's macroeconomic stability. Indeed, while the macroeconomic environment was previously the country's greatest strength, its ranking has gone from 20th last year all the way down to 97th this year. A large fiscal surplus has turned to deficit, the interest rate spread has increased measurably, and the country credit rating places Nigeria 91st out of all countries covered. There has also been a measurable weakening in measures of Nigeria's institutional environment, ranked 121st, down from 102nd last year. There are significant and increasing concerns about the protection of property rights, ethics and corruption, undue influence, and government inefficiencies. Private institutions also receive a worsening assessment, with poor corporate ethics (125th) and weak auditing and reporting standards (130th) of particular concern. The security situation in the country continues to be dire (ranked 123rd). Additionally, Nigeria receives poor assessments for its infrastructure (135th) as well as its health and primary education levels (137th). In addition, the country is not harnessing the latest technologies for productivity enhancements, as demonstrated by its low rates of ICT penetration.

While the situation is therefore difficult, it is important to note that Nigeria also has a number of strengths on which to build its competitiveness. The country benefits from a relatively large market (30th) providing its companies with opportunities for economies of scale, as well as businesses that are sophisticated by regional standards (76th), with some cluster development companies that tend to hire professional managers and delegate decision-making authority within the organization.

Zimbabwe continues to be among the lowest-ranked countries included in the GCI, ranked fourth to last at 136th overall, although there have been some improvements in individual areas. The assessment of public institutions, while still weak, has improved measurably, increasing from 125th last year to 113th this year. Specific areas of improvement are ethics and corruption (up from 122nd to 103rd), government inefficiency (up from 124th to 105th), and the security situation (up from 85th to 66th). On the other hand, some major concerns linger with regard to the protection of property rights (ranked 136th) and undue influence (126th), where Zimbabwe continues to be among the lowest-ranked countries. And despite efforts to improve its macroeconomic environment—including the dollarization of its economy in early 2009, which brought down inflation and interest rates—the situation continues to be bad enough to place Zimbabwe last out of all countries in this pillar (139th). Weaknesses in other areas include health (ranked 135th in the health subpillar), low educational enrollment rates, and official markets that continue to function with difficulty (particularly with regard to goods and labor markets, ranked 130th and 129th, respectively).

Conclusions

This chapter has discussed the results of the Global Competitiveness Index, covering 139 economies from all of the world's regions. The GCI aims at capturing the complexity of the phenomenon of national competitiveness, which can be improved only through an array of reforms in different areas that affect the longer-term productivity of a country. These areas range from good governance and macroeconomic stability to the efficiency of factor markets, technological adoption, and innovation potential, among others. In the present context, it is important to bear in mind that economic crises are short term in nature and related to the business cycle, while competitiveness is very much about a country's development potential over the medium to long term. However, countries that have competitive strengths in a variety of areas can be expected to exit the crisis faster and to rebound much more strongly, as their development is based on strong productivity fundamentals.

Since its introduction in 2005, the GCI has been used by an increasing number of countries and institutions to benchmark national competitiveness. The clear and intuitive structure of the GCI framework is useful for prioritizing policy reforms because it allows each country to determine the strengths and weaknesses of its national competitiveness environment and to identify those factors most constraining its economic development. More specifically, the GCI provides a platform for dialogue among government, business, and civil society that can serve as a catalyst for productivity-improving reforms, with the aim of boosting living standards of the world's citizens.

Notes

1 The G-20 economies include Argentina, Australia, Brazil, Canada, China, the European Union, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, Korea, Rep., Turkey, the United Kingdom, and the United States.

2 The first version of the Global Competitiveness Index was published in 2004. See Sala-i-Martin and Artadi 2004.

3 Schumpeter 1942; Solow 1956; and Swan 1956.

4 See, for example, Sala-i-Martin et al. 2004 for an extensive list of potential robust determinants of economic growth.

5 See Easterly and Levine 1997; Acemoglu et al. 2001, 2002; Rodrik et al. 2002; and Sala-i-Martin and Subramanian 2003.

6 See de Soto 2000.

7 See de Soto and Abbot 1990.

8 See Shleifer and Vishny 1997; Zingales 1998.

9 See Kaufmann and Vishwanath 2001.

10 See Aschauer 1989; Canning et al. 1994; Gramlich 1994; and Easterly 2002.

11 See Fischer 1993.

12 See Sachs 2001.

13 See Schultz 1961; Lucas 1988; Becker 1993; and Kremer 1993.

14 See Almeida and Carneiro 2009; Amin 2009; and Kaplan 2009 for country studies demonstrating the importance of flexible labor markets for higher employment rates and, therefore, economic performance.

15 See Aghion and Howitt 1992 and Barro and Sala-i-Martin 2003 for a technical exposition of technology-based growth theories.

16 A general purpose technology (GPT), according to Trajtenberg (2005), is one which in any given period gives a particular contribution to overall economy's growth thanks to its ability to transform the methods of production in a wide array of industries. Examples of GPTs have been the invention of the steam engine and the electric dynamo.

17 See Sachs and Warner 1995; Frenkel and Romer 1999; Rodrik and Rodriguez 1999; Alesina et al. 2005; and Feyrer 2009.

18 This is particularly important in a world in which economic borders are not as clearly delineated as political ones. In other words, when Belgium sells goods to the Netherlands, the national accounts register the transaction as an export (so the Netherlands is a foreign market of Belgium), but when California sells the same kind of output to Nevada, the national accounts register the transaction as domestic (so Nevada is a domestic market of California).

19 See Romer 1990; Grossman and Helpman 1991; and Aghion and Howitt 1992.

20 Probably the most famous theory of stages of development was developed by the American historian W. W. Rostow in the 1960s (see Rostow 1960). Here we adapt Michael Porter's theory of stages (see Porter 1990). Please see Chapter 1.1 of *The Global Competitiveness Report 2007–2008* for a complete description of how we have adapted Michael Porter's theory for the present application.

21 Some restrictions were imposed on the coefficients estimated. For example, the three coefficients for each stage had to add up to one, and all the weights had to be non-negative.

22 In order to capture the resource intensity of the economy, we use as a proxy the exports of mineral products as a share of overall exports according to the sector classification developed by the International Trade Centre in their Trade Performance Index. In addition to crude oil and gas, this category also contains all metal ores and other minerals as well as petroleum products, liquefied gas, coal, and precious stones. The data used cover the years 2004 through 2008. Further information on these data can be found at the following site: http://www.intracen.org/menus/countries.htm.

All countries that export more than 70 percent of mineral products are considered to be to some extent factor driven. The stage of development for these countries is adjusted downward smoothly depending on the exact primary export share. The higher the minerals export share, the stronger the adjustment and the closer the country will move to stage 1. For example, a country that exports 95 percent of mineral exports and that, based on the income criteria, would be in stage 3 will be in transition between stages 1 and 2. The income and primary exports criteria are weighted identically. Stages of development are dictated uniquely by income for countries that export less than 70 percent minerals. Countries that export only primary products would automatically fall into the factor-driven stage (stage 1).

23 The reader should note that, as in any benchmarking exercise of this nature, the data are necessarily subject to a time lag and do not fully capture economic circumstances at the time of publication. However, this does not significantly hinder our ability to assess competitiveness, given its medium- to long-term nature.

24 The BRIC countries are Brazil, Russia, India, and China.

25 IMF 2010b.

26 *OECD Observer* 2010.

27 Brandt 2010.

28 Padgett 2010.

29 For a more detailed analysis on Brazil's competitiveness enhanced reforms and policies, see Mia et al. 2009.

30 See Sala-i-Martin et al. 2009 for further details.

31 See the IMF *World Economic Outlook Database,* April 2010 edition. Available online at http://www.imf.org/external/pubs/ft/weo/2010/01/weodata/index.aspx.

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Appendix A: Computation and structure of the Global Competitiveness Index 2010–2011

This appendix presents the structure of the Global Competitiveness Index 2010–2011 (GCI). The numbering of the variables matches the numbering of the data tables. The number preceding the period indicates to which pillar the variable belongs (e.g., variable **1.**01 belongs to the 1st pillar, and variable **12.**04 belongs to the 12th pillar).

The computation of the GCI is based on successive aggregations of scores from the indicator level (i.e., the most disaggregated level) all the way up to the overall GCI score. Unless mentioned otherwise, we use an arithmetic mean to aggregate individual variables within a category.[a] For the higher aggregation levels, we use the percentage shown next to each category. This percentage represents the category's weight within its immediate parent category. Reported percentages are rounded to the nearest integer, but exact figures are used in the calculation of the GCI. For example, the score a country achieves in the 9th pillar accounts for 17 percent of this country's score in the *efficiency enhancers* subindex, irrespective of the country's stage of development. Similarly, the score achieved on the subpillar *transport infrastructure* accounts for 50 percent of the score of the infrastructure pillar.

Unlike the case for the lower levels of aggregation, the weight placed on each of the three subindexes (*basic requirements*, *efficiency enhancers*, and *innovation and sophistication factors*) is not fixed. Instead, it depends on each country's stage of development, as discussed in the chapter.[b] For instance, in the case of Benin—a country in the first stage of development—the score in the *basic requirements* subindex accounts for 60 percent of its overall GCI score, while it represents just 20 percent of the overall GCI score of Australia, a country in the third stage of development.

Variables that are not derived from the Executive Opinion Survey (Survey) are identified by an asterisk (*) in the following pages. The Technical Notes and Sources section at the end of the *Report* provides detailed information about these indicators. To make the aggregation possible, these variables are transformed onto a 1-to-7 scale in order to align them with the Survey results. We apply a min-max transformation, which preserves the order of, and the relative distance between, country scores.[c]

Variables that are followed by the designation "1/2" enter the GCI in two different pillars. In order to avoid double counting, we assign a half-weight to each instance.[d] Finally, note that the numbering of variables in the 1st, 8th, and 9th pillars has changed this year following the adjustments made to the structure of the GCI, as discussed in the text.

Weight (%) within immediate parent category

BASIC REQUIREMENTS

1st pillar: Institutions 25%

A. Public institutions 75%

1. Property rights 20%
   - 1.01 Property rights
   - 1.02 Intellectual property protection 1/2

2. Ethics and corruption 20%
   - 1.03 Diversion of public funds
   - 1.04 Public trust of politicians
   - 1.05 Irregular payments and bribes

3. Undue influence 20%
   - 1.06 Judicial independence
   - 1.07 Favoritism in decisions of government officials

4. Government inefficiency 20%
   - 1.08 Wastefulness of government spending
   - 1.09 Burden of government regulation
   - 1.10 Efficiency of legal framework in settling disputes
   - 1.11 Efficiency of legal framework in challenging regulations
   - 1.12 Transparency of government policymaking

5. Security 20%
   - 1.13 Business costs of terrorism
   - 1.14 Business costs of crime and violence
   - 1.15 Organized crime
   - 1.16 Reliability of police services

B. Private institutions 25%

1. Corporate ethics 50%
   - 1.17 Ethical behavior of firms

2. Accountability 50%
   - 1.18 Strength of auditing and reporting standards
   - 1.19 Efficacy of corporate boards
   - 1.20 Protection of minority shareholders' interests
   - 1.21 Strength of investor protection*

2nd pillar: Infrastructure 25%

A. Transport infrastructure 50%
- 2.01 Quality of overall infrastructure
- 2.02 Quality of roads
- 2.03 Quality of railroad infrastructure
- 2.04 Quality of port infrastructure
- 2.05 Quality of air transport infrastructure
- 2.06 Available seat kilometers*

B. Energy and telephony infrastructure 50%
- 2.07 Quality of electricity supply
- 2.08 Fixed telephone lines* 1/2
- 2.09 Mobile telephone subscriptions* 1/2

3rd pillar: Macroeconomic environment 25%
- 3.01 Government budget balance*
- 3.02 National savings rate*
- 3.03 Inflation* e
- 3.04 Interest rate spread*
- 3.05 Government debt*
- 3.06 Country credit rating*

Appendix A: Computation and structure of the Global Competitiveness Index 2010–2011 *(cont'd.)*

4th pillar: Health and primary education 25%

A. Health.....50%

4.01 Business impact of malaria [f]
4.02 Malaria incidence* [f]
4.03 Business impact of tuberculosis [f]
4.04 Tuberculosis incidence* [f]
4.05 Business impact of HIV/AIDS [f]
4.06 HIV prevalence* [f]
4.07 Infant mortality*
4.08 Life expectancy*

B. Primary education 50%

4.09 Quality of primary education
4.10 Primary education enrollment rate* [g]

EFFICIENCY ENHANCERS

5th pillar: Higher education and training.....17%

A. Quantity of education 33%

5.01 Secondary education enrollment rate*
5.02 Tertiary education enrollment rate*

B. Quality of education.....33%

5.03 Quality of the educational system
5.04 Quality of math and science education
5.05 Quality of management schools
5.06 Internet access in schools

C. On-the-job training 33%

5.07 Local availability of specialized research and training services
5.08 Extent of staff training

6th pillar: Goods market efficiency 17%

A. Competition 67%

1. Domestic competition .....variable [h]

6.01 Intensity of local competition
6.02 Extent of market dominance
6.03 Effectiveness of anti-monopoly policy
6.04 Extent and effect of taxation 1/2
6.05 Total tax rate*
6.06 Number of procedures required to start a business* [i]
6.07 Time required to start a business* [i]
6.08 Agricultural policy costs

2. Foreign competition.....variable [h]

6.09 Prevalence of trade barriers
6.10 Trade tariffs*
6.11 Prevalence of foreign ownership
6.12 Business impact of rules on FDI
6.13 Burden of customs procedures
10.04 Imports as a percentage of GDP* [g]

B. Quality of demand conditions.....33%

6.14 Degree of customer orientation
6.15 Buyer sophistication

7th pillar: Labor market efficiency 17%

A. Flexibility 50%

7.01 Cooperation in labor-employer relations
7.02 Flexibility of wage determination
7.03 Rigidity of employment*
7.04 Hiring and firing practices
7.05 Redundancy costs*
6.04 Extent and effect of taxation 1/2

B. Efficient use of talent 50%

7.06 Pay and productivity
7.07 Reliance on professional management 1/2
7.08 Brain drain
7.09 Female participation in labor force*

8th pillar: Financial market development 17%

A. Efficiency 50%

8.01 Availability of financial services
8.02 Affordability of financial services
8.03 Financing through local equity market
8.04 Ease of access to loans
8.05 Venture capital availability
8.06 Restriction on capital flows

B. Trustworthiness and confidence.....50%

8.07 Soundness of banks
8.08 Regulation of securities exchanges
8.09 Legal rights index*

9th pillar: Technological readiness.....17%

A. Technological adoption.....50%

9.01 Availability of latest technologies
9.02 Firm-level technology absorption
9.03 FDI and technology transfer

B. ICT use 50%

9.04 Internet users*
9.05 Broadband Internet subscriptions*
9.06 Internet bandwidth*
2.08 Fixed telephone lines* 1/2
2.09 Mobile telephone subscriptions* 1/2

10th pillar: Market size 17%

A. Domestic market size.....75%

10.01 Domestic market size index* [j]

B. Foreign market size.....25%

10.02 Foreign market size index* [k]

INNOVATION AND SOPHISTICATION FACTORS

11th pillar: Business sophistication.....50%

11.01 Local supplier quantity
11.02 Local supplier quality
11.03 State of cluster development
11.04 Nature of competitive advantage
11.05 Value chain breadth
11.06 Control of international distribution
11.07 Production process sophistication
11.08 Extent of marketing
11.09 Willingness to delegate authority
7.07 Reliance on professional management 1/2

(Cont'd.)

12th pillar: Innovation.....50%

- 12.01 Capacity for innovation
- 12.02 Quality of scientific research institutions
- 12.03 Company spending on R&D
- 12.04 University-industry collaboration in R&D
- 12.05 Government procurement of advanced technology products
- 12.06 Availability of scientists and engineers
- 12.07 Utility patents*
- 1.02 Intellectual property protection [1/2]

Notes

a Formally, for a category *i* composed of *K* indicators, we have:

$$category_i = \frac{\sum_{k=1}^{K} indicator_k}{K}$$

b As described in the chapter, the weights are the following:

Weights	Factor-driven stage (%)	Efficiency-driven stage (%)	Innovation-driven stage (%)
Basic requirements	60	40	20
Efficiency enhancers	35	50	50
Innovation and sophistication factors	5	10	30

c Formally, we have:

$$6 \times \frac{(\text{country score} - \text{sample minimum})}{(\text{sample maximum} - \text{sample minimum})} + 1$$

The *sample minimum* and *sample maximum* are, respectively, the lowest and highest country scores in the sample of economies covered by the GCI. In some instances, adjustments were made to account for extreme outliers. For those indicators for which a higher value indicates a worse outcome (e.g., disease incidence, government debt), the transformation formula takes the following form, thus ensuring that 1 and 7 still corresponds to the worst and best possible outcomes, respectively:

$$-6 \times \frac{(\text{country score} - \text{sample minimum})}{(\text{sample maximum} - \text{sample minimum})} + 7$$

d For those categories that contain one or several half-weight variables, country scores for those groups are computed as follows:

$$\frac{(\text{sum of scores on full-weight variables}) + \frac{1}{2} \times (\text{sum of scores on half-weight variables})}{(\text{count of full-weight variables}) + \frac{1}{2} \times (\text{count of half-weight variables})}$$

e In order to capture the idea that both high inflation and deflation are detrimental, inflation enters the model in a U-shaped manner as follows: for values of inflation between 0.5 and 2.9 percent, a country receives the highest possible score of 7. Outside this range, scores decrease linearly as they move away from these values.

f The impact of malaria, tuberculosis, and HIV/AIDS on competitiveness depends not only on their respective incidence rates but also on how costly they are for business. Therefore, in order to estimate the impact of each of the three diseases, we combine its incidence rate with the Survey question on its perceived cost to businesses. To combine these data we first take the ratio of each country's disease incidence rate relative to the highest incidence rate in the whole sample. The inverse of this ratio is then multiplied by each country's score on the related Survey question. This product is then normalized to a 1-to-7 scale. Note that countries with zero reported incidence receive a 7, regardless their scores on the related Survey question.

g For this variable we first apply a log-transformation and then a min-max transformation.

h The *competition* subpillar is the weighted average of two components: *domestic competition* and *foreign competition*. In both components, the included variables provide an indication of the extent to which competition is distorted. The relative importance of these distortions depends on the relative size of domestic versus foreign competition. This interaction between the domestic market and the foreign market is captured by the way we determine the weights of the two components. Domestic competition is the sum of consumption (C), investment (I), government spending (G), and exports (X), while foreign competition is equal to imports (M). Thus we assign a weight of (C + I + G + X)/(C + I + G + X + M) to *domestic competition* and a weight of M/(C + I + G + X + M) to *foreign competition*.

i Variables 6.06 and 6.07 combine to form one single variable.

j The size of the domestic market is constructed by taking the natural log of the sum of the gross domestic product valued at purchasing power parity (PPP) plus the total value (PPP estimates) of imports of goods and services, minus the total value (PPP estimates) of exports of goods and services. Data are then normalized on a 1-to-7 scale. PPP estimates of imports and exports are obtained by taking the product of exports as a percentage of GDP and GDP valued at PPP. The underlying data are reported in the data tables section (see Tables 10.03, 10.04, and 10.05).

k The size of the foreign market is estimated as the natural log of the total value (PPP estimates) of exports of goods and services, normalized on a 1-to-7 scale. PPP estimates of exports are obtained by taking the product of exports as a percentage of GDP and GDP valued at PPP. The underlying data are reported in the data tables.

Appendix B: The Joint Research Centre assessment of the Global Competitiveness Index

MICHELA NARDO, European Commission Joint Research Centre
PAOLA ANNONI, European Commission Joint Research Centre

Attempting to summarize complex concepts such as competitiveness in a single metric or index raises a number of empirical challenges. These include data quality, indicator selection, indicator importance, weighting, aggregation, and so on. If done well, the exercise could yield a powerful tool capable of capturing the societal conditions that drive national competitiveness. It could allow for comparisons across space and time by providing the technical ability to monitor change and identify problems, and could contribute to priority setting and policy formulation. The robustness analysis of an index is therefore an essential ingredient for validating the significance of its messages.[1]

The Joint Research Centre (JRC) assessment analysis of the Global Competitiveness Index (GCI) addresses two key questions:

1. Is the Index internally sound and consistent from a statistical point of view?

2. What is the role of the weighting scheme based on the development stage of each economy? Is there a way to assess the importance of each pillar in shaping the GCI results?

With regard to the first objective, the analysis of statistical quality of the Index has been carried out through univariate and multivariate statistical analyses. The univariate analysis is a detailed statistical analysis carried out indicator by indicator and focuses on the presence of missing data, outliers, and the impact of asymmetric distributions (skewness) on the Index. For the multivariate analysis, principal component analysis (PCA) has been used to assess the consistency of the GCI framework in terms of the number of pillars/subpillars and the adequacy of indicators in describing each pillar.[2] PCA has been applied at the pillar level to compare the number of relevant latent factors with the number of subpillars (a top-down analysis), and at the subpillar level to identify a unique relevant latent dimension (a bottom-up analysis).

Overall, the analysis, which was carried out on the 2009–2010 GCI data, confirms the GCI structure with few exceptions. For some pillars, the analysis suggests a redundancy in the subpillar division. In other cases, some indicators are found to be statistically unrelated to the rest of the indicators populating the pillar. This means that they may be describing aspects other than the one represented by most other indicators included in the pillar. These elements have been taken into

We are grateful to our colleagues C. Garrouste and M. Loi for their collaboration in the analysis.

Appendix B: The Joint Research Centre assessment of the Global Competitiveness Index *(cont'd.)*

account by the World Economic Forum in the formulation of the 2010–2011 GCI release, and the relevant adjustments to the model are described in the main text of this chapter.

The second objective is addressed by a detailed robustness analysis. In every composite indicator analysis, the final index is the outcome of a number of choices: the framework (usually driven by theoretical models and experts' opinions), the indicators to be included, their normalization, the weights assigned to each indicator, and the aggregation method, among other elements. Some of these choices are subjective; others are driven by statistical analysis, mathematical simplicity, experts' opinions, or common practice. The aim of the robustness analysis is to assess to what extent all these choices, some of them considered crucial, might affect the final score and ranking of the index.[3]

In the case of the GCI, we decided not to explore all uncertainties in order to check their simultaneous and joint influence on the final score. The complexity of the GCI would indeed have made it difficult to disentangle influential factors and fully understand the implication of their variability. Instead, the GCI robustness analysis focused on some critical key points and checked the overall influence of each of them on the Index.

The robustness assessment of the GCI consisted of different steps. First, a Monte Carlo experiment was used to assess the impact of assigning different weights to the GCI subindexes according to the development stage of each country. This exercise was used to test the weighting scheme at subindex level (*basic requirements, efficiency enhancers,* and *innovation and sophistication factors*), which is considered critical for the results of the GCI.[4]

For technical reasons, all economies are classified into three main development stages in the uncertainty analysis. Countries in transition from one stage to the next were assigned the closest higher or lower development stage.

Figures B1, B2, and B3 show the main outcomes of the 1,200 Monte Carlo simulations, which assessed the GCI robustness with respect to its weighting scheme. For each development stage, the distributions of the rank differences between the GCI and that based on our simulated weights (henceforth termed the *simulated GCI*) are plotted country by country. The median rank difference is in black while the boxes represent the interquartile range of the distribution (25th and 75th percentiles). No particular volatility affects the GCI on average: the median absolute shift of a country ranking is smaller than eight positions for all countries. In absolute terms we find only 7 volatile countries out of an overall sample of 133 countries considered in the GCI 2009–2010. The dispersion around the median is lower for economies in development stage 3 than for the others.

Figure B4 shows the median rank (blue dot) and the 90 percent confidence interval across all the Monte Carlo simulations for all the countries reordered from best to worst according to their GCI rank (black line). At the extreme ends of the ranking there are two groups of very stable countries: regardless of the weights they are assigned, the top performers—Switzerland, the United States, Singapore, Sweden, Denmark, and Finland—and the bottom performers—Timor-Leste, Mauritania, Burkina Faso, Mozambique, Mali, Chad, Zimbabwe, and Burundi—remain the same. As expected, the most unstable countries are located in the middle-to-low area of the competitiveness ladders: these countries are characterized by very similar scores, so that even a small variation in their score causes a comparatively large variation in their rank.

Together with the classical uncertainty analysis, other tests have been carried out to examine the GCI under different conditions. Alternative scenarios have been simulated: (1) to evaluate the compensability effect intrinsically embedded in the linear structure of the GCI, (2) to test the assumption of smooth transitions in the definition of development stages, and (3) to assess whether the pillars play a balanced role in the GCI framework.

Compensability is present within the GCI given its linear structure, which intrinsically embeds the possibility of offsetting a disadvantage in some pillars by a sufficiently large advantage in others.[5] This offsetting might not be always desirable when dealing with fundamental aspects of a concept such as competitiveness. Although it is generally difficult to quantify the level of compensability (comparisons with fully non-compensatory multi-criteria methods should be necessary), the ordered weighted averaging (OWA), originally proposed by Yager (1988 and 1996), is applied to the GCI. The OWA method consists of a family of operators that, for any given element (country, region, individual, . . .), map a set of (k) real values $\{x_1, x_2, \ldots, x_k\}$—that is, indicators observed for that element—into a single index depending on a set of weights $\{w_1, w_2, \ldots, w_k\}$:

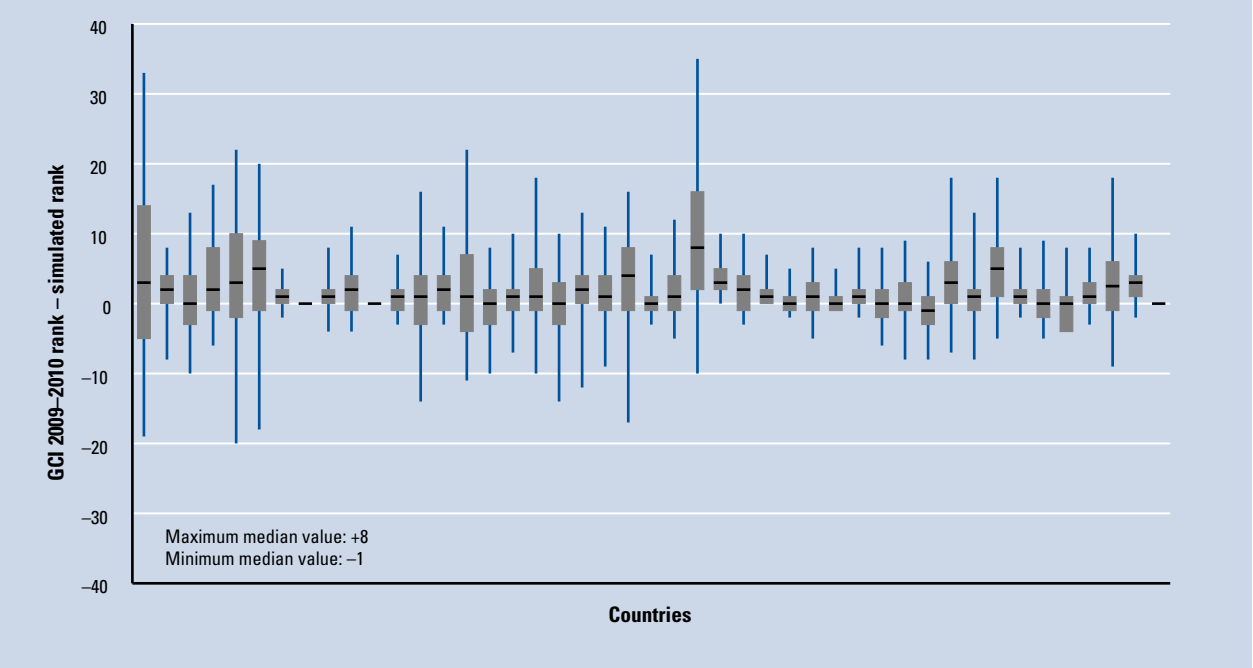
$$f_{\mathrm{OWA}}(x_1, x_{1,\ldots,} x_k) = \sum_{i=1}^{k} w_i x_{(i)} \qquad w_i \in [0,1] \qquad \sum_{i=1}^{k} w_i = 1$$

where $x_{(i)}$ is the i-th largest x_i—that is, $\{x_{(1)}, x_{(2)}, \ldots, x_{(k)}\}$ is the series of x_i values reordered in descending order. OWA operators are not weighted averages since the set of weights depends only on the i-th ordered position of the indicators. OWA operators embed many different types of aggregations depending on the set of weights w_i.

In particular, operator $f^{(or)}$ assigns to each country the highest indicator value, thus implying full compensability among indicators. Consider, for example, the *basic requirements* subindex, comprised of the first four pillars.

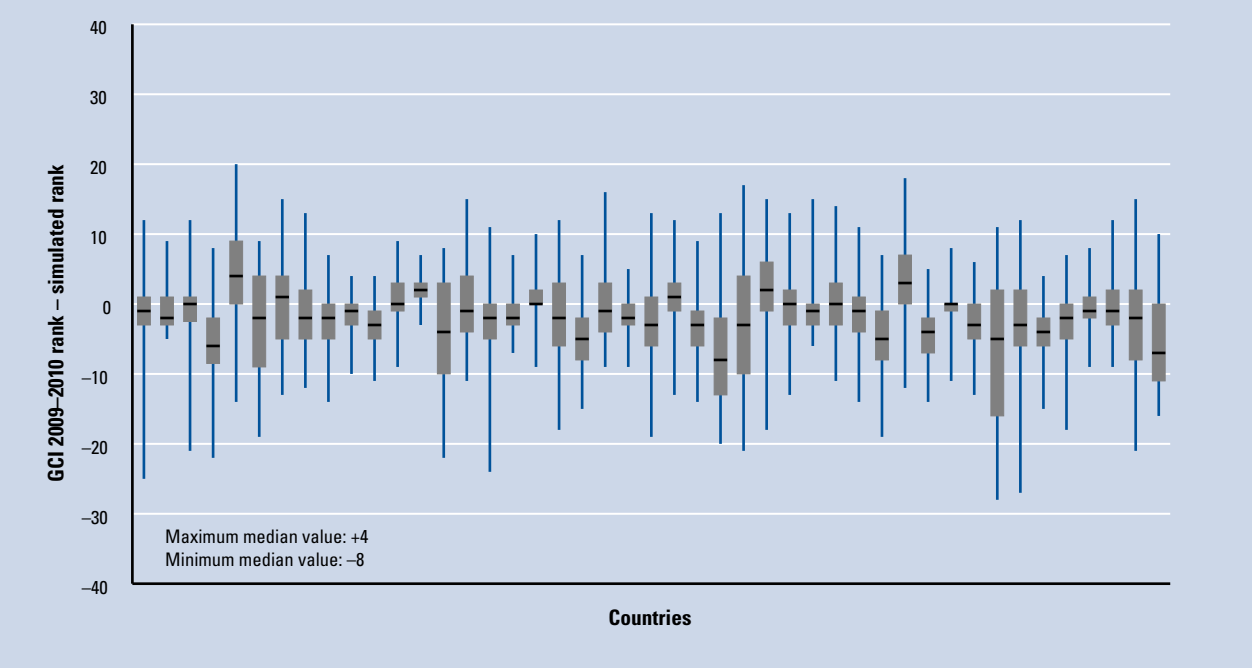
Appendix B: The Joint Research Centre assessment of the Global Competitiveness Index *(cont'd.)*

Figure B1: Uncertainty analysis and GCI rank robustness, countries in development stage 1



Sources: European Commission Joint Research Centre; World Economic Forum, 2009.

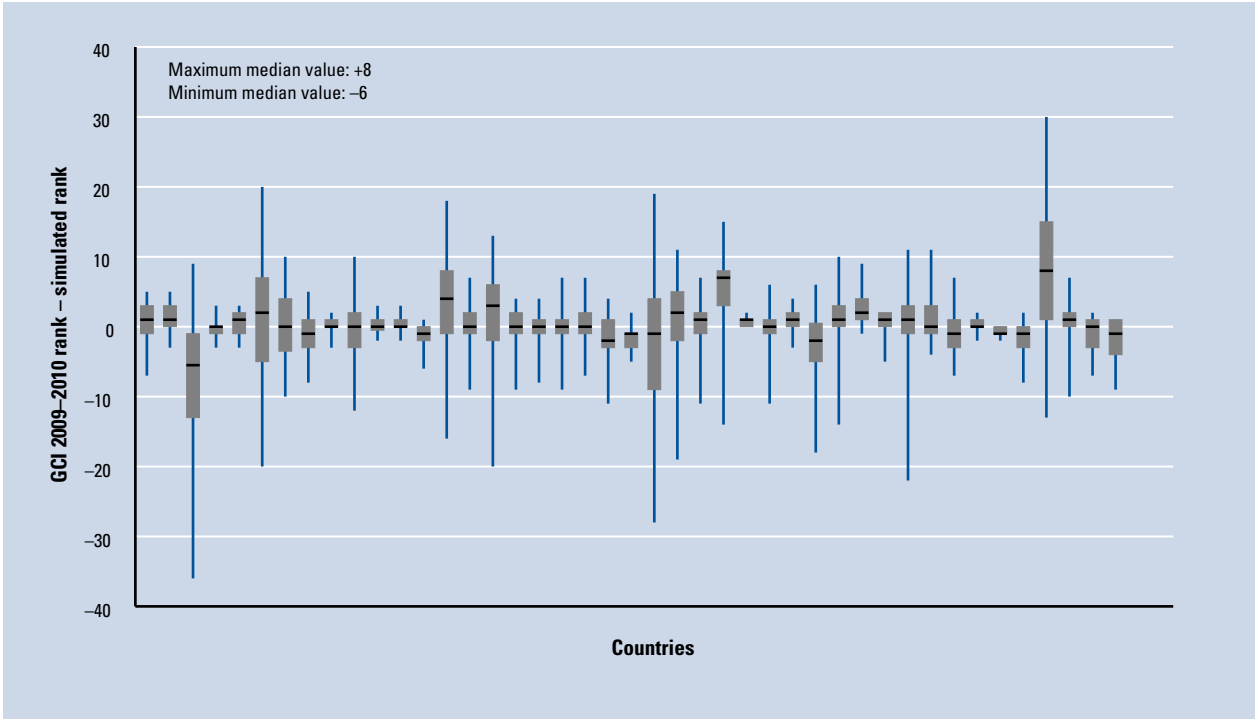
Figure B2: Uncertainty analysis and GCI rank robustness, countries in development stage 2



Sources: European Commission Joint Research Centre; World Economic Forum, 2009.

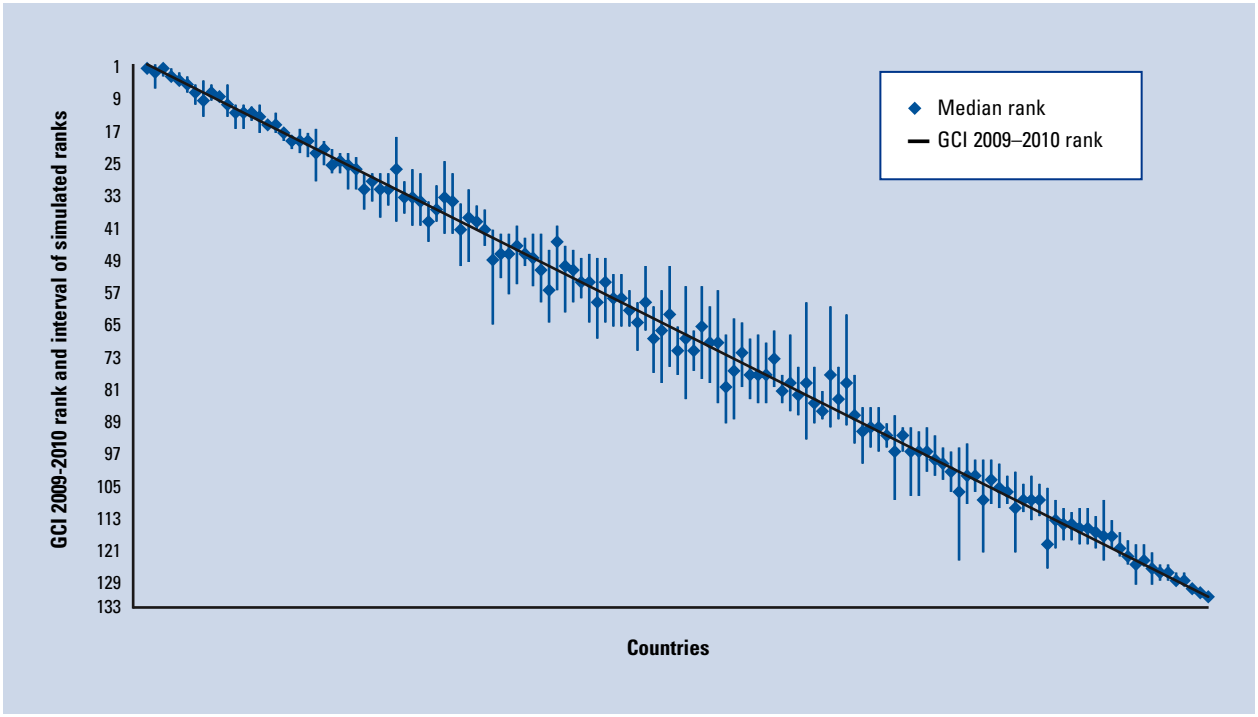
Appendix B: The Joint Research Centre assessment of the Global Competitiveness Index *(cont'd.)*

Figure B3: Uncertainty analysis and GCI rank robustness, countries in development stage 3



Sources: European Commission Joint Research Centre; World Economic Forum, 2009.

Figure B4: Robustness analysis: Median GCI ranks and confidence intervals



Sources: European Commission Joint Research Centre; World Economic Forum, 2009.

Appendix B: The Joint Research Centre assessment of the Global Competitiveness Index *(cont'd.)*

Table B1: Shift of scores and ranks for countries in transition

		DEVELOPMENT STAGE			
		Stage 1		Stage 2	
	Country	Score (%)	Rank	Score (%)	Rank
1.05	Algeria	–0.3	3	6.1	–14
1.16	Egypt	–0.3	1	1.7	–8
1.24	Libya	–1.5	7	4.1	–7
1.25	Indonesia	–0.1	0	0.4	–1
1.39	Kuwait	–2.1	6	2.6	–3
1.43	Botswana	–1.7	2	2.2	–13
1.47	Brunei Darussalam	–3.7	6	3.3	–9
1.54	Azerbaijan	–1.7	7	1.5	–4
1.54	Venezuela	–1.8	5	0.9	–1
1.60	Paraguay	–1.1	2	0.8	–1
1.75	Morocco	–3.2	11	1.1	–6
1.75	Saudi Arabia	–2.8	4	0.4	–1
1.76	Syria	–4.0	9	1.3	–2
1.85	Guatemala	–1.4	1	0.2	–3
1.90	Jamaica	0.4	0	0	1
1.93	Georgia	–2.8	5	0.2	–1
1.94	Kazakhstan	–1.7	2	0.1	–1
1.95	Qatar	–4.8	8	–0.6	1

		DEVELOPMENT STAGE			
		Stage 2		Stage 3	
	Country	Score (%)	Rank	Score (%)	Rank
2.04	Romania	–0.1	0	3.1	–15
2.14	Uruguay	–0.8	1	5.1	–23
2.14	Chile	–0.7	0	4.3	–10
2.15	Mexico	–0.7	3	3.6	–10
2.18	Turkey	–0.6	0	2.5	–7
2.24	Oman	–2.2	8	4.7	–12
2.35	Russian Federation	–1.6	6	3	–11
2.46	Bahrain	–4.1	8	3.5	–5
2.54	Barbados	–3.4	3	2.8	–11
2.60	Poland	–1.3	2	0.9	–7
2.64	Lithuania	–2.8	10	1.6	–2
2.75	Latvia	–4.0	11	1.3	–11
2.82	Hungary	–3.1	13	0.7	–2
2.83	Croatia	–4.6	15	1	–7

Sources: European Commission Joint Research Centre; World Economic Forum, 2009.

The operator $f^{(or)}$ would be the best value each country scored within the four pillars. This is implicitly equivalent to the optimistic criterion, where the satisfaction of at least one aspect is enough. On the contrary, operator $f^{(and)}$ assigns to the country its lowest score, implying no compensability at all: all aspects must be satisfied in order to be "good" and, in this sense, this is equivalent to the most restrictive approach. In our example, $f^{(and)}$ would be the worst value each country scored within the four pillars. In between lies the reference GCI, computed with the reference set of weights. The higher the difference between the values of $f^{(or)}$ and $f^{(and)}$, the higher the compensability effect for that country. Results are shown in Figure B5 where separate pictures are displayed for the three development stages.

The three graphs show that the width of error bars tends to decrease as the development stage increases, indicating that countries in the first development stage are more affected by compensability within each pillar group. On the contrary, the highest-ranked countries, with only a few exceptions, are the least affected by compensability, meaning that best performers have high scores in almost every aspect of competitiveness.

One of the distinctive characteristics of the GCI is the introduction of transition development stages. Countries that are in between two of the three major stages are assigned a set of weights that gradually change as a country moves to the more advanced stage. This reproduces the smooth transition from a lower stage of development to the upper level, implying that countries possessing the economic capacity to perform better—reflected by their weight values—are expected to score higher in the different dimensions of the GCI. A simple scenario has been set up for an ex post test of this assumption. The shift in country score and rank (difference between GCI and the modified GCI) is computed for each country in transition by assigning them the weights of the adjacent lower and higher stage.

Table B1 shows results for countries in the first transition stage, between stage 1 and 2 (left-hand side), and in the second transition stage, between stage 2 and 3 (right-hand side). For almost all countries, the shift in score (with respect to the reference score) is negative when assigning weights of the lower stage and positive when assigning weights of the higher stage. In terms of ranking, most of the countries would gain positions if assigned the weights of the adjacent lower-development stage and would lose positions if assigned the weights of the adjacent higher-development stage. For instance, if we assign to Algeria the weights of stage 1, its score would increase by 0.3 percent with respect to the baseline scenario (higher weight is assigned to the pillars where this country is stronger) and the country would gain three positions in the global ranking. This indicates that the results are clearly in line with the GCI intention, namely to gradually penalize countries that, having the capacity, *"are not preparing for the next stage."*[6]

Finally, the distinct contribution of the pillars to the final scores and ranks is assessed. All weights are set back to their reference values and country scores and ranks are computed by discarding one pillar at a time, for a total of 12 simulations. Figure B6 shows results in terms

Appendix B: The Joint Research Centre assessment of the Global Competitiveness Index *(cont'd.)*

Figure B5: Ordered weighted averaging analysis

Figure a: Countries in development stage 1

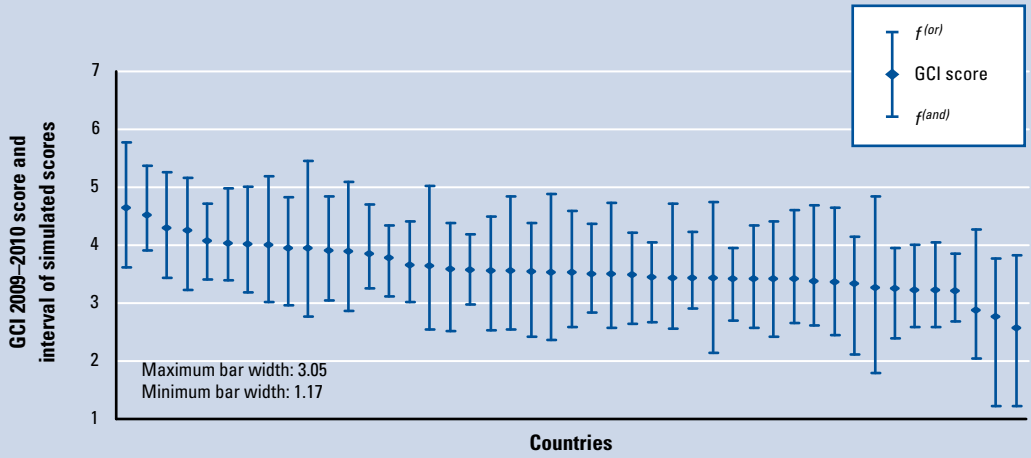


Figure b: Countries in development stage 2

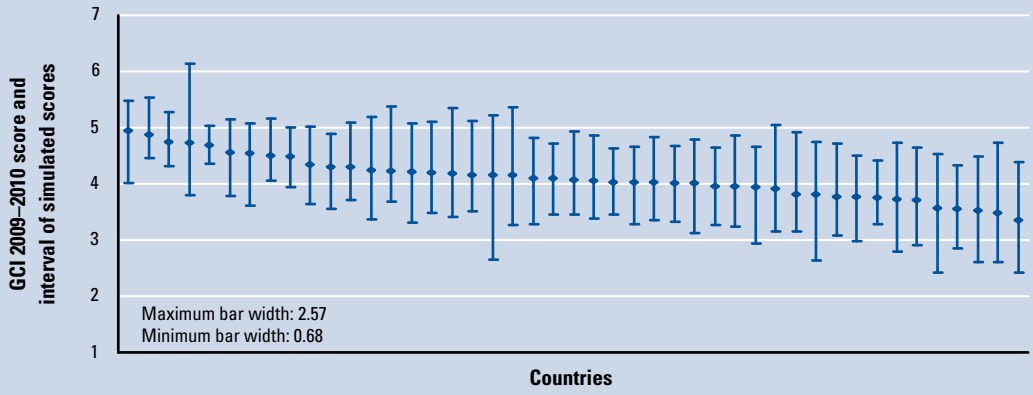
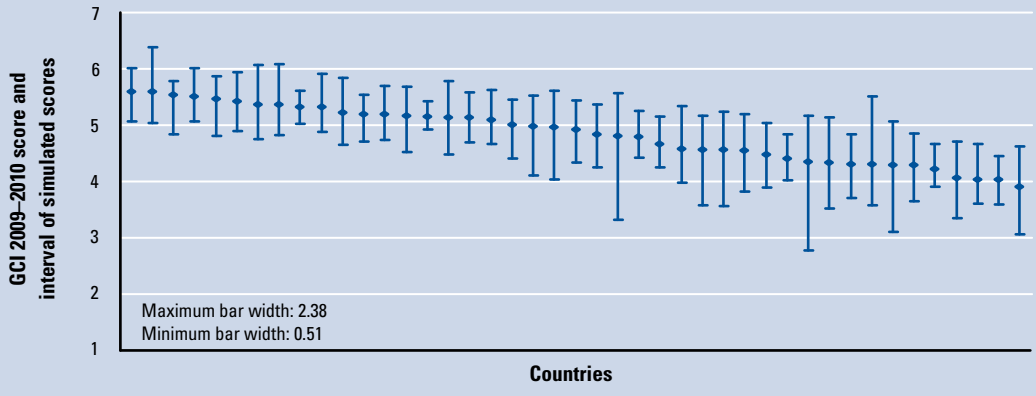


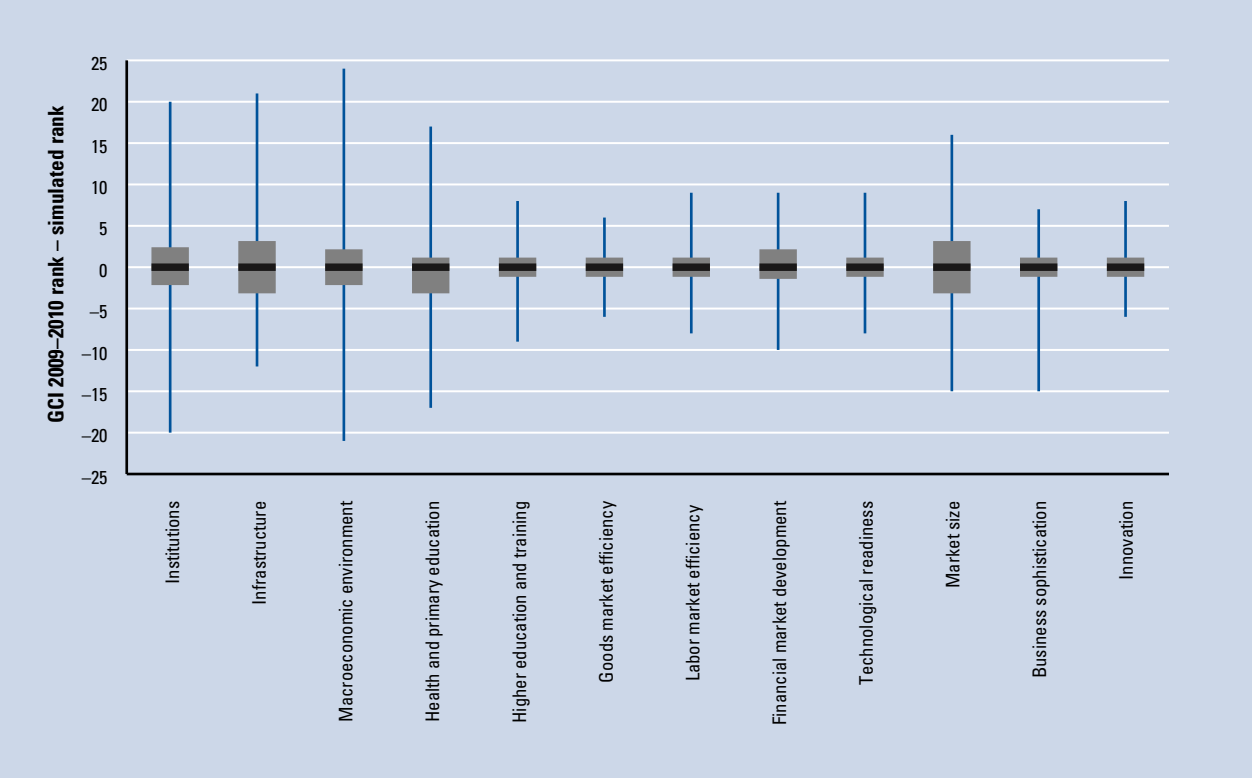
Figure c: Countries in development stage 3



Sources: European Commission Joint Research Centre; World Economic Forum, 2009.

Appendix B: The Joint Research Centre assessment of the Global Competitiveness Index *(cont'd.)*

Figure B6: GCI framework balance of pillars: Rank differences



Sources: European Commission Joint Research Centre; World Economic Forum, 2009.

of rank differences (score differences are reported in Box 2, Figure 2). The black line is the median rank difference across all countries and the boxes include 75 percent of the cases. The entire distribution of the score differences is displayed by the vertical lines. All the boxes are well between the band –5 and +5, meaning that the maximum shift of country rank is up to 5 positions in 75 percent of the times. This confirms that, on average, all the pillars contribute in a balanced way to the overall GCI score. Almost all of the most influential pillars—*institutions, infrastructure, macroeconomic environment, health and primary education,* and *market size*—belong to the *basic requirements* subindex.

Overall, the GCI proved to be robust and consistent. Despite its multifaceted structure, wide coverage of different countries, and complex weighting scheme, the Index draws a reliable picture of national competitiveness and represents a well-balanced plurality of different fundamental aspects.

Notes

1 More information on robustness analysis applied to composite indicators can be found in http://composite-indicators.jrc.ec.europa.eu/ .

2 Mardia et al. 1979.

3 OECD 2008; Saltelli et al. 2008.

4 The weighting scheme at the pillar level has been tested by comparing the GCI weighting structure with weights derived using principal component analysis, and with equal weighing.

5 Munda 2008.

6 Sala-i-Martin et al. 2009, p. 1.

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The Africa Commission presented its findings in the report Realising the Potential of Africa's Youth, which was published in May 2009. Drawing on existing analyses and best practices, the Africa Commission presented specific policy recommendations and launched five international initiatives aimed at creating jobs for young men and women in Africa through private sector–led growth and improved competitiveness of African economies. Special emphasis was given to creating decent jobs, fostering entrepreneurship, and providing greater opportunities through education, skills development and access to finance. The Africa Commission is supported by a Secretariat established within the Danish Ministry of Foreign Affairs.

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