

## CHAPTER 1

# The Global Competitiveness Index 2012: Strengthening Recovery by Raising Productivity\*

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At the time of releasing The Global Competitiveness Report 2012, the outlook for the world economy is once again fragile. Global growth remains historically low for the second year running with major centers of economic activity – particularly large emerging economies and key advanced economies – expected to slow in 2012–13, confirming the belief that the global economy is troubled by a slow and weak recovery. As in previous years, growth remains unequally distributed. Emerging and developing countries are growing faster than advanced economies, steadily closing the income gap.

The International Monetary Fund (IMF) estimates that, in 2012, the euro zone will have contracted by 0.3 percent, while the United States is experiencing a weak recovery with an uncertain future. Large emerging economies such as Brazil, the Russian Federation, India, China, and South Africa are growing somewhat less than they did in 2011. At the same time, other emerging markets – such as developing Asia – will continue to show robust growth rates, while the Middle East and North Africa as well as sub-Saharan African countries are gaining momentum.

Recent developments – such as the danger of a property bubble in China, a decline in world trade, and volatile capital flows in emerging markets – could derail the recovery and have a lasting impact on the global economy. Arguably, this year's deceleration to a large extent reflects the inability of leaders to address the many challenges that were already present last year. Policymakers around the world remain concerned about high unemployment and the social conditions in their countries. The political brinkmanship in the United

States continues to affect the outlook for the world's largest economy, while the sovereign debt crises and the danger of a banking system meltdown in peripheral euro zone countries remain unresolved. The high levels of public debt coupled with low growth, insufficient competitiveness, and political gridlock in some European countries stirred financial markets' concerns about sovereign default and the very viability of the euro. Given the complexity and the urgency of the situation, European countries are facing particularly difficult economic management decisions with challenging political and social ramifications. Although European leaders do not agree on how to address the immediate challenges, there is recognition that, in the longer term, stabilizing the euro and putting Europe on a higher and more sustainable growth path will necessitate improvements to the competitiveness of the weaker member states.

All these developments are highly interrelated and demand timely, decisive, and coordinated action by policymakers. In light of these uncertain global ramifications, sustained structural reforms aimed at enhancing competitiveness will be necessary for countries to stabilize economic growth and ensure the rising prosperity of their populations going into the future.

Competitive economies drive productivity enhancements that support high incomes by ensuring that the mechanisms enabling solid economic performance are in place.

For more than three decades, the World Economic Forum's annual Global Competitiveness Reports have studied and benchmarked the many factors underpinning national competitiveness. From the onset, the goal has been to provide insight and stimulate the discussion

\*WEF, Global Competitiveness Report 2012

among all stakeholders on the best strategies and policies to help countries to overcome the obstacles to improving competitiveness. In the current challenging economic environment, our work is a critical reminder of the importance of structural economic fundamentals for sustained growth.

Since 2005, the World Economic Forum has based its competitiveness analysis on the Global Competitiveness Index (GCI), a comprehensive tool that measures the microeconomic and macroeconomic foundations of national competitiveness.

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 level of prosperity that can be earned by an economy. The productivity level also determines the rates of return obtained by investments in an economy, which in turn are the fundamental drivers of its growth rates. In other words, a more competitive economy is one that is likely to sustain growth.

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

## THE 12 PILLARS OF COMPETITIVENESS

Many determinants drive productivity and competitiveness. Understanding the factors behind this process has occupied the minds of economists for hundreds of years, engendering theories ranging from Adam Smith's focus on specialization and the division of labor to neoclassical economists' emphasis on investment in physical capital and infrastructure, 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 factors are likely to be important for competitiveness and growth, they are not mutually

exclusive – two or more of them can be significant at the same time, and in fact that is what has been shown in the economic literature.

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 competitiveness (Figure 1).

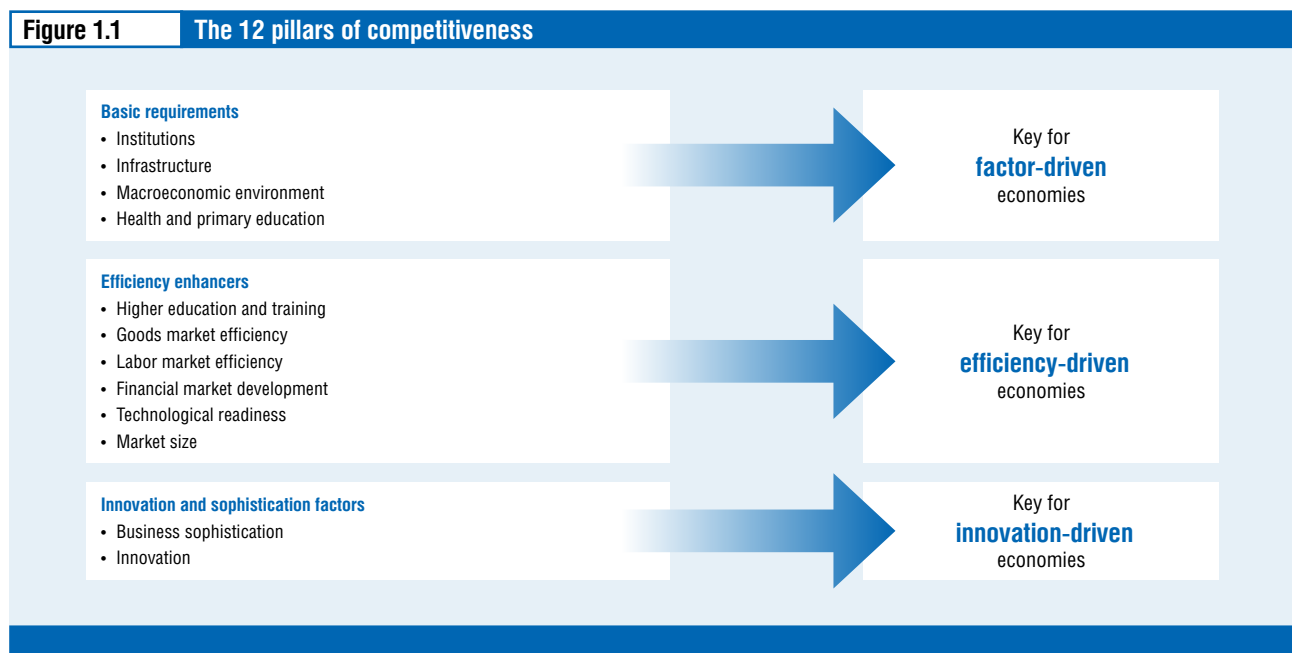
### First pillar: Institutions

The institutional environment is determined by the legal and administrative framework within which individuals, firms, and governments interact to generate wealth. The importance of a sound and fair institutional environment became even more apparent during the recent economic and financial crisis and is especially crucial for further solidifying the fragile recovery given the increasing role played by the state at the international level and for the economies of many countries.

The quality of institutions has a strong bearing on competitiveness and growth. 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.

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, overregulation, corruption, dishonesty in dealing with public contracts, lack of transparency and trustworthiness, inability to provide appropriate services for the business sector, and political dependence of the judicial system impose significant economic costs to businesses and slow the process of economic development.

In addition, the 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 therefore 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 creating wealth. The recent global financial crisis, along with numerous corporate scandals, have 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. 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.

### Second pillar: Infrastructure

Extensive and efficient infrastructure is critical for ensuring the effective functioning of the economy, as it is an important factor in determining the location of economic activity and the kinds of activities or sectors that can develop in a particular instance. 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 reduce income inequalities and poverty in a variety of ways. 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.

### 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. Although it is certainly true that macroeconomic stability alone cannot increase the productivity of a nation, it is also recognized that macroeconomic instability harms the economy, as we have seen over the past years, notably in the European context. 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 and to invest in competitiveness-enhancing measures. Firms cannot operate efficiently when inflation rates are out of hand. In sum, the economy cannot grow in a sustainable manner unless the macro environment is stable. Macroeconomic stability has captured the attention

of the public most recently when some European countries needed the support of the IMF and other euro zone economies to prevent sovereign default, as their public debt reached unsustainable levels.

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.

### 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.

In addition to health, this pillar takes into account the quantity and quality of the basic education received by the population. Basic education increases the efficiency of each individual worker. Moreover, workers who have received little formal education can carry out only simple manual tasks and find it much more difficult to adapt to more advanced production processes and techniques, and therefore contribute less to come up with or execute innovations. In other words, lack of basic education can 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 with existing human resources.

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 the deficits and debt burden.

### Fifth pillar: Higher education and training

Quality higher education and training is particularly crucial for economies that want to move up the value chain beyond simple production processes and products. In particular, today's globalizing economy requires countries to nurture pools of well-educated workers who are able to perform complex tasks and adapt rapidly to their changing environment and the evolving needs of the economy. 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. 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 effective 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. The importance of well-functioning labor markets has been dramatically highlighted by last year's events in Arab countries, where rigid labor markets were an important cause of high youth unemployment, sparking social unrest in Tunisia that then spread across the region. Youth unemployment is also high in a number of European countries, where important barriers to entry into the labor market remain in place.

Efficient labor markets must also ensure a clear relationship between worker incentives and their efforts to promote meritocracy at the workplace, and they must provide equity in the business environment between women and men. Taken together these factors have a positive effect on worker performance and the attractiveness of the country for talent, two aspects that are growing more important as talent shortages loom on the horizon.

### **Eighth pillar: Financial market development**

The recent economic 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 of a sound financial market.

Business investment is also 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, well-regulated securities exchanges, venture capital, and other financial products. 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 is increasingly essential 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 enabling innovation for competitiveness. ICT has evolved into the “general purpose technology” of our time, 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 need to have access to advanced products and blueprints and the ability to absorb and use them. Among the main sources of foreign technology, FDI often plays a key role, especially for countries at a lower stage of technological development. 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 conduct blue-sky research and develop new technologies for innovation that expand the frontiers of knowledge. That is why we separate technological readiness from innovation, captured in the 12th pillar, described 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 can to a certain extent substitute for domestic markets, especially for small countries. Vast empirical evidence shows that trade openness is positively associated with growth. Even if some recent research casts doubts on the robustness of this relationship, there is a general sense that trade has a positive effect on growth, especially for countries with small domestic markets. The case of the European Union illustrates the importance of the market size for competitiveness, as important efficiency gains were realized through closer integration. Although the reduction of trade barriers and the harmonization of standards within the European Union have contributed to raising exports within the region, many barriers to a true single market, in particular in services, remain in place and lead to important border effects. Therefore we continue to use the size of the national domestic and foreign market in the Index.

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. 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 divided into many countries but have a single common market.

### **Eleventh pillar: Business sophistication**

There is no doubt that sophisticated business practices are conducive to higher efficiency in the production of goods and services. Business sophistication concerns two elements that are intricately linked: the quality of a country's

**Table 1.1** Subindex weights and income thresholds for stages of development

	Stage 1: Factor-driven	Transition from stage 1 to stage 2	Stage 2: Efficiency-driven	Transition from stage 2 to stage 3	Stage 3: Innovation-driven
<b>GDP per capita* (USD) thresholds**</b>	<b>&lt;2 000</b>	<b>2 000-2 999</b>	<b>3 000-8 999</b>	<b>9 000-17 000</b>	<b>&gt;17 000</b>
Weights for basic requirements subindex, %	60	40-60	40	20-40	20
Weights for efficiency enhancers subindex, %	35	35-50	50	50	50
Weights for innovation and sophistication factors subindex, %	5	5-10	10	10-30	30

\* For economies with a high dependency on mineral resources, GDP per capita is not the sole criterion for the determination of the stage of development. See text for details.

\*\* There is inverse dependence between GDP per capita and weight in the range of subindex weights. For example, for a country with GDP per capita of USD 2999 the weight used for subindex "Basic Requirements" is 40%.

overall business networks and the quality of individual firms' operations and strategies. These factors are particularly important for countries at an advanced stage of development when, to a large extent, the more basic sources of productivity improvements have been exhausted. 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, called clusters, efficiency is heightened, greater opportunities for innovation in processes and products are created, and barriers to entry for new firms are reduced. Individual firms' advanced operations and strategies (branding, marketing, distribution, advanced production processes, and the production of unique and sophisticated products) spill over into the economy and lead to sophisticated and modern business processes across the country's business sectors.

### Twelfth pillar: Innovation

Innovation can emerge from new technological and non- technological knowledge. Non-technological innovations are closely related to the know-how, skills, and working conditions that are embedded in organizations and are therefore largely covered by the eleventh pillar of the GCI. The final pillar of competitiveness focuses on 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 largely enhanced by technological innovation. Technological breakthroughs have been at the basis of many of the productivity gains that our economies have historically experienced. These range from the industrial revolution in the 18th century and the invention of the steam engine and the generation of electricity to the more recent digital revolution. The latter is transforming not only the way things are being done, but also opening a wider range of new possibilities in terms of products and services. Innovation is particularly important for economies as they approach the frontiers of knowledge and the possibility of generating more value by only integrating and adapting exogenous technologies tends to disappear.

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 and move toward higher- value-added activities. This progression requires an environment that is conducive to innovative activity and 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 that can generate the basic knowledge needed to build the new technologies; extensive collaboration in research and technological developments between universities and industry; and the protection of intellectual property, in addition to high levels of competition and access to venture capital and financing that are analyzed in other pillars of the Index. In light of the recent sluggish recovery and rising fiscal pressures faced by advanced economies, it is important that public and private sectors resist pressures to cut back on the R&D spending 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 in others. For example, a strong innovation capacity (pillar 12) will be very difficult to achieve without a healthy, well-educated and trained workforce (pillars 4 and 5) that is 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). Although 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.

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

## 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 Cambodia to improve its competitiveness is not the same as the best way for France to do so. This is because Cambodia and France 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.

<b>Table 1.2 Countries/economies at each stage of development</b>				
<b>Stage 1: Factor-driven (38 economies)</b>	<b>Transition from stage 1 to stage 2 (17 economies)</b>	<b>Stage 2: Efficiency-driven (33 economies)</b>	<b>Transition from stage 2 to stage 3 (21 economies)</b>	<b>Stage 3: Innovation-driven (35 economies)</b>
Bangladesh	Algeria	Albania	Argentina	Australia
Benin	Azerbaijan	Armenia	Bahrain	Austria
Burkina Faso	Bolivia	Bosnia and Herzegovina	Barbados	Belgium
Burundi	Botswana	Bulgaria	Brazil	Canada
Cambodia	Brunei Darussalam	Cape Verde	Chile	Cyprus
Cameroon	Egypt	China	Croatia	Czech Republic
Chad	Gabon	Colombia	Estonia	Denmark
Cote d'Ivoire	Honduras	Costa Rica	Hungary	Finland
Ethiopia	Iran, Islamic rep.	Dominican Republic	Kazakhstan	France
Gambia, The	Kuwait	Ecuador	Latvia	Germany
Ghana	Libya	El Salvador	Lebanon	Greece
Guinea	Mongolia	Georgia	Lithuania	Hong Kong SAR
Haiti	Philippines	Guatemala	Malaysia	Iceland
India	Qatar	Guyana	Mexico	Ireland
Kenya	Saudi Arabia	Indonesia	Oman	Israel
Kyrgyz Republic	Sri Lanka	Jamaica	Poland	Italy
Lesotho	Venezuela	Jordan	Russian Federation	Japan
Liberia		Macedonia, FYR	Seychelles	Korea, Rep.
Madagascar		Mauritius	Trinidad and Tobago	Luxembourg
Malawi		Montenegro	Turkey	Malta
Mali		Morocco	Uruguay	Netherlands
Mauritania		Namibia		New Zealand
Moldova		Panama		Norway
Mozambique		Paraguay		Portugal
Nepal		Peru		Puerto Rico
Nicaragua		Romania		Singapore
Nigeria		Serbia		Slovak Republic
Pakistan		South Africa		Slovenia
Rwanda		Surinam		Spain
Senegal		Swaziland		Sweden
Sierra Leone		Thailand		Switzerland
Tajikistan		Timor-Leste		Taiwan, China
Tanzania		<b>Ukraine</b>		United Arab Emirates
Uganda				United Kingdom
Vietnam				United States
Yemen				
Zambia				
Zimbabwe				

In line with the economic theory of stages of development, the GCI assumes that economies in the first stage are mainly factor-driven and compete based on their factor endowments – primarily low-skilled labor and natural resources. 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), a 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/or unique products, services, models, and processes. At this stage, companies must compete by producing new and different goods through new technologies (pillar 12) and/or the most sophisticated production processes or business models (pillar 11).

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 subindices, 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 subindices are shown in Figure 1.1.

The weights attributed to each subindex in every stage of development are shown in Table 1.1. To obtain the weights shown in the table, 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. The rounding of these econometric estimates led to the choice of weights displayed in Table 1.1.

### 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 also shown in Table 1.1. A second criterion is used to adjust for countries that are wealthy, but where prosperity is based on the extraction of resources. This is measured by the share of exports of mineral goods in total exports (goods and services), and assumes that countries that export more than 70 percent of mineral products (measured using a five-year average) are to a large extent factor driven. 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 1.2.

### DATA SOURCES

To measure these concepts, the GCI uses statistical data such as enrollment rates, government debt, budget deficit, and life expectancy, which are obtained from internationally recognized agencies, notably the United Nations Educational, Scientific and Cultural Organization (UNESCO), the IMF, and the World Health Organization (WHO). The descriptions and data sources of all these statistical variables are presented in the Technical Notes and Sources at the end of this Report. Furthermore, the GCI uses data from the World Economic Forum's annual Executive Opinion Survey (Survey) to capture concepts that require a more qualitative assessment or for which

internationally comparable statistical data are not available for the entire set of economies. In Ukraine, the Centre for Social and Economic Research Ukraine (CASE) is the Forum's Partner Institute.

### ADJUSTMENTS TO THE GCI

A few minor adjustments have been made to the GCI structure this year. Within the macroeconomic environment pillar (3rd), the interest rate spread has been removed from the Index because of limitations in the international comparability of these data. Furthermore, mobile broadband was added to the technological readiness (9th) pillar in order to take into account the rapidly expanding access to the Internet via mobile devices. And a variable capturing the extent to which governments provide services to the business community, which has been collected through the Executive Opinion Survey, was added to the institutions pillar (1st). For the patent indicator in the innovation pillar (12th), the source has been changed to include data based on the Patents Co-operations Treaty instead of the US Patent and Trademark Office (USPTO), which had been used until now. These data are collected and published jointly by the World Intellectual Property Organization and the Organization for Economic Co-operation and Development (OECD). They record patent applications globally, not just in the United States, therefore eliminating a possible geographical bias. Finally, the Rigidity of Employment Index was dropped from the labor market efficiency pillar (7th), as the World Bank ceased to provide this indicator.

### COUNTRY COVERAGE

The coverage of this year has increased from 142 to 144 economies. The newly covered countries are Gabon, Guinea, Liberia, Seychelles, and Sierra Leone. Libya was re-included after a year of absence as we were not able to conduct the Survey because of civil unrest in 2011. Three previously covered countries had to be excluded from this year's Report. Survey data could not be collected in Belize and Angola; in Syria, the security situation did not allow the Survey to be carried out. In the case of Tunisia we decided not to report the results this year because an important structural break in the data makes comparisons with past years difficult. We hope to re-include these countries in the future.

## Annex A: Computation and Structure of the Global Competitiveness Index 2012

This appendix presents the structure of the Global Competitiveness Index 2012 (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 1.11 belongs to the 1st pillar and variable 9.04 belongs to the 9th 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<sup>a</sup>.

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 put 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<sup>b</sup>. For instance, in the case of Burundi – 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 Sweden, a country in the third stage of development. For countries in transition between stages, the weighting applied to each subindex is reported in the corresponding profile at the end of this volume. For instance, in the case of Algeria, currently in transition from stage 1 to stage 2, the weight on each subindex is 59.1 percent, 35.7 percent, and 5.2 percent, respectively.

Variables that are not derived from the Executive Opinion Survey are identified by an asterisk (\*) in the following pages. 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<sup>c</sup>.

Indicators 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<sup>d</sup>.

Weight (%)  
within immediate  
parent category

### BASIC REQUIREMENTS

<b>1st pillar: Institutions</b> .....	<b>25%</b>
<b>A. Public institutions</b> .....	<b>75%</b>
Property rights.....	20%
1.01 Property rights	
1.02 Intellectual property protection <sup>1/2</sup>	
Ethics and corruption.....	20%
1.03 Diversion of public funds	
1.04 Public trust of politicians	
1.05 Irregular payments and bribes	
Undue influence.....	20%
1.06 Judicial independence	
1.07 Favoritism in decisions of government officials	
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	
1.13 Provision of government services for improved business performance	
Security.....	20%
1.14 Business costs of terrorism	
1.15 Business costs of crime and violence	
1.16 Organized crime	
1.17 Reliability of police services	
<b>B. Private institutions</b> .....	<b>25%</b>
Corporate ethics.....	50%
1.18 Ethical behavior of firms	
Accountability.....	50%
1.19 Strength of auditing and reporting standards	
1.20 Efficacy of corporate boards	
1.21 Protection of minority shareholders' interests	
1.22 Strength of investor protection*	
<b>2nd pillar: Infrastructure</b> .....	<b>25%</b>
<b>A. Transport infrastructure</b> .....	<b>50%</b>
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 airline seat kilometers*	
<b>B. Energy and telephony infrastructure</b> .....	<b>50%</b>
2.07 Quality of electricity supply	
2.08 Mobile telephone subscriptions* <sup>1/2</sup>	
2.09 Fixed telephone lines* <sup>1/2</sup>	
<b>3rd pillar: Macroeconomic environment</b> .....	<b>25%</b>
3.01 Government budget balance *	
3.02 National savings rate*	
3.03 Inflation* <sup>e</sup>	
3.04 Interest rate spread*	
3.05 Government debt*	
3.06 Country credit rating*	
<b>4th pillar: Health and primary education</b> .....	<b>25%</b>
<b>A. Health</b> .....	<b>50%</b>
4.01 Business impact of malaria <sup>f</sup>	
4.02 Malaria incidence* <sup>f</sup>	
4.03 Business impact of tuberculosis <sup>f</sup>	
4.04 Tuberculosis incidence* <sup>f</sup>	
4.05 Business impact of HIV/AIDS <sup>f</sup>	
4.06 HIV prevalence* <sup>f</sup>	
4.07 Infant mortality*	
4.08 Life expectancy*	
<b>B. Primary education</b> .....	<b>50%</b>
4.09 Quality of primary education	
4.10 Primary education enrollment rate*	



## 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%

**Domestic competition**.....75%<sup>g</sup>

- 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<sup>1/2</sup>
- 6.05 Total tax rate\*
- 6.06 Number of procedures required to start a business\*<sup>h</sup>
- 6.07 Time required to start a business\*<sup>h</sup>
- 6.08 Agricultural policy costs

**External competition**.....25%<sup>g</sup>

- 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
- 6.14 Imports as a percentage of GDP\*<sup>i</sup>

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

- 6.15 Degree of customer orientation
- 6.16 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 Hiring and firing practices
- 7.04 Redundancy costs\*
- 7.04 Extent and effect of taxation<sup>1/2</sup>

**B. Efficient use of talent**.....50%

- 7.05 Pay and productivity
- 7.06 Reliance on professional management<sup>1/2</sup>
- 7.07 Brain drain
- 7.08 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

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

- 8.06 Soundness of banks
- 8.07 Regulation of securities exchanges
- 8.08 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\*
- 9.07 Mobile broadband subscriptions\*
- 2.08 Mobile telephone subscriptions\*<sup>1/2</sup>
- 2.09 Fixed telephone lines \*<sup>1/2</sup>

**10th pillar: Market size**.....17%

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

- 10.01 Domestic market size index\*<sup>i</sup>

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

- 10.02 Foreign market size index\*<sup>k</sup>

## 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
- 7.06 Reliance on professional management<sup>1/2</sup>

**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<sup>1/2</sup>

## REFERENCES

a. For each category *i* that consist from *K* indicators:

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

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

Stage of development				
Stage 1: Factor-driven	Transition from stage 1 to stage 2	Stage 2: Efficiency- driven	Transition from stage 2 to stage 3	Stage 3: Innovation- driven
GDP per capita* (USD) thresholds**				
<2 000	2 000-2 999	3 000-8 999	9 000-17 000	>17 000
Weights for basic requirements subindex, %				
60	40-60	40	20-40	20
Weights for efficiency enhancers subindex, %				
35	35-50	50	50	50
Weights for innovation and sophistication factors subindex, %				
5	5-10	10	10-30	30

\* For economies with a high dependency on mineral resources, GDP per capita is not the sole criterion for the determination of the stage of development. See text for details.

\*\* There is inverse dependence between GDP per capita and weight in the range of subindex weights. For example, for a country with GDP per capita of USD 2999 the weight used for subindex "Basic Requirements" is 40%. Ukraine is on the 2nd stage of development.

c. The standard formula for converting hard data is the following:

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

The "sample minimum" and "sample maximum" are, respectively, the lowest and highest country scores in the sample of countries covered by the GCI. In some instances, adjustments were made to account for extreme outliers. For those hard data variables for which a higher value indicates a worse outcome (eg, disease incidence, government debt), we rely on a normalization formula

that, in addition to converting the series to a 1-to-7 scale, reverses it, so 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 groups of variables that contain one or several half weight variables, country scores for those groups are computed as follows:

$$\frac{(\text{sum of scores on full weight variables}) + 0.5 \times (\text{sum of scores on half weight variables})}{(\text{full weight variables}) + 0.5 \times (\text{count of full weight variables})}$$

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. 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 markets. 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". For Ukraine, the calculation yields a weight of 0.75 for the Domestic competition component and of 0.25 for the Foreign competition component.

h. Variables 6.06 and 6.07 combine to form a single variable.

i. The values of this variable are normalized.

j. The size of the domestic market is constructed by taking the natural log of the sum of the gross domestic

product valued at 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.

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.

## Annex B Ukrainian National Competitiveness Index 2012

### Property rights

Property rights, including over financial assets (1 = are poorly defined and not protected by law, 7 = are clearly defined and well protected by law)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Intellectual property protection

Intellectual property protection in your region (1 = is weak and not enforced; 7 = is strong and enforced)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Diversion of public funds

In your region diversion of public funds to companies, individuals, or groups due to corruption (1 = is common, 7 = never occurs)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Public trust of politicians

Public trust in the financial honesty of politicians is (1 = very low, 7 = very high)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Irregular payments and bribes

In your region, how common is it for firms to make undocumented extra payments or bribes connected with the following

- Import and export permits?
  - Public utilities (e.g., telephone or electricity)?
  - Tax payments?
  - Awarding of public contracts and licenses?
  - Obtaining favorable judicial decisions?
- (1 – common, 7 – never occurs)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Judicial independence

Is the judiciary in your region independent from political influences of members of government, citizens, or firms? (1 = no – heavily influenced, 7 = yes – entirely independent)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Favoritism in decisions of government officials

When deciding upon policies and contracts, government officials (1 = usually favor well-connected firms and individuals, 7 = are neutral)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Wastefulness of government spending

Public spending in your region (1 = is wasteful, 7 = provides necessary goods and services not provided by the market)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Burden of government regulation

Complying with administrative requirements (permits, regulations, reporting) issued by the government in your region is (1 = burdensome, 7 = not burdensome)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Efficiency of legal framework in settling disputes

How efficient is the legal framework in your region for private businesses in settling disputes? (1 = extremely inefficient, 7 = highly efficient)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Efficiency of legal framework in challenging regulations

How efficient is the legal framework in your region for private businesses in challenging the legality of government actions and/or regulations? (1 = extremely inefficient, 7 = highly efficient)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Transparency of government policymaking

“Are firms in your region usually informed clearly by the government on changes in policies and regulations affecting your industry? (1 = never informed; 7 = always informed)”

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Gov't services for improved business performance

To what extent does the government in your region continuously improve its provision of services to help businesses in your region boost their economic performance? (1 = not at all, 7 = extensively)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Business costs of terrorism

“The threat of terrorism in your region (1 = imposes significant costs on business, 7 = does not impose significant costs on business)”

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Business costs of crime and violence

The incidence of common crime and violence (e.g., street muggings, firms being looted) (1 = imposes significant costs on businesses, 7 = does not impose significant costs on businesses)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Organized crime

Organized crime, such as mafia-oriented racketeering, extortion in your region (1 = imposes significant costs on businesses, 7 = does not impose significant costs on businesses)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Reliability of police services

Police services (1 = cannot be relied upon to protect businesses from criminals, 7 = can be relied upon to protect businesses from criminals)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Ethical behavior of firms

“The corporate ethics (ethical behavior in interactions with public officials, politicians, and other enterprises) of firms in your region are (1 = among the world's worst, 7 = among the best in the world)”

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Efficacy of corporate boards

Corporate governance by investors and boards of directors in your region is characterized by (1 = management has little accountability, 7 = investors and boards exert strong supervision of management decisions)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Protection of minority shareholders' interests

Interests of minority shareholders in your region are (1 = not protected by law and seldom recognized by majority shareholders, 7 = protected by law and actively enforced)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Strength of investor protection\*

Strength of investor protection, 0–10 (best), 2011

Source: *The World Bank, Doing Business 2011*

### Quality of overall infrastructure

General infrastructure (transport, telephony and energy) in your region is (1 = underdeveloped, 7 = as extensive and efficient as the world's best)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Quality of roads

Roads in your region are (1 = underdeveloped, 7 = extensive and efficient by international standards)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Quality of railroad infrastructure

Railroads in your region are (1 = underdeveloped, 7 = as extensive and efficient as the world's best)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

### Quality of port infrastructure

Port facilities and inland waterways in your region are (1 = underdeveloped, 7 = as developed as the world's best) | \* For landlocked regions, this measures the ease of access to port facilities and inland waterways.

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Quality of air transport infrastructure

Passenger air transport in your region is (1 = infrequent, limited, and inefficient, 7 = as frequent, extensive, and efficient as the world's best)

Source: Foundation for Effective Governance, Executive Opinion Survey, 2012

#### Available seat kilometers\*

Air transport passenger turnover in a region per week, million seat kilometers

Source: State Aviation Service of Ukraine. Calculations: Foundation for Effective Governance

#### Quality of electricity supply

The quality of electricity supply in your region (lack of interruptions and lack of voltage fluctuations) is (1 = worse than in most other countries, 7 = meets the highest standards in the world)

Source: Foundation for Effective Governance, Executive Opinion Survey, 2012

#### Fixed telephone lines\*

Main telephone lines per 100 population, 2011

Source: National Commission for Communications Regulation of Ukraine

#### Mobile telephone subscriptions\*

Mobile telephone subscribers per 100 population

Source: National Commission for Communications Regulation of Ukraine

#### Government budget balance\*

Central government gross surplus/deficit as a percentage of GDP, 2011

Source: National Bank of Ukraine

#### Gross national savings\*

National savings rate as a percentage of GDP

Source: National Bank of Ukraine

#### Inflation\*

Annual percent change in consumer price index, 2011

Source: State Statistics Committee of Ukraine

#### Interest rate spread\*

Average interest rate spread (difference between typical lending and deposit rates), 2011

Source: National Bank of Ukraine, Calculations: Foundation for Effective Governance

#### General government debt\*

Government gross debt as a percentage of GDP, 2011

Source: National Bank of Ukraine

#### Country credit rating\*

Country credit rating, 2011

Source: World Economic Forum

#### Business impact of malaria

How serious do you consider the future impact of malaria on your company in the next 5 years? (1 = extremely serious, 7 = not a problem)

Source: Foundation for Effective Governance, Executive Opinion Survey, 2012

#### Malaria incidence\*

Number of malaria cases per 100 000 population, 2011

Source: State Statistics Committee of Ukraine

#### Business impact of tuberculosis

How serious do you consider the future impact of tuberculosis on your company in the next 5 years? (1 = extremely serious, 7 = not a problem)

Source: Foundation for Effective Governance, Executive Opinion Survey, 2012

#### Tuberculosis incidence\*

Number of tuberculosis cases per 100 000 population, 2011

Source: Ministry of healthcare of Ukraine

#### Business impact of HIV/AIDS

How serious do you consider the future impact of HIV/AIDS on your company in the next 5 years? (1 = extremely serious, 7 = not a problem)

Source: Foundation for Effective Governance, Executive Opinion Survey, 2012

#### HIV prevalence\*

HIV prevalence as a percentage of adults aged 15-49 years, 2011

Source: Ukrainian AIDS prevention and control center

#### Infant mortality\*

Infant (children aged 0-12 months) mortality per 1 000 live births, 2011

Source: State Statistics Committee of Ukraine

#### Life expectancy\*

Life expectancy at birth (years), 2011

Source: State Statistics Committee of Ukraine

#### Quality of primary education

Primary schools in your region are (1 = of poor quality, 7 = among the best in the world)

Source: Foundation for Effective Governance, Executive Opinion Survey, 2012

#### Primary education enrollment\*

Net primary education enrollment rate, 2011

Source: State Statistics Committee of Ukraine

#### Secondary education enrollment\*

Gross secondary education enrollment rate, 2011

Source: State Statistics Committee of Ukraine

#### Tertiary education enrollment, gross %\*

Gross tertiary education enrollment rate (18-23), 2011

Source: State Statistics Committee of Ukraine, Calculation: Foundation for Effective Governance

#### Quality of the educational system

The educational system in your region (1 = does not meet the needs of a competitive economy, 7 = meets the needs of a competitive economy)

Source: Foundation for Effective Governance, Executive Opinion Survey, 2012

#### Quality of math and science education

Math and science education in your region's schools (1 = lag far behind most other countries, 7 = are among the best in the world)

Source: Foundation for Effective Governance, Executive Opinion Survey, 2012

#### Quality of management schools

Management or business schools in your region are (1 = limited or of poor quality, 7 = among the best in the world)

Source: Foundation for Effective Governance, Executive Opinion Survey, 2012

#### Internet access in schools

Internet access in schools is (1 = very limited, 7 = extensive – most children have frequent access)

Source: Foundation for Effective Governance, Executive Opinion Survey, 2012

#### Availability of research and training services

In your region specialized research and training services are (1 = not available, 7 = available from world-class local institutions)

Source: Foundation for Effective Governance, Executive Opinion Survey, 2012

#### Extent of staff training

The general approach of companies in your region to human resources is (1 = to invest little in training and employee development, 7 = to invest heavily to attract, train, and retain employees)

Source: Foundation for Effective Governance, Executive Opinion Survey, 2012

#### Intensity of local competition

Competition in the local market is (1 = limited in most industries, 7 = intense in most industries)

Source: Foundation for Effective Governance, Executive Opinion Survey, 2012

#### Extent of market dominance

Corporate activity in your region is (1 = dominated by a few business groups, 7 = spread among many firms)

Source: Foundation for Effective Governance, Executive Opinion Survey, 2012

**Effectiveness of anti-monopoly policy**

Anti-monopoly policy in your region is (1 = lax and not effective at promoting competition, 7 = effective and promotes competition)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Extent and effect of taxation**

The level of taxes in your region (1 = significantly limits the incentives to work or invest, 7 = has little impact on the incentives to work or invest)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Total tax rate\***

This variable is a combination of profit tax (% of profits), labor tax and contribution (% of profits), and other taxes (% of profits), 2011

Source: *The World Bank, Doing Business 2011*

**Number of procedures required to start a business\***

Number of procedures required to start a business, 2011

Source: *The World Bank, Doing Business 2011*

**Time required to start a business\***

Time required to start a business, 2011

Source: *The World Bank, Doing Business 2011*

**Agricultural policy costs**

Agricultural policy in your region (1 = is excessively burdensome for the economy, 7 = balances the interests of taxpayers, consumers, and producers)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Prevalence of trade barriers**

In your region, tariff and non-tariff barriers significantly reduce the ability of imported goods to compete in the domestic market (1 = strongly agree, 7 = strongly disagree)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Trade-weighted tariff rate\***

In your region, tariff and non-tariff barriers significantly reduce the ability of imported goods to compete in the domestic market (1 = strongly agree, 7 = strongly disagree)

Source: *International Trade Centre*

**Prevalence of foreign ownership**

Foreign ownership of companies in your region is (1 = rare and limited, 7 = prevalent and encouraged)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Business impact of rules on FDI**

In your region, rules governing foreign direct investment (1 = discourage foreign direct investment, 7 = encourage foreign direct investment)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Burden of customs procedures**

Customs procedures (formalities regulating the entry and exit of merchandise) in your region are (1 = extremely slow and cumbersome, 7 = rapid and efficient)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Imports as a percentage of GDP\***

Imports as a percentage of GDP

Source: *State Statistics Committee of Ukraine. Calculations: Foundation for Effective Governance*

**Degree of customer orientation**

Customer orientation: Firms in your region (1 = generally treat their customers badly, 7 = are highly responsive to customers and customer retention)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Buyer sophistication**

Buyers in your region make purchasing decisions (1 = based solely on the lowest price, 7 = based on a sophisticated analysis of performance attributes)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Cooperation in labor-employer relations**

Labor-employer relations in your region are (1 = generally confrontational, 7 = generally cooperative)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Flexibility of wage determination**

In your region, wages are (1 = set by a centralized bargaining process, 7 = up to each individual company)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Hiring and firing practices**

The hiring and firing of workers is (1 = impeded by regulations, 7 = flexibly determined by employers)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Redundancy costs, weeks of salary\***

Firing costs (in weeks of wages)

Source: *The World Bank, Doing Business 2011*

**Pay and productivity**

In your region, pay is (1 = not related to worker productivity, 7 = strongly related to worker productivity)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Reliance on professional management**

Senior management positions in your region are (1 = usually held by relatives or friends without regard to merit, 7 = mostly held by professional managers chosen based for their superior qualification)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Brain drain**

Your region's talented people (1 = normally leave to pursue opportunities in other countries, 7 = almost always remain in the region)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Women in labor force\***

Female participation in the labor force as a percentage of male participation, 2011

Source: *State Statistics Committee of Ukraine*

**Availability of financial services**

The level of sophistication of financial markets in your region is (1 = poor by international standards, 7 = excellent by international standards)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Affordability of financial services**

Does the financial sector in your region provide a wide variety of financial products and services to businesses? (1 = Not at all, 7 = Provides a wide variety)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Financing through local equity market**

Raising money by issuing shares on the stock market in your region (1 = impossible, 7 = very easy)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Ease of access to loans**

How easy is it to obtain a bank loan in your region with only a good business plan and no collateral? (1 = impossible, 7 = very easy)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Venture capital availability**

In your region, how easy is it for entrepreneurs with innovative but risky projects to find venture capital? (1 = impossible, 7 = very easy)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

**Soundness of banks**

Banks in your region are (1 = insolvent and may require a government bailout, 7 = generally healthy with sound balance sheets)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Regulation of securities exchanges

Regulation of securities exchanges in your region (1 = not transparent, ineffective and subject to undue influence from industry and government, 7 = transparent, effective and independent of undue influence from industry and government)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Legal rights index\*

Strength of legal rights index on a 0–10 (best) scale

Source: *The World Bank, Doing Business 2011*

#### Availability of latest technologies

In your region, the latest technologies are (1 = not widely available or used, 7 = widely available and used)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Firm-level technology absorption

Companies in your region are (1 = not able to absorb new technology, 7 = aggressive in absorbing new technology)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### FDI and technology transfer

Foreign direct investment in your region (1 = brings little new technology, 7 = is an important source of new technology)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Internet users\*

Internet users per 100 population, 2011

Source: *Gemius/GFK-Ukraine*

#### Broadband Internet subscriptions\*

Broadband internet subscribers per 100 population, 2011

Source: *IKS-consulting*

#### Internet bandwidth\*

Internet bandwidth, kb/s/capita, 2011

Source: *International Telecommunications Unit*

#### Mobile broadband subscriptions/100 pop\*

Mobile broadband subscriptions/100 pop, 2011

Source: *World Economic Forum*

#### Domestic market size index\*

Sum of gross domestic product plus value of imports of goods and services, minus value of exports of goods and services, normalized on a 1–7 (best) scale

Source: *Preliminary data of the State Statistic Service of Ukraine, Calculations: Foundation for Effective governance. See Annex A*

#### Foreign market size index\*

Value of exports of goods and services, normalized on a 1–7 (best) scale

Source: *Calculations: Foundation for Effective governance. See Annex A*

#### Local supplier quantity

Local suppliers in your region are (1 = largely nonexistent, 7 = numerous and include the most important materials, components, equipment, and services)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Local supplier quality

The quality of local suppliers in your region is (1 = very poor, 7 = very good)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### State of cluster development

In your region's economy, well-developed and deep clusters are (1 = rare or absent, 7 = widespread in many fields)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Control of international distribution

Competitiveness of your region's companies in international markets is primarily due to (1 = low-cost or local natural resources, 7 = unique products and processes)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Value chain breadth

Exporting companies in your region are (1 = primarily involved in individual steps of the value chain, e.g., resource extraction or production, 7 = present across the entire value chain, e.g., do not only produce but also perform product design, marketing sales, logistics and after-sales services)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Control of international distribution

International distribution and marketing from your region (1 = take place through foreign companies, 7 = are owned and controlled by local companies)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Production process sophistication

In your region, production processes use (1 = labor-intensive methods or previous generations of process technology, 7 = the world's best and most efficient process technology)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Extent of marketing

In your region, the extent of marketing (1 = limited and primitive, 7 = extensive and employs the world's most sophisticated tools and techniques)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Willingness to delegate authority

In your company, willingness to delegate authority to subordinates is (1 = low – top management controls all important decisions, 7 = high – authority is mostly delegated to business unit heads and other lower-level managers)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Capacity for innovation

In your region, companies obtain technology (1 = exclusively from licensing or imitating foreign companies, 7 = by conducting formal research and pioneering their own new products and processes)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Quality of scientific research institutions

Scientific research institutions in your region (e.g., university laboratories, government laboratories) (1 = nonexistent, 7 = the best in their fields internationally)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Company spending on R&D

Companies in your region (1 = do not spend money on research and development, 7 = spend heavily on research and development relative to international peers)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### University-industry collaboration in R&D

In the area of R&D, collaboration between the business community and local universities is (1 = minimal or nonexistent, 7 = intensive and ongoing)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Gov't procurement of advanced tech products

In your region, government procurement decisions result in technological innovation (1 = strongly disagree, 7 = strongly agree)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Availability of scientists and engineers

Scientists and engineers in your region are (1 = nonexistent or rare, 7 = widely available)

Source: *Foundation for Effective Governance, Executive Opinion Survey, 2012*

#### Utility patents granted\*

Number of utility patents (i.e., patents for invention) granted by the Patents Co-operations Treaty, per million population, 2011

Source: *World Intellectual Property Organization and the Organisation for Economic Co-operation and Development (OECD), State Statistics Committee of Ukraine. Calculations: Foundation for Effective Governance*