

# Benchmarking productivity across countries and regions: The Global Competitiveness Index

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The global economic crisis that originated in the United States and in the United Kingdom has rapidly spread across the world, affecting developed countries and emerging markets alike. As policy makers focus on sustaining the recovery, it becomes apparent that some countries have fared better than others. In particular, many emerging markets have weathered the shock better than would have been expected based on past experience. Improved policy frameworks resulting from past reforms contributed to the ability of some economies to be more resistant to economic shocks. The World Economic Forum's Global Competitiveness Network has been studying the factors enabling national economies to achieve sustained economic growth and long-term prosperity for over three decades.

In 2008, the World Economic Forum published the first Ukraine Competitiveness Report in partnership with the Foundation for Effective Governance. The report analyzed the country's competitive strengths and weaknesses and assessed the competitiveness of Ukraine's regions. With this third edition of the Ukraine Competitiveness Report, the Foundation continues this work using the methodology developed by the World Economic Forum.

In this chapter, we present the main features of the Global Competitiveness Index, the benchmarking tool used by the Forum to assess the competitiveness of nations<sup>1</sup>. This tool is used in this Report to draw the competitive landscape of both Ukraine and its regions. It provides businesses and policymakers with a benchmarking tool to enable an objective assessment of the relative strengths and weaknesses of their national economy and to make informed comparisons between countries. The outcomes can also help prioritize reform and identify best practice cases in specific areas.

The methodology of the Global Competitiveness Report is being used to inform policy making in a growing number of countries. In Egypt, for example, the Egyptian Competitiveness Council is using the Global Competitiveness Index to improve the perception of competitiveness within the public at large and to raise awareness of the importance of competitiveness – enhancing reforms for the future of the country. In other countries, such as Croatia, the methodology has entered the government's toolbox to formulate policy recommendations. By analyzing the results in detail, public bodies and think tanks can identify areas for improvement and identify the most suitable best practices in specific areas. Many countries such as Kazakhstan or Saudi Arabia have utilized the wide public outreach of the report to mobilize public support behind ambitious reform agendas, which would have not been feasible otherwise. By declaring the achievement of a national goal in a given amount of time, governments raised awareness of necessary reforms and made positive impact on well-being of their nations in the interim. One of the main advantages of the methodology is that its reliance on the perspectives of business executives provides governments and the public at large with key information on the opinions

of individuals whose investment decisions drive economic growth.

## 1.1 The 12 pillars of competitiveness

With continuous progress in theoretical and empirical economic research, the methodology used by the World Economic Forum to assess national competitiveness has inevitably evolved over time. The latest step in this evolution is the Global Competitiveness Index (GCI), which was first introduced in 2004 and which has developed in cooperation with Professor Xavier Sala-i-Martin of Columbia University. Since then, the GCI has been the World Economic Forum's main vehicle for assessing competitiveness.

The GCI is designed to assess the potential of countries to grow over the medium to longer term, taking into account the present level of development, based on the understanding that competitiveness is “the set of institutions, policies and factors that determine the level of productivity of a country”.

The GCI encapsulates the latest thinking on competitiveness and captures the complexity of the economic growth process by taking into account a weighted average of many different components, each of which reflects one aspect of the complex reality of competitiveness. The components are grouped into 12 different categories, called the twelve pillars of competitiveness and described below.<sup>2</sup> The detailed structure of the GCI is presented in Annex A of this chapter.

### 1st pillar: Institutions

Institutions form the framework within which individuals, firms and governments interact to generate income and wealth in the economy, and therefore have a strong bearing on competitiveness and growth. The quality of the institutional environment plays a central role in the ways in which societies distribute the benefits and bear the costs of development strategies and policies. It also has a bearing on investment decisions and on the organization of production.

### 2nd pillar: Infrastructure

High-quality infrastructure is critical to ensuring the efficient functioning of the economy. It is also an important factor determining the location of economic activity and the kinds of activities or sectors that can develop in an economy. Well-developed transport infrastructure reduces the effect of distance between regions, thereby truly integrating the domestic market and connecting it to other markets. It also facilitates the movement of workers around the country to the most suitable jobs. Economies also depend on electricity supplies that are free of interruptions and shortages to ensure that businesses and factories can work unimpeded, while a reliable and extensive telecommunications network allows for a rapid and free flow of information.

### 3rd pillar: Macroeconomic stability

Although macroeconomic stability alone cannot increase the productivity of a nation, macroeconomic dis-

array seriously harms the economy. Firms cannot make informed decisions in the absence of price stability, the financial sector cannot function if the government runs huge deficits, and the public sector cannot provide services efficiently if it has to make large interest payments on its past debts.

### 4th pillar: Health and primary education

A healthy and educated workforce is vital to a country's competitiveness and productivity. Poor health produces significant costs for business, as sick workers are often absent or less productive. Investment in the provision of health services is therefore critical for clear economic, as well as moral, considerations. As basic skills are vital to the productivity of each individual worker, this pillar also takes into account the quantity and the quality of basic education.

### 5th pillar: Higher education and training

Good quality higher education and training is crucial for economies that want to move up the value chain beyond simple production processes and products. To capture this concept, this pillar measures secondary and tertiary enrollment rates as well as the quality of education. The extent of staff training and the availability of vocational training is also taken into consideration, as it ensures a constant upgrading of workers' skills to meet the changing needs of the production system.

### 6th pillar: Goods market efficiency

Efficient goods markets allow countries to produce the right mix of products and services given supply-and-demand conditions, and ensure that these goods can be most effectively traded. Healthy market competition, both domestic and foreign, is important in driving market efficiency and thus business productivity. Such competition ensures that the most efficient firms are those that survive. The pillar also looks at demand conditions that force companies to be more innovative and more customer-oriented, thereby fostering healthy competition.

### 7th pillar: Labor market efficiency

The efficiency and flexibility of the labor market are critical for ensuring that workers are allocated, or easily re-allocated, to their most efficient use in the economy and provided with incentives to give their best effort in their jobs. Labour market flexibility also implies that businesses can adjust wages independently to a large extent and that their relationships with employees are smooth. Efficiency of labor markets calls for meritocracy in the workplace and the ability to retain talent in the country.

### 8th pillar: Financial market sophistication

An efficient financial sector allocates the resources saved by a nation's citizens, or those invested from abroad, to its most productive uses. It channels resources to the entrepreneurial or investment projects with the highest expected rates of return, rather than to the politically connected, based on a thorough assessment

of risks. A well-functioning financial market also makes different products and services available to businesses and entrepreneurs according to their financing needs, from such sources as loans, security exchanges, or venture capital.

#### 9th pillar: Technological readiness

This pillar measures the readiness of an economy to adopt and use – but not necessarily to develop – new technologies to enhance the productivity of its industries. In today's interconnected world, the ability to adopt and use new technologies has become an important competitive advantage of firms. Information and communication technologies (ICT) have consequently evolved into the “general purpose technology” of our time, given the critical spillovers to the other economic sectors and their role as efficient infrastructure for commercial transactions.

#### 10th pillar: Market size

The size of the market affects productivity because large markets allow firms to exploit economies of scale. Traditionally, the markets available to firms have been constrained by a nation's borders. In the era of globalization, international markets have become a substitute for domestic markets, especially for small countries. This is why both domestic and foreign markets are taken into account when constructing the tenth pillar of economic competitiveness, market size. By including both domestic and foreign markets in the measure of market size, this pillar also avoids discriminating against geographic areas such as the European Union that are broken into many countries, but have one common market

#### 11th pillar: Business sophistication

Business sophistication concerns the quality of a country's overall business networks, as well as the sophistication of the operations and strategies of individual firms. This is conducive to higher efficiency in the production of goods and services, leading to increased productivity and enhancing a nation's competitiveness. When companies and suppliers are interconnected in geographically proximate groups (clusters), efficiency is heightened, leading to greater opportunities for innovation and to reduced barriers to entry for new firms. 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, as they spill over to other companies.

#### 12th pillar: Innovation

The last pillar of competitiveness is technological innovation. In the long run, efficiency gains can be achieved and standards of living expanded only through technological innovation. Innovation is particularly important for more advanced economies. These tend to operate at the technology frontier, so that the possibilities of integrating and adapting exogenous technologies, as captured in the ninth pillar of technological readiness, are limited. 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, this entails sufficient investment in research and development, especially by the business sector; high-quality scientific research institutions; collaboration in research between universities and industry; and the protection of intellectual property.

#### The interrelation of the 12 pillars

Although the 12 pillars of competitiveness are discussed separately, this should not obscure the fact that they are interdependent: they are related to each other and also tend to reinforce each other. For example, businesses will not innovate at a large scale (12th pillar) if institutions (1st pillar) that protect intellectual property rights are not in place or if the labor force is poorly educated and trained (5th pillar). Although the actual construction of the Index will involve the aggregation of the twelve pillars into a single index, measures are reported for each pillar separately, thereby offering an analysis of the competitive strengths and weaknesses of countries. By highlighting and prioritizing areas for improvement and strengths to build upon, this analysis provides a basis for policy formulation.

## 1.2 Competitiveness and the stages of economic development

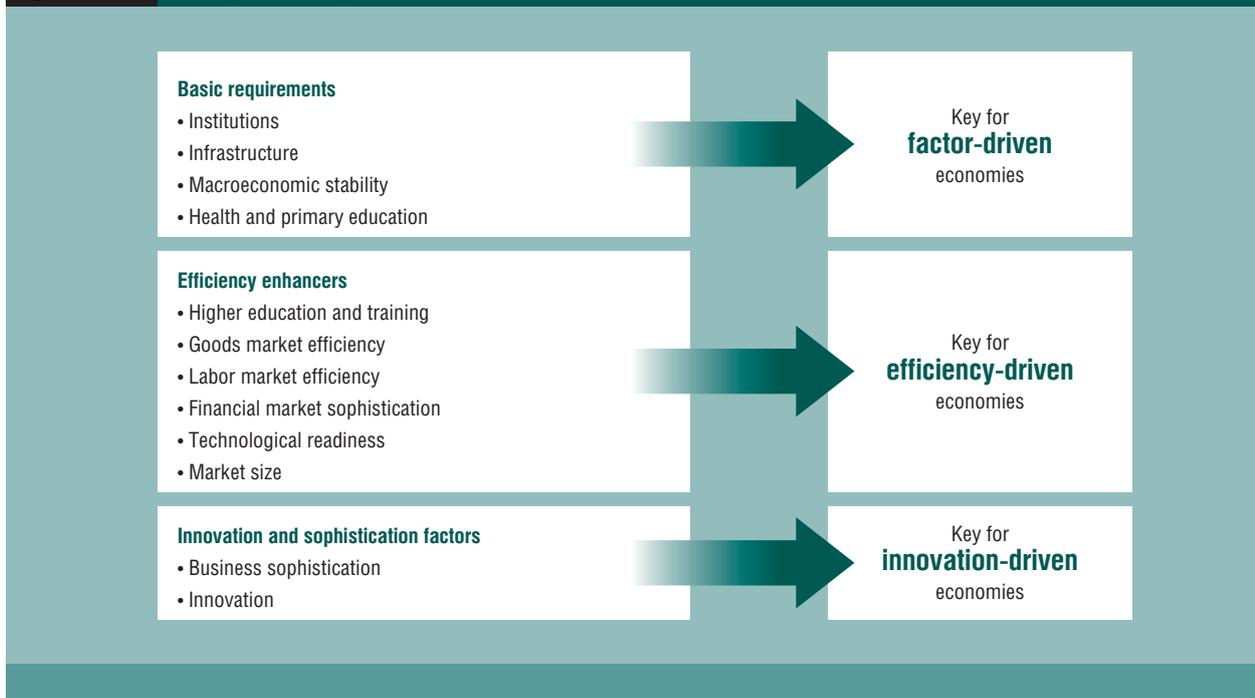
It is clear that different pillars are of different importance to different countries. Cameroon is likely to focus on other issues to improve its competitiveness than France. This is because Cameroon and France are in different stages of development: as countries move along the development path, wages tend to increase, and in order to sustain this higher income, labor productivity must improve.

According to the GCI, in the first stage, the economy is factor-driven and countries compete based on their factor endowments, primarily unskilled labor and natural resources. Maintaining competitiveness at this stage of development hinges primarily on well-functioning public and private institutions (1st pillar), well-developed infrastructure (2nd pillar), a stable macroeconomic framework (3rd pillar), and a healthy and literate workforce (4th pillar).

As wages rise with advancing development, countries move into the efficiency-driven stage of development, when they must begin to develop more efficient production processes and increase product quality. At this point, competitiveness is increasingly driven by higher education and training (5th pillar), efficient goods markets (6th pillar), well-functioning labor markets (7th pillar), sophisticated financial markets (8th pillar), a large domestic or foreign market (10th pillar), and the ability to harness the benefits of existing technologies (9th pillar).

Finally, as countries move into the innovation-driven stage, they are able to sustain higher wages and the asso-

Figure 1.1 The 12 pillars of competitiveness



ciated standard of living only if their businesses are able to compete with new and unique products. At this stage, companies must compete through innovation (12th pillar), producing new and different goods using the most sophisticated production processes (11th pillar)..

The concept of stages of development is integrated into the GCI by attributing higher relative weights to those pillars that are relatively more relevant for a country given its particular stage of development. That is, although all twelve pillars matter to a certain extent for all countries, the importance of each one depends on a country's particular stage of development. To take this into account, the pillars are organized into three sub-indexes, each critical to a particular stage of development, as shown in Figure 1.1. Countries are allocated to stages of development based on the level of GDP and the share of minerals exports. The precise thresholds are shown in Table 1.2.

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.

### 1.3 The Global Competitiveness Index Data

Out of the 110 indicators composing the index, about one third are hard data, i.e. statistical data typically collected from renowned international organizations. The remaining indicators are obtained from the Executive Opinion Survey (the Survey) carried out annually by the World Economic Forum in all countries covered by the Report.

The aim of the Survey is to capture the qualitative dimension of specific aspects of competitiveness and to provide comparable data on issues for which hard data indicators do not exist. Business leaders are asked to assess specific aspects of the business environment in the country in which they operate. To conduct the Survey in each country, the Forum relies on a network of 150 Partner Institutes. Typically, the Partner Institutes are recognized economics departments of national universities, independent research institutes, or business organizations. In Ukraine, the Centre for Social and Economic Research Ukraine (CASE) is the Forum's Partner Institute.<sup>4</sup>

Table 1.1 Weights of the three main groups of pillars 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

## 1.4 Conclusions

This chapter has presented the Global Competitiveness Index which serves as the main vehicle for assessing Ukraine's competitiveness in this Report. The GCI captures what government and business leaders have known for a long time. Competitiveness is a complex phenomenon and the overall level of competitiveness of a nation can be improved only through a wide array of reforms in different areas. The GCI also highlights the fact that the priorities are different for different countries, depending on their level of development.

The GCI is constructed by combining hard data with perception data gathered through the Executive Opinion Survey. As a result, the relative scores of the various sub-categories of the GCI provide useful information as to what the priorities for reform should be, both from the cold reality of the hard data and from the point of view of the business community that is currently operating in the country.

The GCI is an instrument that can be used to identify the competitive strengths of a country as well as the

Stage of Development	GDP per capita (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

barriers to its economic progress. It can also be used to establish comparisons with neighboring countries and the relative position in the overall rankings that a particular country holds. In this context, the particular strength of the World Economic Forum's competitiveness work is that it provides a platform for dialogue among government, business, and civil society that can serve as a catalyst for productivity-raising reforms, with the aim of improving living standards.

Stage	Comparator countries	Other countries in this stage	Important areas for competitiveness
Stage 1 (factor-driven)	India	Kyrgyz Republic, Philippines, Tajikistan	Basic requirements (critical) and efficiency enhancers (very important)
Transition from 1 to 2	Azerbaijan, Kazakhstan	Georgia, Egypt, Venezuela	Basic requirements (critical) and efficiency enhancers (increasingly important)
Stage 2 (efficiency-driven)	Argentina, Brazil, China, Colombia, <b>Ukraine</b>	Armenia, Bosnia and Herzegovina, Bulgaria, Peru, Serbia, South Africa, Thailand, Tunisia	Basic requirements (very important) and efficiency enhancers (critical)
Transition from 2 to 3	Chile, Lithuania, Mexico, Poland, Romania, Russian Federation, Turkey	Hungary, Latvia	Same as above, but innovation factors become increasingly important
Stage 3 (innovation-driven)	Estonia, United States	Czech Republic, France, Germany, Ireland, Israel, Japan, Korea, Slovak Republic, Spain, Sweden	All three areas important: basic requirements, efficiency enhancers and innovation factors

## Notes

- <sup>1</sup> This chapter draws extensively on Sala-i-Martin et al. (2009) and Browne, C. Geiger, T. (2009). The reader interested in learning more about the topics discussed in this chapter is strongly encouraged to consult these two references, which also contain further references to economic literature utilized in the methodology.
- <sup>2</sup> For a more detailed description of each pillar and expanded references, see Sala-i-Martin et al. (2009).
- <sup>3</sup> Countries are allocated to stages of development based on two criteria. The first criterion is the level of GDP per capita at market exchange rates. This widely available measure is used as a proxy for wages, as internationally comparable data for the latter are not available for all countries covered. The precise thresholds are shown in Table 1.2. A second criterion measures the extent to which countries are factor driven. We proxy this by the share of exports of primary goods in total exports (goods and services) and assume that countries that export more than 70 percent of primary products (proxied by minerals) are primarily factor driven. See Sala-i-Martin et al (2009).
- <sup>4</sup> For more detailed information about the survey process and the treatment of survey data, please refer to Browne, C. Geiger, T. (2009).

## References

- Browne, C. and T. Geiger. 2009. "The Executive Opinion Survey: Capturing the Views of the Business Community". *The Global Competitiveness Report 2009-2010*. World Economic Forum. 49-57.
- Sala-i-Martin, X., J. Blanke, M. Drzeniek Hanouz, T. Geiger, and I. Mia. 2009. "The Global Competitiveness Index 2009-2010: Contributing to Long-Term Prosperity amid the Global Economic Crisis". *The Global Competitiveness Report 2009-2010*. World Economic Forum. 3-47

## Appendix A: Structure of the Global Competitiveness Index 2009–2010

This appendix details the structure of the Global Competitiveness Index (GCI) introduced in Chapter 1, and provides notes on its computations.

The numbering of the variables matches the numbering of the Data Tables found in the World Economic Forum's Global Competitiveness Report 2009–2010, which present countries' scores and ranks in each indicator composing the GCI. The number preceding the period indicates the pillar to which the variable belongs (eg, variable 1.01 belongs to the 1st pillar, variable 12.04 belongs to the 12th pillar).

The hard data indicators used in the GCI are normalized on a 1-to-7 scale in order to align them with the Executive Opinion Survey's results.<sup>a</sup> The Technical Notes and Sources of all the hard data indicators is available online at [www.weforum.org/gcr](http://www.weforum.org/gcr).

Those variables that are followed by the symbol <sup>1/2</sup> enter the GCI in two different places. In order to avoid double counting, we give them a half-weight in each place by dividing their value by 2 when computing the aggregate score for the two categories in which they appear.<sup>b</sup>

The percentage next to each category represents this category's weight within its immediate parent category. The computation of the GCI is based on successive aggregations of scores, from the variable level (ie, the lowest level) all the way up to the overall GCI score (ie, the highest level), using the weights reported below. For example, the score a country achieves in the ninth pillar accounts for 17 percent of this country's score in the "efficiency enhancers" sub-index. Similarly, the score achieved in the sub-pillar "Networks and supporting industries" accounts for 50 percent of the score of the 11th pillar. Reported percentages are rounded to the nearest integer, but exact figures are used in the calculation of the GCI.

Unlike the lower levels of aggregation, the weight put on each of the three sub-indexes ("basic requirements", "efficiency enhancers", and "innovation and sophistication factors") is not fixed. It depends on each country's stage of development, as discussed in the text.<sup>c</sup> For instance, in the case of Ukraine, which is in the second stage of development, the score in the basic requirements sub-index accounts for 40 percent of its overall GCI score, while it represents just 20 percent of the overall GCI score of Denmark, a country in the third stage of development.

### Basic requirements

Weight (%) within  
immediate  
parent category

<b>1st pillar:</b>		
<b>Institutions</b>	.....	<b>25%</b>
<b>A. Public institutions</b>	.....	<b>75%</b>
1. Property rights	.....	20%
1.01 Property rights		
1.02 Intellectual property protection <sup>1/2</sup>		
2. Ethics and corruption	.....	20%
1.03 Diversion of public funds		
1.04 Public trust of politicians		
3. Undue influence	.....	20%
1.05 Judicial independence		
1.06 Favoritism in decisions of government officials		
4. Government inefficiency	.....	20%
1.07 Wastefulness of government spending		
1.08 Burden of government regulation		
1.09 Efficiency of legal framework		
1.10 Transparency of government policymaking		
5. Security	.....	20%
1.11 Business costs of terrorism		
1.12 Business costs of crime and violence		
1.13 Organized crime		
1.14 Reliability of police services		
<b>B. Private institutions</b>	.....	<b>25%</b>
1. Corporate ethics	.....	50%
1.15 Ethical behavior of firms		
2. Accountability	.....	50%
1.16 Strength of auditing and reporting standards		
1.17 Efficacy of corporate boards		
1.18 Protection of minority shareholders' interests		
<b>2nd pillar:</b>		
<b>Infrastructure</b>	.....	<b>25%</b>
<b>A. General infrastructure</b>	.....	<b>50%</b>
2.01 Quality of overall infrastructure		
<b>B. Specific infrastructure</b>	.....	<b>50%</b>
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 (hard data)		
2.07 Quality of electricity supply		
2.08 Telephone lines (hard data)		
<b>3rd pillar:</b>		
<b>Macroeconomic stability</b>	.....	<b>25%</b>
3.01 Government surplus/deficit (hard data)		
3.02 National savings rate (hard data)		
3.03 Inflation (hard data) <sup>d</sup>		
3.04 Interest rate spread (hard data)		
3.05 Government debt (hard data)		
<b>4th pillar:</b>		
<b>Health and primary education</b>	.....	<b>25%</b>
<b>A. Health</b>	.....	<b>50%</b>
4.01 Business impact of malaria <sup>e</sup>		
4.02 Malaria incidence (hard data) <sup>e</sup>		
4.03 Business impact of tuberculosis <sup>e</sup>		
4.04 Tuberculosis incidence (hard data) <sup>e</sup>		
4.05 Business impact of HIV/AIDS <sup>e</sup>		
4.06 HIV prevalence (hard data)		
4.07 Infant mortality (hard data)		
4.08 Life expectancy (hard data)		

## Appendix A: Structure of the Global Competitiveness Index 2009–2010

### B. Primary education.....50%

- 4.09 Quality of primary education
- 4.10 Primary enrollment (hard data)
- 4.11 Education expenditure (hard data)<sup>1/2</sup>

### Efficiency enhancers

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

##### A. Quantity of education.....33%

- 5.01 Secondary enrollment (hard data)
- 5.02 Tertiary enrollment (hard data)
- 4.11 Education expenditure (hard data)<sup>1/2</sup>

##### 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<sup>1</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 (hard data)<sup>1/2</sup>
- 6.06 Number of procedures required to start a business (hard data)<sup>9</sup>
- 6.07 Time required to start a business (hard data)<sup>9</sup>
- 6.08 Agricultural policy costs

###### 2. Foreign competition.....variable<sup>1</sup>

- 6.09 Prevalence of trade barriers
- 6.10 Trade-weighted tariff rate (hard data)
- 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 (hard data)

##### 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 (hard data)
- 7.04 Hiring and firing practices
- 6.04 Extent and effect of taxation<sup>1/2</sup>
- 6.05 Total tax rate (hard data)<sup>1/2</sup>
- 7.05 Firing costs (hard data)

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

- 7.07 Pay and productivity
- 7.08 Reliance on professional management<sup>1/2</sup>
- 7.09 Brain drain
- 7.10 Female participation in labor force (hard data)

#### 8th pillar: Financial market sophistication.....17%

##### A. Efficiency.....50%

- 8.01 Financial market sophistication
- 8.02 Financing through local equity market
- 8.03 Ease of access to loans
- 8.04 Venture capital availability
- 8.05 Restriction on capital flows
- 8.06 Strength of investor protection (hard data)

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

- 8.07 Soundness of banks
- 8.08 Regulation of securities exchanges
- 8.09 Legal rights index (hard data)

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

- 9.01 Availability of latest technologies
- 9.02 Firm-level technology absorption
- 9.03 Laws relating to ICT
- 9.04 FDI and technology transfer
- 9.05 Mobile telephone subscribers (hard data)
- 9.06 Internet users (hard data)
- 9.07 Personal computers (hard data)
- 9.08 Broadband Internet subscribers (hard data)

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

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

- 10.01 Domestic market size index (hard data)<sup>h</sup>

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

- 10.02 Foreign market size index (hard data)<sup>i</sup>

### Innovation and sophistication factors

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

##### A. Networks and supporting industries.....50%

- 11.01 Local supplier quantity
- 11.02 Local supplier quality
- 11.03 State of cluster development

##### B. Sophistication of firms' operations and strategy.....50%

- 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
- 7.08 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 research collaboration
- 12.05 Government procurement of advanced technology products
- 12.06 Availability of scientists and engineers
- 12.07 Utility patents (hard data)
- 1.02 Intellectual property protection<sup>1/2</sup>

## Appendix A: Structure of the Global Competitiveness Index 2009–2010

### Notes

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

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

The “sample minimum” and “sample maximum” are, respectively, the lowest and highest country scores in the sample of 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:

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

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

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

- c. 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

Ukraine is in the second stage of development, that is, the Efficiency-driven stage.

- d. 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.
- e. 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.
- f. The “Competition” sub-pillar 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.

- g. Variables 6.06 and 6.07 combine to form a single variable.
- h. 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. The underlying data are reported in the Data Tables section.
- i. 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.

## Ukraine's Competitiveness in an International Context

### 2.1 Ukraine's ranking in 2009–10

In the World Economic Forum's Global Competitiveness Index for 2009–10, Ukraine is placed 82nd among the 133 countries that were ranked, dropping by ten places. In the past Ukraine was usually placing among developing countries in Latin America and Africa. Now, after enjoying a period of relative stability in the ranking during 2006–08 (69th, 73rd, and 72nd respectively), it finds itself among countries it had consistently beaten in the past. Currently, its nearest neighbors in the ranking are Gambia and Algeria.

Ukraine's position suffered from the consequences of the financial crisis. But the same is true of another nine countries: Botswana, Croatia, Ghana, Latvia, Mali, Mongolia, Philippines, Russia and Syria also dropped sharply, by ten or more places. For example, Latvia and Russia dropped 14 and 12 places respectively in the rankings.

The competitiveness index is designed normally to discount the impact of temporary economic shocks on a country's competitiveness. However, the sheer depth and duration of the financial crisis meant that it had negative effects on most countries. And Ukraine's economy suffered more than most: GDP dropped by 15.1% in 2009.

### 2.2 Reasons for Ukraine's fall in the rankings

The calculations behind the Global Competitiveness Index for Ukraine in 2009–10 show the country fell back in each of the three sub-indexes: "basic requirements" (from 86th to 94th position), "efficiency enhancers" (from 58th to 68th position) and "innovation and sophistication factors" (from 66th to 80th position). The WEF methodology lists Ukraine as currently in the second stage of development, and as a result, the performance of the factors that constitute the first ten pillars of competitiveness are the most important for the country's overall position (see description of the methodology in Chapter 1).

Ukraine has improved its ranking only in the three competitiveness pillars. The country ranks 49th in labor-market efficiency, 29th in market size and 78th in infrastructure. Labor-market efficiency showed a particularly striking five-point improvement, thanks to the country's increasing flexibility of wage determination (a climb from 61st to 52nd place in the ranking). In 2009, Ukraine saw a very sharp fall in real wages, amounting to 9%. At the same time, the ranking points to the deterioration of relations between the employers and employees, a fact that can most likely be due to the wage cuts and lay-offs that took place during the crisis.

The financial crisis unveiled the weakness of the country's competitiveness. The strongest deterioration of Ukraine's ranking was registered in the following three components: macroeconomic stability (dropped by 15 points), financial market sophistication (by 21 points) and technological readiness (by 15 points). Much of the deterioration in Ukraine's position in the ranking came in areas where the country already lags.

**Table 2.1** Ukraine's Results in GCI 2009–10 broken down into components and 2008–09 comparisons

	2009–2010		Delta 2008–2009	
	Rank	Score	Rank	Score
<b>The Global Competitiveness Index</b>	<b>82</b>	<b>3.96</b>	<b>-10</b>	<b>-0.12</b>
<b>Sub-index A: Basic requirements</b>	<b>94</b>	<b>3.96</b>	<b>-8</b>	<b>-0.18</b>
First pillar: Institutions	120	3.10	-5	-0.16
Second pillar: Infrastructure	78	3.39	1	0.26
Third pillar: Macroeconomic stability	106	3.96	-15	-0.66
Fourth pillar: Health and primary education	68	5.41	-8	-0.18
<b>Sub-index B: Efficiency enhancers</b>	<b>68</b>	<b>4.05</b>	<b>-10</b>	<b>-0.07</b>
Fifth pillar: Higher education and training	46	4.38	-3	-0.07
Sixth pillar: Goods market efficiency	109	3.74	-6	-0.14
Seventh pillar: Labor market efficiency	49	4.57	5	0.10
Eighth pillar: Financial market sophistication	106	3.56	-21	-0.44
Ninth pillar: Technological readiness	80	3.37	-15	-0.01
Tenth pillar: Market size	29	4.67	2	0.12
<b>Sub-index C: Innovation and sophistication factors</b>	<b>80</b>	<b>3.42</b>	<b>-14</b>	<b>-0.23</b>
Eleventh pillar: Business sophistication	91	3.63	-11	-0.28
Twelfth pillar: Innovation	62	3.21	-10	-0.18

Over 2008 – 2009, as the financial crisis deepened, the macroeconomic situation in Ukraine continued to worsen. Interest-rate spreads increased sharply, while bank lending was almost suspended. The level of the state debt and the size of budget deficit also began to grow, further weakening the economy. As a result, the country ranked 106th in its macroeconomic performance, next to Jordan and Paraguay.

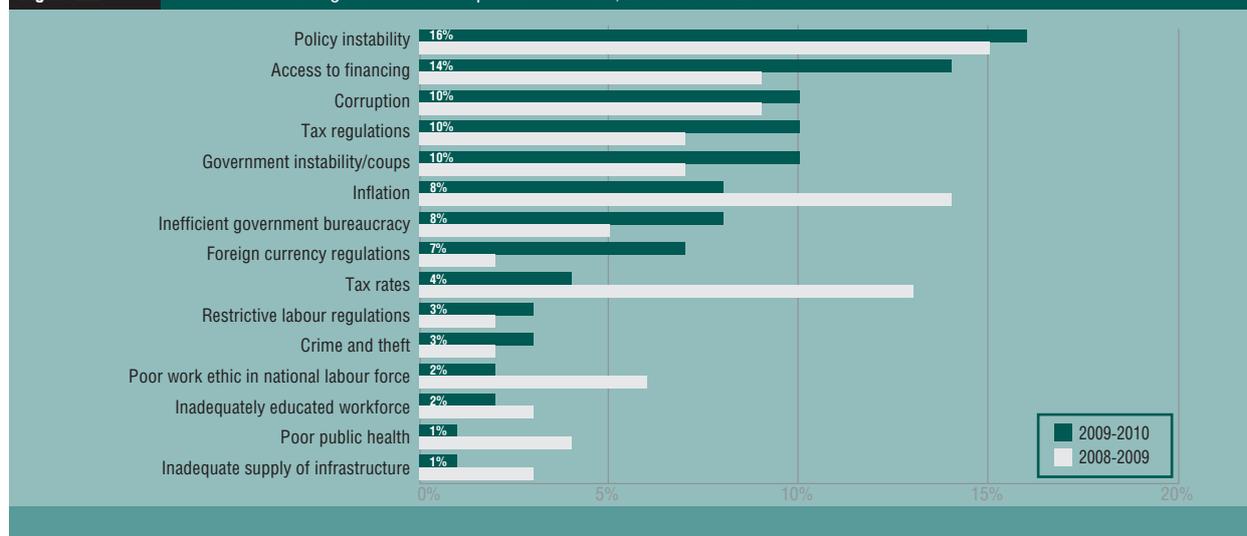
Ukraine's financial system turned out to be very susceptible to the crisis. The availability of financing dropped sharply; limitations for capital flow increased and, to make the things even worse, the stability of the banks substantially deteriorated. The attempts of the National Bank of Ukraine to stabilize the banking system had little effect. Delays in restructuring banks that were experiencing problems and a lack of transparency in the process raised doubts about the independence of

the regulator. As a small consolation prize, Ukraine is ranked higher in this area (106th place) than its regional neighbors Kazakhstan and Russia, which are at 111th and 119th place respectively.

Finally, in the technological readiness pillar, the indicators of foreign direct investment (FDI) and technology transfer saw a particularly dramatic drop. FDI and capital investment showed a sharp decrease, a trend that aggravated the difficulties of overcoming the financial crisis. Companies were deterred from introducing new technologies and some of the key indicators of development in the telecommunications market grew considerably slower compared to the previous year, a trend accentuated by market saturation, primarily in the mobile-communication market.

During a crisis, the role of the government becomes more important and therefore its efficiency is even more

**Figure 2.1** Ukraine's performance compared with efficiency-driven countries

**Figure 2.2** Factors undermining business development in Ukraine, 2008–09 and 2009–10

essential for the competitiveness of the economy. Even though the ranking of institutions in Ukraine dropped by only five points, there are still reasons for concern. In this pillar, Ukraine has its lowest ranking overall; at the 120th place, next to Nicaragua and Mongolia. Business representatives ranked this pillar so low due to problems in the sphere of government efficiency, in particular on such indicators as wastefulness of government spending and burden of government regulation on business.

### 2.3 Results of executive opinion survey

One of the main reasons for the deterioration in Ukraine's ranking in the latest WEF survey was the poor sentiment of the top business managers. As the global study showed, business owners everywhere were considerably more pessimistic during the crisis than the representatives of academia. The economic collapse and unconvincing response of the government meant that Ukrainian businessmen had valid reasons for pessimism.

In addition to the impact of the crisis, Ukrainian business managers still had to deal with more familiar problems. They ranked as their greatest difficulties unstable government policy and inadequate access to financing: these were selected by 16.5% and 13.5% of respondents respectively (see Figure 2.2). Year after year, business executives mark the inadequacies of government policy as their biggest problem.

This year, tax regulation and government instability replaced inflation and tax rates as two of the five greatest handicaps to doing business in Ukraine. Indeed, after record inflation in 2008, the rate of price growth slowed down considerably; whereas fiscal pressures on business increased (the practice of advance taxes became widespread). Finally, the political crisis that reached its height during the presidential elections in 2009 also negatively affected the assessment of Ukrainian government stability.

### 2.4 Conclusions

Even in a difficult 2009, which saw the economic and political crises in Ukraine coincide, the government should have displayed more consistency in its policy-making. The absence of the clear and realistic government plans and actions to mitigate the consequences of the crisis, together with the difficulty of fulfilling the IMF's requirements, had a negative effect on business expectations.

The government failed to improve the business climate and to foster the development of small and medium enterprises. Parliament failed to approve the necessary legislation. In the World Bank's international report, "Doing Business 2010", Ukraine still ranks 142nd out of 183 countries on the ease of doing business. This ranking also feeds into the Global Competitiveness Index. That is why the regulatory guillotine remains one of the key reforms that the country needs.

Even though the eventual recovery of the world economy may help Ukraine emerge from the crisis, this alone will not be enough to improve the country's competitiveness. As the results of the GCI show, Ukraine first and foremost needs to implement measures that will stabilize the public finances, revive the banking system, simplify the regulatory system and stimulate competition. Without them, Ukraine will continue to lose ground to the countries that have adapted to the challenges highlighted by the crisis.