

The Competitiveness Indexes

Part 1

Policies and Institutions Underpinning Economic Growth: Results from the Competitiveness Indexes

AUGUSTO LOPEZ-CLAROS

JENNIFER BLANKE

MARGARETA DRZENIEK

IRENE MIA

SAADIA ZAHIDI

at the World Economic Forum

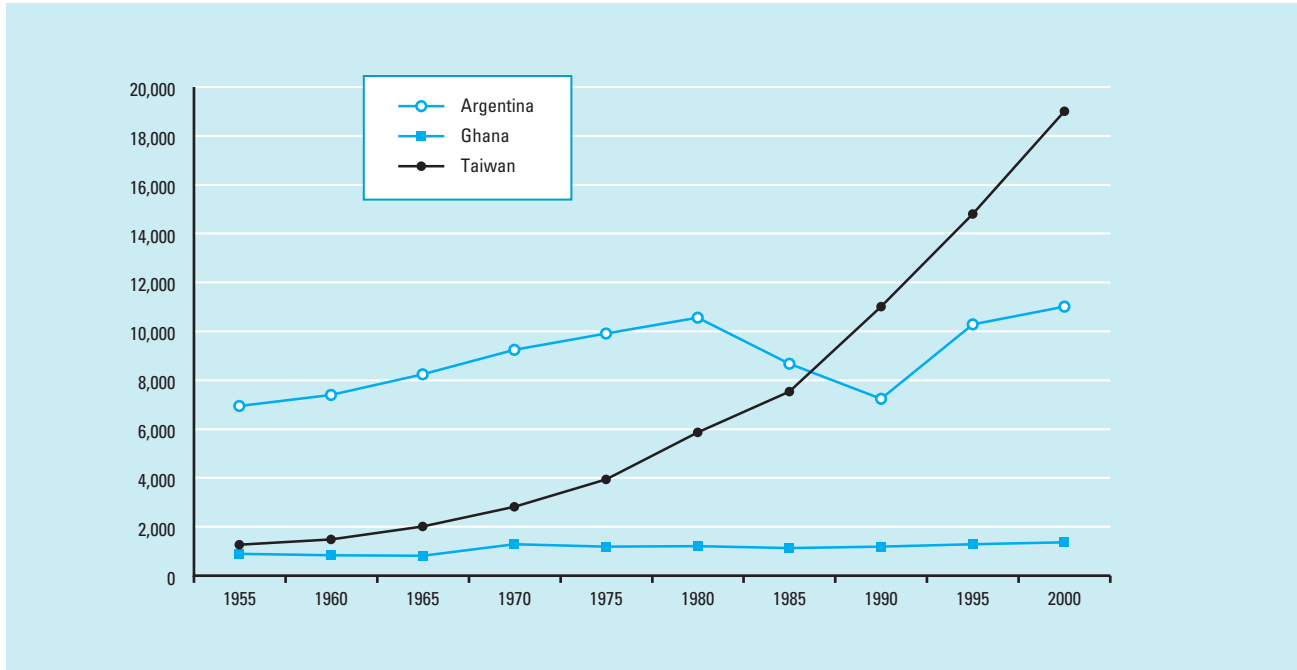
What is *competitiveness* and why does it matter?

The word *competitiveness* means different things to different people. For many it is a reference to the real exchange rate, defined as the nominal exchange rate adjusted for differences in the price level between the country in question and the rest of the world. From this vantage point, a low value for the real exchange rate is good for exporters, whose goods gain in competitiveness in global markets, while a high value makes imports inexpensive relative to domestically produced goods. The importance of the real exchange rate is not in doubt—indeed, we wholeheartedly agree with Kenneth Rogoff who, in a paper elsewhere in this volume,¹ examines the role of the exchange rate in assessing competitiveness and states: “Ask any good international macroeconomist what key variables they most want to know in assessing a country’s overall macroeconomic stance, and the real exchange rate will often be near the top of the list.”²

At the World Economic Forum we use a broader definition of competitiveness, one that goes beyond notions of exchange rate competitiveness, and that links the concept to that of productivity. We think of competitiveness as that collection of factors, policies, and institutions which determine the level of productivity of a country and that, therefore, determine the level of prosperity that can be attained by an economy. As put by Xavier Sala-i-Martin: “more competitive economies tend to be able to produce higher levels of income for their citizens.”³ However, productivity is also the key driver of the rates of return associated with investment in an economy which, in turn, unambiguously determine the aggregate growth rates of the economy. Thus, a more competitive economy is one that is likely to grow faster over the medium to long term.

Much of the work at the World Economic Forum in the area of competitiveness is aimed at shedding some light on the factors, policies, and institutions that determine the sharply different growth experiences of over 100 economies. What explains the differences in the evolution of per capita income in Argentina, Ghana, and Taiwan over the last five decades? (Figure 1). Perhaps few questions are more pertinent in the area of comparative development. There are at least three key insights that emerge from the Forum’s work in this field: first, the factors that matter are many, and are spread over a wide range of areas. The quality of the macroeconomic environment is certainly key—we do not have many examples of countries able to show sustained growth while mismanaging the public finances or, as noted above, pursuing misguided or inconsistent exchange rate policies.

But so are other aspects of the role of the public sector, which go beyond cautious management of the macroeconomy. Does the government maintain an arm’s-length relationship with respect to the private sector, or does it play favorites? Does the judicial system operate in a way

Figure 1: GDP per capita, PPP in international dollars

Sources: Heston et al., 2002; International Monetary Fund, 2005.

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that allows for the settlement of disputes in a reasonably expeditious, transparent, low-cost manner, or is “justice” for sale? Is tax revenue channeled back into the economy through productivity-enhancing investments in human capital and infrastructure, or is the money wasted on inefficient projects, or, even worse, mostly stolen? Is the regulatory environment laden with bureaucracy and red tape, thereby reducing competitiveness by raising the costs of transactions and operations? How efficiently are new technological innovations being absorbed and is enough attention being given to the quality of the country’s educational system? Does the country engage with the outside world with openness and self-confidence, or with fear and ambivalence?

More generally, what is the role of property rights and institutions? Acemoglu (2001) makes a compelling case for their central importance to the development process: “Countries with better ‘institutions,’ more secure property rights, and less distortionary policies will invest more in physical and human capital, and will use these factors more efficiently to achieve a greater level of income.”¹⁴ The answers to the above questions will vary greatly across countries and, not surprisingly, will have an important bearing on whether the economy grows in a predictable and sustained way (e.g., Taiwan), fails to fulfil its potential (e.g., Argentina), or whether it stagnates, or,

worse, actually suffers a reduction in per capita income (e.g., Ghana). The growth experiences of these three countries are shown in Figure 1.

Second, these factors matter differently for different countries, depending on their stage of development. Management of the public finances in Finland is less of a concern than it is in India or Turkey, both of which have a long history of fiscal indiscipline. Finland, facing an aging population problem, is running surpluses now to pay for future pension liabilities—and in so doing puts to shame many larger countries in Europe. India and Turkey run budget deficits, although the latter has made remarkable progress in the last couple of years in leaving behind irresponsible fiscal policies, which have resulted in the accumulation of large levels of public debt. In Finland, however, the pace of technological innovation is absolutely central to the country’s future growth prospects. Whether Nokia is able to maintain its technological edge over its Asian rivals is a far more important determinant of the future evolution of per capita income in Finland than whether there is a slight rise in inflation.

Third, the importance of these factors changes over time, a trend enhanced by the forces of globalization. Inflation, which has been on a downward trend worldwide, and has fallen to some of the lowest levels in the post-war period, is not as much of a worry as it used to be

in the 1970s and 1980s, when even the United States suffered from double digit inflation. But, with increasing capital mobility and skittish financial markets, countries that do not manage their public finances well do so at increasing risk, as Argentina found out in late 2001. Education, the acquisition of relevant skills, and the level of training of the labor force have acquired growing importance in recent years, as swift reductions in the costs of transport and communications have made it much easier for global corporations to shift production to places in the world which can bring together the right combination of skills, low labor costs, and political and social stability. This has become evident during the past decade in Central and Eastern Europe, whose economies have been growing at twice the average of the rest of Europe.

The Growth Competitiveness Index

The World Economic Forum has been measuring national competitiveness and producing *Competitiveness Reports* since 1979. Over the years, the specific methodology used to measure competitiveness has necessarily evolved, as we have taken into account the latest thinking about what drives the underlying productivity so critical to a country's ability to ensure sufficient and rising prosperity for its citizens. Since 2001, our methodology has been based on a model developed for the World Economic Forum by Jeffrey Sachs and John McArthur, called the Growth Competitiveness Index (GCI).⁵

The GCI brings together a number of complementary concepts aimed at providing a quantified framework for measuring competitiveness. In formulating the range of factors that go into explaining the evolution of growth in a country, it identifies “three pillars”: the quality of the macroeconomic environment, the state of the country's public institutions, and, given the importance of technology and innovation, the level of its technological readiness. The GCI uses a combination of hard data—e.g., university enrollment rates, inflation performance, the state of the public finances, the level of penetration of new technologies, such as mobile telephones and the Internet—and data drawn from the World Economic Forum's Executive Opinion Survey (Survey). The latter helps to capture concepts for which hard data are typically unavailable, but which are, nevertheless, central to an appropriate understanding of the factors fueling economic growth. Examples of the latter might include such concepts as judicial independence, the prevalence of institutionalized corruption, or the extent of inefficient government intervention in an economy.

These various pieces are brought together under different subindexes, each capturing a different aspect of the growth process (e.g., the importance of contracts and law, the stability of the macroeconomic environment) and are aggregated to give an overall competitiveness “score.” A second concept introduced by Sachs and McArthur is the notion that, while technology matters a great deal, it matters in different ways for different countries, depending on the stage of development. Innovation will be key in Switzerland, but the adoption of foreign technologies and technology transfer may be relatively more important in Chile, a distinction that led them to separate countries in two sets, so-called *core innovators* and *non-core innovators*, based on the number of US utility patents (patents for invention) per capita registered in the most recent year. Table 1 lists the core innovators, all with at least 15 patents per million population in 2004. A third concept was the idea that the factors which explain a nation's competitiveness will vary in importance across these two sets of countries. So, macroeconomic stability is likely to be a more important factor in Turkey than in Sweden. The exact methodology underlying the construction of this index is described in Appendix A, at the end of this chapter.

Table 1: Core technology-innovating economies, 2004

Country	Average annual US utility patents granted per million population	Rank
United States	283.7	1
Japan	276.6	2
Taiwan	263.9	3
Switzerland	177.4	4
Finland	176.5	5
Israel	155.8	6
Sweden	144.9	7
Germany	130.7	8
Canada	106.4	9
Singapore	104.4	10
Korea, Rep.	92.3	11
Luxembourg	88.0	12
Netherlands	78.6	13
Denmark	76.7	14
Austria	66.7	15
Iceland	66.7	15
Belgium	59.4	17
United Kingdom	58.1	18
France	56.0	19
Norway	52.8	20
Australia	47.9	21
Ireland	46.5	22
Hong Kong SAR	43.8	23
New Zealand	36.4	24
Italy	27.6	25

Source: United States Patent and Trademark Office

Growth Competitiveness Index rankings 2005–2006

Europe and the United States

Finland maintains its position at the top of the ranking. The country owes its strong showing to one of the most innovative business environments in the world, particularly critical to driving productivity in the country, given its advanced stage of development. This is coupled with a very healthy macroeconomic environment, at a time when many other industrial countries are struggling in this area. The willingness of Finnish governments to run budget surpluses, so as to be able to meet future social commitments linked to the aging of the population is particularly impressive. This approach to macroeconomic policy highlights a degree of political maturity in Finnish society worthy of emulation. Furthermore, Finland has an institutional environment that is among the world's finest: the business community operates in a climate of respect for the law, unusually low levels of corruption, and an openness and transparency which, again, other countries would do well to study.⁶

The United States is ranked second, with its strong performance attributable to its continuing technological supremacy, with a pipeline of innovation second to none in the world. The US has companies that are aggressive in adopting new technologies, and spend heavily on research and development. This environment, coupled with one of the highest tertiary enrollment rates in the world, provides the basis for an economy in which there is a powerful culture of innovation. However, the country's undeniable technological prowess, which explains its very high overall rank, is offset by its significantly weaker performance in other areas measured by the index. The GCI shows that the country's institutional environment is not a competitive strength. The US has a relatively low rank of 20 for the contracts and law indicator used in the GCI, with particular concerns on the part of the business community about the government's ability to maintain arm's-length relationships with the private sector, and in the formulation of policies more generally. But the country's greatest weakness concerns the stability of its macroeconomic environment, where it ranks a low 47th overall. This is not surprising in the context of intensifying international concern regarding macroeconomic imbalances in the country, especially as regards the public finances. According to the latest data made available by the International Monetary Fund, the United States is running a fiscal deficit in 2005 in excess of 4 percent of GDP for the fourth year in a row, and is projected to run a similar deficit in 2006. Little additional fiscal adjustment is envisaged through 2010. As would be expected, particular weaknesses are the very low national savings rate, and a growing level of public indebtedness. Our analysis indicates that weaknesses in key macroeconomic indicators pose a non-negligible risk to

the United States' overall competitiveness rankings in future years, as well as to the overall world economy, requiring serious attention by the authorities.

As has been the case in recent years, the other Nordic countries continue to do very well in the competitiveness rankings. After Finland and the United States, **Sweden** and **Denmark** take the next two places in the ranking at 3rd and 4th places, respectively. **Iceland** and **Norway** follow closely behind, still among the top-ten, at 7th and 9th places, respectively. These countries share a number of characteristics that make them extremely competitive, such as very healthy macroeconomic environments and public institutions that are highly transparent and efficient, with general agreement within society on the spending priorities to be met in the government budget. While the business communities in the Nordic countries, when asked, point to high tax rates as a potential problem area, there is no evidence that these are adversely affecting the ability of these countries to compete effectively in world markets, or to deliver to their respective populations some of the highest standards of living in the world. Indeed, the high levels of government tax revenue have delivered world-class educational establishments, an extensive safety net, and a highly motivated and skilled labor force.

The United Kingdom (13th) and **Germany** (15th) continue to occupy relatively privileged positions in the overall rankings. Both countries have world-class public institutions, although the German business community views the property rights environment in their country and the functioning of their judicial system as being second to none in the world, a slightly more upbeat assessment than that made by their United Kingdom counterparts. Both countries also have broadly similar rankings on the technology subindex (17th and 16th, respectively) with particularly strong scores on such variables as spending on R&D, collaboration between academia and the business community, the legal framework underpinning the ICT sector and, of course, a broad range of variables which capture the use of various new technologies. Both countries have a well-developed capacity for innovation, although, as measured by US patents registration, Germany is more of a powerhouse. Germany's overall GCI rank would be higher, were it not for the pessimism of its business community about the short-term economic growth outlook and the presence of a large public sector deficit—a rank of 86th among the 117 countries covered—for which the macroeconomic environment subindex penalizes the country's score. **France** does not quite come up to the levels of performance seen in the United Kingdom and Germany. France, like Germany, is running large budget deficits (at least since 2002), and has also suffered from a relatively sluggish growth performance, which may have colored the mood of its business community. Its macroeconomic environment rank is 27th, falling

Table 2: Growth Competitiveness Index rankings and 2004 comparisons

Country	GCI 2005 rank	GCI 2005 score	GCI 2004 rank	Country	GCI 2005 rank	GCI 2005 score	GCI 2004 rank
Finland	1	5.94	1	Tanzania	71	3.57	82
United States	2	5.81	2	Argentina	72	3.56	74
Sweden	3	5.65	3	Panama	73	3.55	58
Denmark	4	5.65	5	Indonesia	74	3.53	69
Taiwan	5	5.58	4	Russian Federation	75	3.53	70
Singapore	6	5.48	7	Morocco	76	3.49	56
Iceland	7	5.48	10	Philippines	77	3.47	76
Switzerland	8	5.46	8	Algeria	78	3.46	71
Norway	9	5.40	6	Armenia	79	3.44	—
Australia	10	5.21	14	Serbia and Montenegro	80	3.38	89
Netherlands	11	5.21	12	Vietnam	81	3.37	77
Japan	12	5.18	9	Moldova	82	3.37	—
United Kingdom	13	5.11	11	Pakistan	83	3.33	91
Canada	14	5.10	15	Ukraine	84	3.30	86
Germany	15	5.10	13	Macedonia, FYR	85	3.26	84
New Zealand	16	5.09	18	Georgia	86	3.25	94
Korea, Rep.	17	5.07	29	Uganda	87	3.24	79
United Arab Emirates	18	4.99	16	Nigeria	88	3.23	93
Qatar	19	4.97	—	Venezuela	89	3.22	85
Estonia	20	4.95	20	Mali	90	3.22	88
Austria	21	4.95	17	Mozambique	91	3.19	92
Portugal	22	4.91	24	Kenya	92	3.19	78
Chile	23	4.91	22	Honduras	93	3.18	97
Malaysia	24	4.90	31	Gambia	94	3.18	75
Luxembourg	25	4.90	26	Bosnia and Herzegovina	95	3.17	81
Ireland	26	4.86	30	Mongolia	96	3.16	—
Israel	27	4.84	19	Guatemala	97	3.12	80
Hong Kong SAR	28	4.83	21	Sri Lanka	98	3.10	73
Spain	29	4.80	23	Nicaragua	99	3.08	95
France	30	4.78	27	Albania	100	3.07	—
Belgium	31	4.63	25	Bolivia	101	3.06	98
Slovenia	32	4.59	33	Dominican Republic	102	3.05	72
Kuwait	33	4.58	—	Ecuador	103	3.01	90
Cyprus	34	4.54	38	Tajikistan	104	3.01	—
Malta	35	4.54	32	Malawi	105	3.00	87
Thailand	36	4.50	34	Ethiopia	106	3.00	101
Bahrain	37	4.48	28	Madagascar	107	2.95	96
Czech Republic	38	4.42	40	East Timor	108	2.93	—
Hungary	39	4.38	39	Zimbabwe	109	2.89	99
Tunisia	40	4.32	42	Bangladesh	110	2.86	102
Slovak Republic	41	4.31	43	Cameroon	111	2.84	—
South Africa	42	4.31	41	Cambodia	112	2.82	—
Lithuania	43	4.30	36	Paraguay	113	2.80	100
Latvia	44	4.29	44	Benin	114	2.74	—
Jordan	45	4.28	35	Guyana	115	2.73	—
Greece	46	4.26	37	Kyrgyz Republic	116	2.62	—
Italy	47	4.21	47	Chad	117	2.37	104
Botswana	48	4.21	45				
China	49	4.07	46				
India	50	4.04	55				
Poland	51	4.00	60				
Mauritius	52	4.00	49				
Egypt	53	3.96	62				
Uruguay	54	3.93	54				
Mexico	55	3.92	48				
El Salvador	56	3.86	53				
Colombia	57	3.84	64				
Bulgaria	58	3.83	59				
Ghana	59	3.82	68				
Trinidad and Tobago	60	3.81	51				
Kazakhstan	61	3.77	—				
Croatia	62	3.74	61				
Namibia	63	3.72	52				
Costa Rica	64	3.72	50				
Brazil	65	3.69	57				
Turkey	66	3.68	66				
Romania	67	3.67	63				
Peru	68	3.66	67				
Azerbaijan	69	3.64	—				
Jamaica	70	3.64	65				

(cont'd.)

Table 3: Growth Competitiveness Index components

Growth Competitiveness Index (GCI)			Technology index			Public institutions index			Macroeconomic environment index		
Country	GCI 2005 Rank	GCI 2005 Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
Finland	1	5.94	United States	1	6.19	New Zealand	1	6.35	Singapore	1	5.82
United States	2	5.81	Finland	2	6.02	Denmark	2	6.35	Norway	2	5.76
Sweden	3	5.65	Taiwan	3	5.85	Iceland	3	6.33	Denmark	3	5.64
Denmark	4	5.65	Sweden	4	5.78	Singapore	4	6.25	Finland	4	5.52
Taiwan	5	5.58	Denmark	5	5.30	Finland	5	6.19	United Arab Emirates	5	5.43
Singapore	6	5.48	Switzerland	6	5.29	Norway	6	6.13	Qatar	6	5.40
Iceland	7	5.48	Korea, Rep.	7	5.26	Luxembourg	7	6.08	Ireland	7	5.38
Switzerland	8	5.46	Japan	8	5.24	Germany	8	6.04	Hong Kong SAR	8	5.34
Norway	9	5.40	Iceland	9	5.16	Switzerland	9	6.02	Luxembourg	9	5.30
Australia	10	5.21	Singapore	10	4.93	Australia	10	6.01	Netherlands	10	5.26
Netherlands	11	5.21	Netherlands	11	4.88	Austria	11	6.00	Iceland	11	5.24
Japan	12	5.18	Israel	12	4.87	United Kingdom	12	5.98	Sweden	12	5.24
United Kingdom	13	5.11	Norway	13	4.87	Ireland	13	5.93	Switzerland	13	5.23
Canada	14	5.10	Australia	14	4.82	Japan	14	5.84	Australia	14	5.21
Germany	15	5.10	Canada	15	4.79	Portugal	15	5.83	Chile	15	5.20
New Zealand	16	5.09	Germany	16	4.78	Netherlands	16	5.83	Canada	16	5.16
Korea, Rep.	17	5.07	United Kingdom	17	4.66	Sweden	17	5.82	Taiwan	17	5.15
United Arab Emirates	18	4.99	Estonia	18	4.62	United States	18	5.77	United Kingdom	18	5.13
Qatar	19	4.97	New Zealand	19	4.47	Qatar	19	5.75	Malaysia	19	5.12
Estonia	20	4.95	Portugal	20	4.39	France	20	5.72	New Zealand	20	5.10
Austria	21	4.95	Austria	21	4.35	Canada	21	5.67	Kuwait	21	5.09
Portugal	22	4.91	Czech Republic	22	4.31	Chile	22	5.58	Austria	22	5.07
Chile	23	4.91	Malta	23	4.29	Hong Kong SAR	23	5.58	United States	23	5.07
Malaysia	24	4.90	France	24	4.26	United Arab Emirates	24	5.52	Spain	24	5.07
Luxembourg	25	4.90	Malaysia	25	4.22	Estonia	25	5.51	Korea, Rep.	25	4.98
Ireland	26	4.86	Hong Kong SAR	26	4.21	Taiwan	26	5.47	Thailand	26	4.94
Israel	27	4.84	Spain	27	4.21	Cyprus	27	5.44	France	27	4.90
Hong Kong SAR	28	4.83	Belgium	28	4.18	Belgium	28	5.38	Germany	28	4.81
Spain	29	4.80	Luxembourg	29	4.11	Malaysia	29	5.36	Belgium	29	4.76
France	30	4.78	Hungary	30	4.08	Israel	30	5.35	Estonia	30	4.73
Belgium	31	4.63	Ireland	31	4.07	Jordan	31	5.28	South Africa	31	4.68
Slovenia	32	4.59	Slovenia	32	4.07	Malta	32	5.23	Bahrain	32	4.62
Kuwait	33	4.58	United Arab Emirates	33	4.04	Uruguay	33	5.19	China	33	4.61
Cyprus	34	4.54	Slovak Republic	34	3.99	Hungary	34	5.15	Tunisia	34	4.59
Malta	35	4.54	Chile	35	3.93	Slovenia	35	5.14	Slovenia	35	4.57
Thailand	36	4.50	Cyprus	36	3.87	Spain	36	5.13	Botswana	36	4.55
Bahrain	37	4.48	Greece	37	3.85	Kuwait	37	5.11	Portugal	37	4.51
Czech Republic	38	4.42	Latvia	38	3.83	Bahrain	38	5.10	Latvia	38	4.48
Hungary	39	4.38	Poland	39	3.77	Botswana	39	5.08	Lithuania	39	4.47
Tunisia	40	4.32	Qatar	40	3.76	Tunisia	40	5.02	Trinidad and Tobago	40	4.44
Slovak Republic	41	4.31	Bahrain	41	3.73	Thailand	41	4.88	Kazakhstan	41	4.42
South Africa	42	4.31	Lithuania	42	3.70	Korea, Rep.	42	4.78	Japan	42	4.40
Lithuania	43	4.30	Thailand	43	3.69	Greece	43	4.77	Mexico	43	4.35
Latvia	44	4.29	Italy	44	3.68	Lithuania	44	4.73	Algeria	44	4.33
Jordan	45	4.28	Jamaica	45	3.64	Slovak Republic	45	4.73	Cyprus	45	4.33
Greece	46	4.26	South Africa	46	3.62	Italy	46	4.70	Czech Republic	46	4.31
Italy	47	4.21	Mauritius	47	3.57	South Africa	47	4.63	Italy	47	4.26
Botswana	48	4.21	Kuwait	48	3.56	Czech Republic	48	4.63	Israel	48	4.25
China	49	4.07	Romania	49	3.53	Colombia	49	4.55	Slovak Republic	49	4.23
India	50	4.04	Brazil	50	3.51	Latvia	50	4.55	India	50	4.17
Poland	51	4.00	Croatia	51	3.48	Ghana	51	4.54	Greece	51	4.16
Mauritius	52	4.00	Jordan	52	3.46	India	52	4.52	Jordan	52	4.10
Egypt	53	3.96	Turkey	53	3.45	Egypt	53	4.46	Poland	53	4.09
Uruguay	54	3.93	Philippines	54	3.43	El Salvador	54	4.45	Malta	54	4.09
Mexico	55	3.92	India	55	3.42	Mauritius	55	4.41	Egypt	55	4.07
El Salvador	56	3.86	Costa Rica	56	3.39	China	56	4.41	Azerbaijan	56	4.05
Colombia	57	3.84	Mexico	57	3.39	Namibia	57	4.38	El Salvador	57	4.03
Bulgaria	58	3.83	Egypt	58	3.36	Costa Rica	58	4.32	Russian Federation	58	4.02
Ghana	59	3.82	Argentina	59	3.35	Peru	59	4.27	Mauritius	59	4.01
Trinidad and Tobago	60	3.81	Tunisia	60	3.35	Tanzania	60	4.25	Vietnam	60	3.96
Kazakhstan	61	3.77	Bulgaria	61	3.31	Turkey	61	4.25	Colombia	61	3.95
Croatia	62	3.74	Trinidad and Tobago	62	3.25	Bulgaria	62	4.23	Bulgaria	62	3.95
Namibia	63	3.72	Uruguay	63	3.19	Moldova	63	4.20	Hungary	63	3.91
Costa Rica	64	3.72	China	64	3.18	Poland	64	4.14	Indonesia	64	3.89
Brazil	65	3.69	Panama	65	3.17	Jamaica	65	4.14	Namibia	65	3.84
Turkey	66	3.68	Indonesia	66	3.13	Armenia	66	4.11	Ghana	66	3.82
Romania	67	3.67	Dominican Republic	67	3.13	Azerbaijan	67	4.09	Morocco	67	3.82
Peru	68	3.66	Serbia and Montenegro	68	3.12	Malawi	68	4.08	Croatia	68	3.76
Azerbaijan	69	3.64	Ghana	69	3.11	Serbia and Montenegro	69	4.07	Pakistan	69	3.74
Jamaica	70	3.64	El Salvador	70	3.09	Brazil	70	4.06	Peru	70	3.71

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Table 3: Growth Competitiveness Index components (cont'd.)

Growth Competitiveness Index (GCI)			Technology index			Public institutions index			Macroeconomic environment index		
Country	GCI 2005 Rank	GCI 2005 Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
Tanzania	71	3.57	Kenya	71	3.04	Mexico	71	4.03	Philippines	71	3.69
Argentina	72	3.56	Venezuela	72	3.03	Mali	72	4.00	Tanzania	72	3.65
Panama	73	3.55	Russian Federation	73	3.01	Croatia	73	3.99	Romania	73	3.65
Indonesia	74	3.53	Colombia	74	3.01	Argentina	74	3.96	Panama	74	3.60
Russian Federation	75	3.53	Peru	75	3.01	Panama	75	3.90	Macedonia, FYR	75	3.58
Morocco	76	3.49	Botswana	76	2.99	Kazakhstan	76	3.89	Nigeria	76	3.54
Philippines	77	3.47	Kazakhstan	77	2.99	Gambia	77	3.88	Armenia	77	3.53
Algeria	78	3.46	Morocco	78	2.96	Romania	78	3.84	Ukraine	78	3.52
Armenia	79	3.44	Namibia	79	2.95	Ethiopia	79	3.79	Brazil	79	3.50
Serbia and Montenegro	80	3.38	Pakistan	80	2.94	Zimbabwe	80	3.79	Ecuador	80	3.50
Vietnam	81	3.37	Mongolia	81	2.93	Algeria	81	3.77	Guatemala	81	3.47
Moldova	82	3.37	Uganda	82	2.93	Nicaragua	82	3.74	Costa Rica	82	3.44
Pakistan	83	3.33	Mozambique	83	2.91	Trinidad and Tobago	83	3.73	Bangladesh	83	3.43
Ukraine	84	3.30	Georgia	84	2.84	Bolivia	84	3.71	Uruguay	84	3.40
Macedonia, FYR	85	3.26	Ukraine	85	2.82	Morocco	85	3.69	Venezuela	85	3.39
Georgia	86	3.25	Tanzania	86	2.81	Bosnia and Herzegovina	86	3.67	Argentina	86	3.37
Uganda	87	3.24	Azerbaijan	87	2.79	Georgia	87	3.65	Turkey	87	3.34
Nigeria	88	3.23	Sri Lanka	88	2.79	Honduras	88	3.61	Uganda	88	3.30
Venezuela	89	3.22	Moldova	89	2.76	Indonesia	89	3.58	Honduras	89	3.25
Mali	90	3.22	Nigeria	90	2.74	Ukraine	90	3.56	Georgia	90	3.25
Mozambique	91	3.19	Macedonia, FYR	91	2.73	Russian Federation	91	3.55	Bosnia and Herzegovina	91	3.23
Kenya	92	3.19	Vietnam	92	2.72	Mozambique	92	3.54	Albania	92	3.20
Honduras	93	3.18	Albania	93	2.69	Mongolia	93	3.53	East Timor	93	3.18
Gambia	94	3.18	Armenia	94	2.69	Kenya	94	3.50	Sri Lanka	94	3.17
Bosnia and Herzegovina	95	3.17	Honduras	95	2.68	Uganda	95	3.49	Tajikistan	95	3.17
Mongolia	96	3.16	Guatemala	96	2.67	Macedonia, FYR	96	3.47	Moldova	96	3.14
Guatemala	97	3.12	Gambia	97	2.65	Vietnam	97	3.43	Mali	97	3.13
Sri Lanka	98	3.10	Zimbabwe	98	2.62	Nigeria	98	3.43	Mozambique	98	3.13
Nicaragua	99	3.08	Bosnia and Herzegovina	99	2.61	Madagascar	99	3.39	Jamaica	99	3.13
Albania	100	3.07	Ecuador	100	2.61	Sri Lanka	100	3.34	Cameroon	100	3.12
Bolivia	101	3.06	Bangladesh	101	2.60	Tajikistan	101	3.33	Benin	101	3.08
Dominican Republic	102	3.05	Nicaragua	102	2.52	Albania	102	3.32	Paraguay	102	3.07
Ecuador	103	3.01	Mali	103	2.52	Pakistan	103	3.31	Bolivia	103	3.05
Tajikistan	104	3.01	Tajikistan	104	2.52	Philippines	104	3.30	Cambodia	104	3.04
Malawi	105	3.00	Cambodia	105	2.51	Dominican Republic	105	3.24	Mongolia	105	3.03
Ethiopia	106	3.00	Madagascar	106	2.48	Venezuela	106	3.23	Kenya	106	3.01
Madagascar	107	2.95	Malawi	107	2.46	Guatemala	107	3.22	Gambia	107	3.01
East Timor	108	2.93	Bolivia	108	2.42	East Timor	108	3.20	Ethiopia	108	2.99
Zimbabwe	109	2.89	East Timor	109	2.42	Guyana	109	3.10	Madagascar	109	2.98
Bangladesh	110	2.86	Cameroon	110	2.36	Benin	110	3.06	Nicaragua	110	2.96
Cameroon	111	2.84	Paraguay	111	2.35	Cameroon	111	3.05	Serbia and Montenegro	111	2.95
Cambodia	112	2.82	Guyana	112	2.34	Paraguay	112	2.97	Dominican Republic	112	2.78
Paraguay	113	2.80	Kyrgyz Republic	113	2.34	Ecuador	113	2.93	Guyana	113	2.77
Benin	114	2.74	Algeria	114	2.29	Cambodia	114	2.90	Chad	114	2.67
Guyana	115	2.73	Ethiopia	115	2.22	Kyrgyz Republic	115	2.89	Kyrgyz Republic	115	2.62
Kyrgyz Republic	116	2.62	Benin	116	2.09	Chad	116	2.64	Malawi	116	2.47
Chad	117	2.37	Chad	117	1.80	Bangladesh	117	2.55	Zimbabwe	117	2.25

Table 4: Technology index components

Country	Technology index		Innovation subindex		ICT subindex		Tech transfer subindex	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Albania	93	2.69	94	1.75	91	1.91	66	4.05
Algeria	114	2.29	84	2.01	110	1.80	89	3.03
Argentina	59	3.35	34	3.18	59	2.51	39	4.54
Armenia	94	2.69	71	2.21	97	1.88	70	3.92
Australia	14	4.82	15	4.36	9	5.27	—	—
Austria	21	4.35	21	3.97	18	4.74	—	—
Azerbaijan	87	2.79	81	2.05	78	2.21	72	3.81
Bahrain	41	3.73	52	2.45	42	3.08	19	5.01
Bangladesh	101	2.60	105	1.61	112	1.73	59	4.10
Belgium	28	4.18	19	4.20	26	4.17	—	—
Benin	116	2.09	113	1.44	104	1.82	91	2.66
Bolivia	108	2.42	59	2.38	106	1.81	86	3.25
Bosnia and Herzegovina	99	2.61	82	2.02	76	2.22	84	3.33
Botswana	76	2.99	98	1.69	75	2.23	46	4.44
Brazil	50	3.51	68	2.25	52	2.70	18	5.02
Bulgaria	61	3.31	50	2.47	48	2.91	58	4.12
Cambodia	105	2.51	110	1.49	113	1.67	68	3.97
Cameroon	110	2.36	106	1.61	107	1.81	85	3.33
Canada	15	4.79	11	4.69	16	4.89	—	—
Chad	117	1.80	117	1.30	117	1.39	92	2.52
Chile	35	3.93	38	2.86	37	3.37	17	5.04
China	64	3.18	75	2.15	60	2.48	43	4.47
Colombia	74	3.01	67	2.26	71	2.28	53	4.24
Costa Rica	56	3.39	72	2.20	58	2.52	22	4.95
Croatia	51	3.48	48	2.54	40	3.19	56	4.18
Cyprus	36	3.87	51	2.46	29	3.88	50	4.32
Czech Republic	22	4.31	39	2.80	31	3.75	2	5.57
Denmark	5	5.30	10	4.70	1	5.90	—	—
Dominican Republic	67	3.13	55	2.42	65	2.35	47	4.40
East Timor	109	2.42	103	1.62	115	1.58	74	3.80
Ecuador	100	2.61	87	1.88	95	1.89	73	3.81
Egypt	58	3.36	64	2.36	68	2.33	14	5.07
El Salvador	70	3.09	85	2.00	66	2.34	45	4.46
Estonia	18	4.62	27	3.51	21	4.56	15	5.07
Ethiopia	115	2.22	116	1.36	116	1.50	83	3.47
Finland	2	6.02	2	6.43	5	5.61	—	—
France	24	4.26	20	4.05	22	4.46	—	—
Gambia	97	2.65	112	1.45	93	1.90	65	4.05
Georgia	84	2.84	60	2.38	87	2.03	62	4.08
Germany	16	4.78	9	4.92	20	4.63	—	—
Ghana	69	3.11	96	1.71	82	2.08	21	4.95
Greece	37	3.85	24	3.54	38	3.36	35	4.62
Guatemala	96	2.67	95	1.72	100	1.84	61	4.09
Guyana	112	2.34	111	1.48	94	1.90	88	3.22
Honduras	95	2.68	90	1.80	101	1.84	60	4.09
Hong Kong SAR	26	4.21	32	3.19	10	5.23	—	—
Hungary	30	4.08	36	3.10	35	3.46	8	5.24
Iceland	9	5.16	14	4.45	2	5.88	—	—
India	55	3.42	76	2.13	67	2.33	6	5.32
Indonesia	66	3.13	80	2.05	85	2.04	23	4.95
Ireland	31	4.07	22	3.82	24	4.33	—	—
Israel	12	4.87	6	5.38	23	4.37	—	—
Italy	44	3.68	30	3.38	28	3.98	—	—
Jamaica	45	3.64	78	2.11	46	2.97	16	5.05
Japan	8	5.24	5	5.74	17	4.75	—	—
Jordan	52	3.46	47	2.57	53	2.66	31	4.82
Kazakhstan	77	2.99	41	2.79	74	2.24	64	4.05
Kenya	71	3.04	97	1.70	108	1.81	12	5.14
Korea, Rep.	7	5.26	8	5.29	11	5.23	—	—
Kuwait	48	3.56	69	2.23	45	3.01	33	4.73
Kyrgyz Republic	113	2.34	63	2.36	90	1.91	90	2.91
Latvia	38	3.83	25	3.52	39	3.36	36	4.57
Lithuania	42	3.70	26	3.51	41	3.15	41	4.48
Luxembourg	29	4.11	37	3.03	13	5.19	—	—
Macedonia, FYR	91	2.73	77	2.11	70	2.29	82	3.51
Madagascar	106	2.48	108	1.54	102	1.83	77	3.66
Malawi	107	2.46	115	1.42	114	1.66	71	3.88
Malaysia	25	4.22	40	2.80	33	3.56	1	5.57
Mali	103	2.52	109	1.53	88	1.98	80	3.57
Malta	23	4.29	58	2.40	25	4.32	26	4.89

(cont'd.)

Table 4: Technology index components (cont'd.)

Country	Technology index		Innovation subindex		ICT subindex		Tech transfer subindex	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Mauritius	47	3.57	79	2.07	47	2.93	25	4.93
Mexico	57	3.39	73	2.20	57	2.57	27	4.88
Moldova	89	2.76	74	2.19	72	2.27	78	3.59
Mongolia	81	2.93	53	2.44	81	2.08	55	4.23
Morocco	78	2.96	93	1.77	83	2.07	38	4.54
Mozambique	83	2.91	114	1.43	105	1.81	28	4.87
Namibia	79	2.95	91	1.79	80	2.11	42	4.47
Netherlands	11	4.88	17	4.33	7	5.43	—	—
New Zealand	19	4.47	18	4.22	19	4.71	—	—
Nicaragua	102	2.52	86	1.89	109	1.80	75	3.69
Nigeria	90	2.74	99	1.69	103	1.83	51	4.30
Norway	13	4.87	12	4.62	14	5.12	—	—
Pakistan	80	2.94	100	1.65	77	2.21	49	4.35
Panama	65	3.17	42	2.75	73	2.24	37	4.54
Paraguay	111	2.35	83	2.01	111	1.77	87	3.24
Peru	75	3.01	62	2.36	84	2.07	40	4.49
Philippines	54	3.43	65	2.34	63	2.42	11	5.15
Poland	39	3.77	31	3.22	43	3.03	24	4.94
Portugal	20	4.39	35	3.15	30	3.84	3	5.55
Qatar	40	3.76	70	2.22	44	3.02	7	5.25
Romania	49	3.53	54	2.44	50	2.71	20	4.97
Russian Federation	73	3.01	29	3.41	62	2.43	76	3.66
Serbia and Montenegro	68	3.12	61	2.37	64	2.36	48	4.37
Singapore	10	4.93	13	4.47	8	5.40	—	—
Slovak Republic	34	3.99	46	2.62	36	3.41	9	5.21
Slovenia	32	4.07	23	3.60	27	4.06	54	4.23
South Africa	46	3.62	66	2.27	55	2.63	4	5.39
Spain	27	4.21	28	3.44	32	3.74	13	5.09
Sri Lanka	88	2.79	101	1.65	89	1.94	52	4.30
Sweden	4	5.78	4	5.89	4	5.66	—	—
Switzerland	6	5.29	7	5.37	12	5.21	—	—
Taiwan	3	5.85	3	6.19	6	5.51	—	—
Tajikistan	104	2.52	89	1.85	92	1.91	81	3.56
Tanzania	86	2.81	107	1.54	96	1.89	44	4.46
Thailand	43	3.69	43	2.72	51	2.70	5	5.33
Trinidad and Tobago	62	3.25	92	1.77	61	2.43	30	4.84
Tunisia	60	3.35	57	2.41	56	2.61	34	4.64
Turkey	53	3.45	56	2.42	54	2.66	29	4.85
Uganda	82	2.93	104	1.62	98	1.84	32	4.82
Ukraine	85	2.82	33	3.19	79	2.17	79	3.57
United Arab Emirates	33	4.04	44	2.67	34	3.53	10	5.16
United Kingdom	17	4.66	16	4.35	15	4.98	—	—
United States	1	6.19	1	6.66	3	5.72	—	—
Uruguay	63	3.19	49	2.50	49	2.71	63	4.07
Venezuela	72	3.03	45	2.67	69	2.30	57	4.13
Vietnam	92	2.72	88	1.87	86	2.04	69	3.92
Zimbabwe	98	2.62	102	1.64	99	1.84	67	3.98

Table 5: Public institutions index components

Country	Public institutions index		Contracts and law subindex		Corruption subindex	
	Rank	Score	Rank	Score	Rank	Score
Albania	102	3.32	108	2.80	93	3.84
Algeria	81	3.77	67	3.66	91	3.87
Argentina	74	3.96	100	2.98	57	4.94
Armenia	66	4.11	72	3.51	61	4.70
Australia	10	6.01	10	5.67	10	6.35
Austria	11	6.00	13	5.61	9	6.39
Azerbaijan	67	4.09	61	3.75	72	4.44
Bahrain	38	5.10	39	4.54	34	5.65
Bangladesh	117	2.55	104	2.88	117	2.22
Belgium	28	5.38	23	5.11	35	5.65
Benin	110	3.06	95	3.12	113	3.00
Bolivia	84	3.71	97	3.05	75	4.36
Bosnia and Herzegovina	86	3.67	101	2.97	74	4.36
Botswana	39	5.08	30	4.93	48	5.23
Brazil	70	4.06	77	3.42	62	4.70
Bulgaria	62	4.23	103	2.90	38	5.57
Cambodia	114	2.90	102	2.91	115	2.89
Cameroon	111	3.05	91	3.15	114	2.95
Canada	21	5.67	24	5.09	17	6.24
Chad	116	2.64	113	2.54	116	2.73
Chile	22	5.58	34	4.88	13	6.29
China	56	4.41	62	3.74	50	5.08
Colombia	49	4.55	83	3.32	30	5.79
Costa Rica	58	4.32	49	4.16	68	4.48
Croatia	73	3.99	80	3.33	65	4.66
Cyprus	27	5.44	25	5.09	31	5.78
Czech Republic	48	4.63	50	4.11	49	5.15
Denmark	2	6.35	1	6.17	4	6.54
Dominican Republic	105	3.24	106	2.85	99	3.63
East Timor	108	3.20	96	3.06	107	3.34
Ecuador	113	2.93	115	2.30	101	3.56
Egypt	53	4.46	45	4.37	67	4.55
El Salvador	54	4.45	70	3.56	44	5.33
Estonia	25	5.51	35	4.87	21	6.16
Ethiopia	79	3.79	75	3.47	84	4.12
Finland	5	6.19	3	5.90	5	6.49
France	20	5.72	18	5.30	22	6.15
Gambia	77	3.88	55	4.05	97	3.71
Georgia	87	3.65	84	3.25	87	4.04
Germany	8	6.04	6	5.88	20	6.19
Ghana	51	4.54	36	4.79	77	4.29
Greece	43	4.77	40	4.53	54	5.00
Guatemala	107	3.22	114	2.47	89	3.97
Guyana	109	3.10	110	2.74	105	3.45
Honduras	88	3.61	107	2.82	73	4.40
Hong Kong SAR	23	5.58	22	5.16	26	5.99
Hungary	34	5.15	43	4.43	29	5.86
Iceland	3	6.33	4	5.89	1	6.78
India	52	4.52	37	4.78	78	4.26
Indonesia	89	3.58	66	3.66	103	3.49
Ireland	13	5.93	11	5.63	18	6.24
Israel	30	5.35	27	5.03	33	5.66
Italy	46	4.70	68	3.66	32	5.74
Jamaica	65	4.14	74	3.47	58	4.81
Japan	14	5.84	21	5.24	8	6.44
Jordan	31	5.28	26	5.05	40	5.51
Kazakhstan	76	3.89	71	3.56	81	4.23
Kenya	94	3.50	90	3.19	94	3.81
Korea, Rep.	42	4.78	41	4.53	52	5.04
Kuwait	37	5.11	31	4.91	45	5.31
Kyrgyz Republic	115	2.89	112	2.71	112	3.07
Latvia	50	4.55	52	4.09	53	5.00
Lithuania	44	4.73	58	3.83	36	5.63
Luxembourg	7	6.08	9	5.71	7	6.45
Macedonia, FYR	96	3.47	111	2.73	82	4.21
Madagascar	99	3.39	88	3.23	100	3.56
Malawi	68	4.08	56	3.95	83	4.21
Malaysia	29	5.36	17	5.30	43	5.42
Mali	72	4.00	51	4.09	90	3.90
Malta	32	5.23	29	4.95	41	5.51

(cont'd.)

Table 5: Public institutions index components (cont'd.)

Country	Public institutions index		Contracts and law subindex		Corruption subindex	
	Rank	Score	Rank	Score	Rank	Score
Mauritius	55	4.41	53	4.07	59	4.76
Mexico	71	4.03	79	3.35	60	4.71
Moldova	63	4.20	93	3.12	47	5.28
Mongolia	93	3.53	81	3.32	96	3.73
Morocco	85	3.69	60	3.76	98	3.63
Mozambique	92	3.54	86	3.23	92	3.85
Namibia	57	4.38	54	4.06	63	4.69
Netherlands	16	5.83	14	5.53	23	6.12
New Zealand	1	6.35	2	5.97	2	6.74
Nicaragua	82	3.74	98	3.03	70	4.45
Nigeria	98	3.43	69	3.59	109	3.27
Norway	6	6.13	7	5.80	6	6.45
Pakistan	103	3.31	87	3.23	106	3.39
Panama	75	3.90	63	3.72	86	4.08
Paraguay	112	2.97	117	2.17	95	3.77
Peru	59	4.27	99	2.98	39	5.55
Philippines	104	3.30	82	3.32	108	3.28
Poland	64	4.14	65	3.68	66	4.61
Portugal	15	5.83	16	5.46	19	6.20
Qatar	19	5.75	15	5.52	27	5.98
Romania	78	3.84	85	3.25	71	4.44
Russian Federation	91	3.55	109	2.78	76	4.33
Serbia and Montenegro	69	4.07	92	3.14	55	5.00
Singapore	4	6.25	5	5.88	3	6.62
Slovak Republic	45	4.73	57	3.85	37	5.61
Slovenia	35	5.14	48	4.28	25	6.01
South Africa	47	4.63	46	4.31	56	4.96
Spain	36	5.13	47	4.30	28	5.95
Sri Lanka	100	3.34	89	3.21	104	3.48
Sweden	17	5.82	19	5.30	11	6.34
Switzerland	9	6.02	8	5.79	15	6.26
Taiwan	26	5.47	33	4.88	24	6.07
Tajikistan	101	3.33	76	3.46	110	3.20
Tanzania	60	4.25	44	4.40	85	4.09
Thailand	41	4.88	42	4.48	46	5.28
Trinidad and Tobago	83	3.73	78	3.41	88	4.04
Tunisia	40	5.02	28	4.99	51	5.04
Turkey	61	4.25	59	3.82	64	4.68
Uganda	95	3.49	73	3.48	102	3.51
Ukraine	90	3.56	105	2.87	79	4.26
United Arab Emirates	24	5.52	38	4.78	16	6.25
United Kingdom	12	5.98	12	5.62	12	6.33
United States	18	5.77	20	5.27	14	6.27
Uruguay	33	5.19	32	4.91	42	5.48
Venezuela	106	3.23	116	2.22	80	4.25
Vietnam	97	3.43	64	3.71	111	3.16
Zimbabwe	80	3.79	94	3.12	69	4.46

Table 6: Macroeconomic environment index components

Country	Macroeconomic environment index		Macroeconomic stability subindex		Government waste		Country credit rating	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Albania	92	3.20	85	4.10	95	2.57	96	2.02
Algeria	44	4.33	12	5.30	51	3.30	68	3.44
Argentina	86	3.37	50	4.59	91	2.61	107	1.68
Armenia	77	3.53	55	4.52	63	3.12	98	1.97
Australia	14	5.21	25	5.05	16	4.34	18	6.39
Austria	22	5.07	38	4.73	22	4.07	12	6.76
Azerbaijan	56	4.05	18	5.13	57	3.19	78	2.74
Bahrain	32	4.62	20	5.11	36	3.68	47	4.58
Bangladesh	83	3.43	67	4.36	85	2.68	86	2.30
Belgium	29	4.76	52	4.56	50	3.33	16	6.61
Benin	101	3.08	92	4.03	104	2.33	101	1.92
Bolivia	103	3.05	105	3.69	97	2.51	87	2.29
Bosnia and Herzegovina	91	3.23	70	4.30	110	2.14	89	2.17
Botswana	36	4.55	53	4.56	15	4.37	43	4.70
Brazil	79	3.50	81	4.14	111	2.13	62	3.58
Bulgaria	62	3.95	51	4.59	89	2.65	56	3.96
Cambodia	104	3.04	100	3.78	70	2.94	107	1.68
Cameroon	100	3.12	87	4.09	102	2.36	100	1.94
Canada	16	5.16	23	5.07	33	3.76	13	6.74
Chad	114	2.67	110	3.56	114	1.80	104	1.73
Chile	15	5.20	3	5.66	19	4.23	32	5.25
China	33	4.61	27	5.02	44	3.45	37	4.96
Colombia	61	3.95	48	4.61	66	3.02	65	3.55
Costa Rica	82	3.44	109	3.62	83	2.69	60	3.85
Croatia	68	3.76	90	4.05	74	2.84	55	4.10
Cyprus	45	4.33	76	4.21	30	3.83	36	5.05
Czech Republic	46	4.31	44	4.64	78	2.80	34	5.15
Denmark	3	5.64	11	5.31	4	5.12	8	6.83
Dominican Republic	112	2.78	108	3.63	115	1.72	92	2.14
East Timor	93	3.18	93	4.03	61	3.15	113	1.51
Ecuador	80	3.50	33	4.84	113	1.95	84	2.35
Egypt	55	4.07	59	4.47	34	3.75	64	3.57
El Salvador	57	4.03	63	4.42	35	3.71	62	3.58
Estonia	30	4.73	14	5.27	43	3.45	38	4.93
Ethiopia	108	2.99	106	3.66	59	3.16	114	1.50
Finland	4	5.52	13	5.30	10	4.61	4	6.87
France	27	4.90	61	4.43	29	3.88	7	6.84
Gambia	107	3.01	113	3.45	45	3.43	106	1.69
Georgia	90	3.25	74	4.23	69	2.96	111	1.58
Germany	28	4.81	65	4.38	37	3.67	10	6.81
Ghana	66	3.82	66	4.37	21	4.18	83	2.37
Greece	51	4.16	96	3.91	60	3.15	25	5.68
Guatemala	81	3.47	73	4.24	106	2.30	72	3.11
Guyana	113	2.77	115	3.13	86	2.67	92	2.14
Honduras	89	3.25	84	4.11	94	2.59	88	2.22
Hong Kong SAR	8	5.34	6	5.55	11	4.60	26	5.66
Hungary	63	3.91	95	3.93	73	2.88	40	4.90
Iceland	11	5.24	21	5.10	6	4.97	23	5.80
India	50	4.17	41	4.68	63	3.12	53	4.20
Indonesia	64	3.89	56	4.51	40	3.58	75	2.94
Ireland	7	5.38	7	5.47	28	3.89	14	6.68
Israel	48	4.25	62	4.42	41	3.50	44	4.68
Italy	47	4.26	89	4.08	87	2.66	20	6.22
Jamaica	99	3.13	107	3.63	88	2.66	80	2.59
Japan	42	4.40	78	4.19	68	2.96	19	6.28
Jordan	52	4.10	57	4.50	23	4.03	70	3.39
Kazakhstan	41	4.42	24	5.06	39	3.60	57	3.95
Kenya	106	3.01	99	3.81	105	2.32	94	2.10
Korea, Rep.	25	4.98	8	5.38	32	3.77	28	5.39
Kuwait	21	5.09	1	5.72	38	3.63	31	5.26
Kyrgyz Republic	115	2.62	114	3.25	107	2.30	109	1.67
Latvia	38	4.48	28	5.00	49	3.34	48	4.57
Lithuania	39	4.47	29	4.91	46	3.41	46	4.63
Luxembourg	9	5.30	26	5.04	18	4.25	3	6.88
Macedonia, FYR	75	3.58	46	4.62	84	2.69	81	2.40
Madagascar	109	2.98	112	3.50	47	3.37	112	1.56
Malawi	116	2.47	117	2.83	92	2.60	110	1.62
Malaysia	19	5.12	19	5.12	2	5.13	35	5.12
Mali	97	3.13	104	3.73	56	3.21	102	1.87
Malta	54	4.09	80	4.15	79	2.77	30	5.28

(cont'd.)

Table 6: Macroeconomic environment index components (cont'd.)

Country	Macroeconomic environment index		Macroeconomic stability subindex		Government waste		Country credit rating	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Mauritius	59	4.01	86	4.09	41	3.50	51	4.35
Mexico	43	4.35	36	4.76	55	3.22	45	4.65
Moldova	96	3.14	75	4.22	80	2.75	115	1.39
Mongolia	105	3.03	94	3.96	109	2.22	97	1.98
Morocco	67	3.82	88	4.09	54	3.23	58	3.87
Mozambique	98	3.13	102	3.76	72	2.91	95	2.08
Namibia	65	3.84	71	4.30	52	3.24	66	3.51
Netherlands	10	5.26	39	4.69	9	4.81	9	6.82
New Zealand	20	5.10	22	5.09	25	4.02	21	6.18
Nicaragua	110	2.96	97	3.88	101	2.38	105	1.72
Nigeria	76	3.54	45	4.64	81	2.74	91	2.14
Norway	2	5.76	5	5.61	8	4.86	2	6.94
Pakistan	69	3.74	49	4.61	48	3.35	82	2.39
Panama	74	3.60	91	4.03	99	2.45	59	3.86
Paraguay	102	3.07	79	4.16	117	1.62	85	2.34
Peru	70	3.71	54	4.53	103	2.34	67	3.45
Philippines	71	3.69	58	4.49	100	2.44	71	3.35
Poland	53	4.09	68	4.33	77	2.80	39	4.92
Portugal	37	4.51	64	4.40	58	3.17	22	6.08
Qatar	6	5.40	4	5.66	3	5.13	33	5.17
Romania	73	3.65	83	4.13	90	2.64	61	3.70
Russian Federation	58	4.02	42	4.65	93	2.59	54	4.19
Serbia and Montenegro	111	2.95	101	3.77	108	2.28	98	1.97
Singapore	1	5.82	10	5.36	1	5.90	15	6.64
Slovak Republic	49	4.23	40	4.69	82	2.70	41	4.82
Slovenia	35	4.57	35	4.78	62	3.15	27	5.55
South Africa	31	4.68	30	4.90	14	4.41	49	4.53
Spain	24	5.07	31	4.87	24	4.02	17	6.51
Sri Lanka	94	3.17	103	3.75	98	2.47	79	2.70
Sweden	12	5.24	16	5.20	31	3.77	11	6.79
Switzerland	13	5.23	37	4.76	13	4.43	1	7.00
Taiwan	17	5.15	17	5.15	12	4.53	24	5.76
Tajikistan	95	3.17	72	4.28	71	2.91	116	1.19
Tanzania	72	3.65	77	4.21	26	4.02	89	2.17
Thailand	26	4.94	9	5.37	17	4.32	42	4.70
Trinidad and Tobago	40	4.44	15	5.23	75	2.83	50	4.48
Tunisia	34	4.59	43	4.65	7	4.86	52	4.20
Turkey	87	3.34	111	3.56	76	2.82	69	3.41
Uganda	88	3.30	82	4.13	65	3.08	102	1.87
Ukraine	78	3.52	69	4.31	96	2.54	76	2.92
United Arab Emirates	5	5.43	2	5.70	5	5.00	29	5.32
United Kingdom	18	5.13	32	4.86	27	3.94	4	6.87
United States	23	5.07	47	4.61	20	4.21	6	6.85
Uruguay	84	3.40	98	3.85	67	2.99	77	2.92
Venezuela	85	3.39	60	4.46	116	1.71	74	2.95
Vietnam	60	3.96	34	4.80	52	3.24	73	3.01
Zimbabwe	117	2.25	116	3.00	112	2.00	117	1.00

Box 1: Is Italy's ranking too low?

Italy's ranking in the Growth Competitiveness Index has been on a downward trend, falling from 26 in 2001 to 47 in both 2004 and 2005. Only Poland in the EU25 has a lower ranking at 51. It is useful to examine the factors that explain this precipitous decline in Italy's competitive position.

First, on the macroeconomic side, Italy has seen a fairly steady deterioration of the public sector accounts. In the 1990s, the country made remarkable progress in bringing the budget under control, as part of its efforts to qualify for membership in the euro area. Indeed, by 2000 the budget deficit had fallen under 1 percent of GDP for the first time in several decades. However, according to the latest data released by the IMF, the country has been running large—and growing—deficits since then, and there appear to be no prospects for improvement, with the deficit in 2006 (4.3 percent of GDP) projected to be even larger than in 2005. The levels of public indebtedness, already well in excess of 100 percent of GDP in the early part of the decade, have remained stubbornly high. Italy's growth performance has been extremely sluggish and on a sharply decelerating trend. After growing by an average of 2.3 percent during the period 1980–90, GDP growth slowed down to 1.3 percent during the period 1991–2000 and to a further 1.1 percent during 2001–2005. Not surprisingly, this has considerably dampened the mood in the business community. Our “recession expectations” indicator—a Survey measure of how the private sector views the short-term outlook—is particularly low for Italy, 110th in the world in this year's rankings.

Second, on the technology side, Italy ranks 44th in the world, well below the corresponding ranks for its G7 partners in the EU where Germany is 16th, the United Kingdom 17th and France 24th. The GCI's technology index has a large number of hard data variables (personal computer use, Internet access, availability of fixed telephone line, patents registration as a measure of innovation, and university enrollment rates, as leading indicators of a country's future innovation potential), and, across the board, Italy's rankings are mediocre for its level of per capita income and stage of development. For example, personal computer use in Italy is lower than in Korea, Taiwan, Estonia, Ireland, Slovenia, Cyprus, Malta, and the Slovak Republic, among others. Internet use is lower than in Singapore, Taiwan, Estonia, and Korea. Patents registration rates are lower in Italy than in Israel, Korea, Ireland, Hong Kong, and New Zealand; indeed of the 25 “core innovator” countries identified in the GCI, Italy is at the bottom.

While the above assessment is based overwhelmingly on hard data variables—and thus beyond the criticism that it simply reflects the subjective opinions of the business community—Italy is weakest in terms of the public institutions indicators used in the GCI, as reflected in a low ranking of 68th with regard to the general state of Italy's *contracts and law* environment. Of particular concern is the lack of independence of the judiciary (59th), the perception that the government favors well-connected firms and individuals in deciding upon contracts and policies (72nd), and the high costs imposed by organized crime on Italian businesses

(103rd). While there is no doubt that these perceptions involve a degree of subjectivity, they are not necessarily off target. In the course of 2005, there have been a number of unfavorable analyses of the Italian economy in the leading international press. An article in *The Economist*¹ refers, in rather unkind language, to glaring weaknesses in Italy's system of corporate governance, as well as to widespread evidence of “political graft and favors.” Indeed, a number of scandals in the course of the past year are thought to have adversely affected confidence. *The Financial Times* has focused on what *The Economist* calls “the extraordinary saga” of the attempted takeover of some Italian banks by banks elsewhere in the EU, strenuously resisted, allegedly, by the Bank of Italy.²

Beyond these particular factors, Italian competitiveness is hindered by its heavy reliance on low-growth mature industries (textiles, clothing, shoes, and white goods), which need a low-cost base to be able to prosper, and which are more and more exposed to international competition. With the adoption of the euro, the option to devalue as a way of maintaining a lower-cost base has been permanently foreclosed. Moreover, companies have to cope with high labor costs, Italian workers being among the best paid and most protected in the world.³

Italy's ranking in the Global Competitiveness Index (see below) is 38, somewhat better than with the GCI, because it gets credit for good scores on health and primary education, and, to a lesser extent, on business sophistication. In light of the above, we do not think that Italy's ranking is too low. On the contrary, the World Economic Forum's indexes seem to capture quite well Italy's competitiveness deficiencies. Regardless of the measure of competitiveness used, it is clear that there are onerous challenges ahead, especially in the area of fiscal policy and strengthening of the institutional environment, if Italy's competitiveness rankings are to improve.

Notes

- 1 See article “The Real Sick Man of Europe,” *The Economist*, 2005.
- 2 *The London Financial Times*, various issues, February–June, 2005.
- 3 This is not to suggest, for a moment, that Italy should consider abandoning the euro and returning to the days of 10 percent of GDP budget deficits, sky-high interest rates and a weak and unstable lira. Far better for the government to focus attention on structural and microeconomic reforms aimed at enhancing productivity and boosting the innovative potential of the manufacturing sector. In terms of policy formulation and implementation, Italy should aim to be more like Finland than Argentina.

two places since last year, although this is explained by the incorporation of two other countries, Kuwait and Qatar, both of which have a higher rank on this component of the GCI. However, French businesses take a considerably tougher line in assessing those aspects of the competitiveness climate which involve the quality of public institutions. Whether one looks at the operations and independence of the courts, at the property rights environment, or at issues of evenhandedness of government officials in their dealings with the private sector, France does not meet the standards seen not only in Germany, but in other countries such as Finland, Denmark, New Zealand, Switzerland, and Singapore, among others. On a more positive note, France's rankings are likely to rise in coming years, as our focus shifts to the Global Competitiveness Index (see below), where the country will get credit for a number of concepts not presently being captured in the GCI—e.g., the sophistication of its companies, its strong human capital endowment, including excellent levels of public health, and so on.⁷

Among the ten countries recently acceding to the EU, **Estonia** leads the pack, coming in at 20th place, ahead of several of the wealthier original EU15 members. Estonia's ranking is impressive for a number of reasons, perhaps the most important among them being that it has bridged the gap between the inefficiencies of central planning and competent economic performance in less than 15 years. The country ranks 14th overall in terms of the stability of its macroeconomic environment, and 18th in the area of technology, slightly ahead of New Zealand and Portugal. The worst performer among the accession countries continues to be **Poland**, with serious weaknesses in the country's institutional and macroeconomic environments. Noteworthy areas of concern are the poor outlook for the public finances, as well as mediocre scores in a number of areas which capture essential elements of the role of the public sector in the economy. However, on a positive note, we do note some progress in Poland's performance, with the country moving up 9 places to 51st, up from 60th last year. This is in line with a trend we see among many of the new accession countries, where there is a measured improvement in levels of competitiveness over recent years, likely due in large part to the general benefits of EU membership, and the incentives it provides for a proactive stance on the part of the government in the area of economic reform.

Asia

Unlike some other regions, where countries often cluster behind one or two top performers, Asian economies are spread throughout the full range of the index, pointing to their very different levels of development and growth potential. Leading within the region are Asian tigers, notably **Taiwan** and **Singapore**, ranked 5th and 6th

respectively, some places ahead of the next Asian country covered by the GCI, **Japan**, ranked 12th. We note that the distance between these top-ranked economies and Japan has increased since last year, reflecting Japan's relatively poor macroeconomic performance. Indeed, Japan has some of the worst rankings in the world for the budget deficit (113th) and the levels of public indebtedness (114th). However, what Japan lacks in fiscal discipline is more than compensated for by the country's impressive technology performance, with extremely high rankings in R&D, firm-level technology absorption, and patent registration, where the scores are second only to the United States, by a small margin.

Compared with the other tigers, **Hong Kong** ranked lower at 28th place, having dropped seven places since last year. A perceived worsening of the quality of the country's public institutions was primarily to blame for this weakening, with Hong Kong dropping 14 places on this subindex, from 9th to 23rd place. This in turn, is the result of significant shifts on both the contracts and law subindex and the corruption subindex. Hong Kong deteriorated on practically all components of the public institutions part of the GCI: judicial independence (from 14th place to 25th), property rights (from 3rd to 15th), favoritism (from 10th to 32nd). Hong Kong's ranks on irregular payments (corruption) have fallen well below its previously excellent performance. These results suggest a tangible deterioration in Hong Kong's institutional environment during the past year.

China and **India**, 49th and 50th, respectively, ranked much more closely to one another than in previous years. While China dropped three ranks, India moved up five places. In China, the change in rank reflects the inclusion in this year's index of two new countries entering at a higher rank. In addition, China had a slightly deteriorating score with regard to the country's macroeconomic environment. The authorities have been trying to rein in the growth of credit—China's ranking on the access to credit variable dropped considerably—and the strength of demand has resulted in an acceleration of inflation in 2004. India's improved rank mirrors the country's somewhat higher position in the technology index. The increasing inflows of FDI to skill and technology-intensive sectors observed over the past few years have certainly succeeded in boosting the mood of the business community. Remaining worries in India, however, stem from the slight progress made in fiscal adjustment—the country has one of the world's largest budget deficits, ranked 116th among 117 countries—the low penetration rates of new technologies (mobile telephones, personal computers, Internet use), and low enrollment rates for higher education. (For a fuller description of competitiveness issues in India, see Box 2.) The latter two are also a problem in China. Both China and India have had an excellent growth

Box 2: What will it take to boost India's competitiveness rankings?

India ranks 50th in this year's Growth Competitiveness Index, moving up five ranks as compared to last year. The country's recent economic success is beyond doubt and reflected in the GDP growth rates of over 7 percent over the past few years, an important achievement, which has brought with it a substantial reduction in the incidence of poverty.¹

The key question at the moment is whether India will be able to sustain and, indeed, accelerate its growth performance over the next decade. To be sure, just as China has benefited from a massive process of urbanization, India has a similar "structural" feature which is likely to fuel growth: its favorable demographics. For the next 20 years, the share of the working-age population will rise rapidly. However, to benefit from this, India will have to find ways to bring its masses of young people into the workforce, by spending on education, and improving the quality of its educational institutions, in order to boost the productivity of its young, particularly the poor.

There has also been a significant improvement in recent years in the quality of India's business environment, and in the degree of sophistication of its private sector. Whether we look at such things as the sophistication of production processes, levels of company spending on R&D, the prevalence of foreign technology licensing, the sophistication of financial markets, the greater openness in the economy associated with a much more sensible approach to trade, India has made tangible progress over the past decade. No doubt, the better growth performance seen during this period reflects these improvements in the policy framework and the institutional environment.

However, to quicken the pace of growth to, let us say, 8 percent per year, a number of weaknesses will have to be addressed. Key among them are:

- *High illiteracy rates* and relatively *low enrollment rates* across all segments of the educational ladder. The needs are particularly urgent at the primary and secondary level, but even tertiary enrollment rates are low by international standards—India ranks 91st among the 117 countries covered in the *Global Competitiveness Report*. The scope for improvement in girls' education is especially wide. India will have to educate and train its young poor, to enable them to join the labor force with usable skills, particularly in those sectors of potential comparative advantage. There is every expectation that world demand for outsourcing will rise in coming years, reflecting the continued shift of backoffice operations to the developing world associated with the drop in the cost of communications. For India to be able to take full advantage of these opportunities—particularly at the high end of the outsourcing market—it will have to improve the level of skills and training of its workforce.
- The extent of *bureaucratic red tape* and *excessive regulation* remains a serious problem in India. There is a pervasive culture of government intervention and control, best characterized as "self-inflicted injuries," which add to business

costs, and discourage the development of small and medium-sized enterprises. That is, things that developing countries do to themselves which have little or no discernible value, other than to make life difficult for business. India has made progress in this area over the past decade, but not nearly enough.

- The government has identified glaring needs in the area of *infrastructure*: India's roads, ports, airports, and power generation are in a sorry state of repair. Some progress has been made to improve the telecom infrastructure, but major investments are necessary, across the board, to sustain private sector development, and boost inflows of FDI to much higher levels. The government would like to attract US\$150 billion of FDI during the next decade, but there is little chance that this will materialize purely on the strength of India's large and growing market. The infrastructure will have to be upgraded to create a friendlier environment for investment. Whether these plans are fully realized will, in turn, be closely linked to a major improvement in the public finances.
- India has a serious *fiscal deficit* problem. Essentially, it has been running deficits of some 10 percent of GDP for the last several years, among the highest in the world—among the 117 countries covered in the *Global Competitiveness Report* only Turkey scores lower. There are several aspects to this problem: first, India's consolidated public debt level, at 83 percent of GDP, is already very high, by both emerging market standards, and those of developed economies; second, the revenue-to-debt ratio is among the highest in the world, due to India's very narrow revenue base; India collects only about 19 percent of GDP in revenues, compared to some 26 percent of GDP on average for the developing countries and much higher levels still for industrial countries with widespread safety nets.

In an attempt to bring about some measure of medium-term fiscal adjustment, the government brought into force in 2003 a Fiscal Responsibility Budget Management law (FRBMA) which sets out a plan for deficit reduction through 2009. But the law has some flaws: first, it applies only to the central government, whereas, in fact, about half of the deficit problem is with the states; second, the law does not establish any penalties and/or sanctions for departures with respect to the path of fiscal adjustment laid down in the FRBMA.

Why is all of this important? For a number of reasons. First, the bulk of the public debt is denominated in rupees. This is seen by the markets as a positive, since it isolates the country from exchange rate risk. However, since the debt is large, it means that the banking system is essentially playing the role of cashier to the government. It taps household savings and then finances the government and sits on several hundred billion dollars of government paper. This is profitable, safe business for the banks, which then do not have to worry excessively about intermediating

(cont'd.)

Box 2: What will it take to boost India's competitiveness rankings? (cont'd.)

savings to the private productive sectors, the small and medium-sized companies, which need finance to grow. They also do not have to worry much about further developing the internal capacity to price risk—why should they, if they have, in the form of the government, a large, reliable client? India is unlikely to see 8 percent growth on a sustained basis without a thriving financial sector channeling household savings into private sector productive investments. But this will not happen as long as the government does not curtail its own appetite for savings. Furthermore, with a huge stock of government securities sitting in the balance sheets of the banks, these are vulnerable to interest rate risk and, thus, potential capital losses.

Finally, India's good growth performance would seem to provide an ideal context for fiscal adjustment, whether in the form of higher taxes or lower expenditures, or some combination thereof. A growing economy provides the cushion, in political economy terms, for belt-tightening. The alternative is to do it in the middle of an economic downturn or a crisis, and this is traditionally more difficult. Fiscal discipline is always difficult in the context of a multiparty democracy, particularly one with the (still) large levels of poverty seen in India. Without doubt the deficit is a drag on the economy; a much lower deficit would have been associated with higher growth rates and higher levels of revenue, boosting the ability of the government to respond to pressing social needs. So, perversely, lack of fiscal discipline is having the opposite of the intended effect: by reducing growth, it has turned into an anti-poor measure.

The Indian economy has the potential to become an engine of growth for the world. To realize its full potential, the authorities and the business community will have to join forces to address a number of important challenges: special priority will have to be given to boosting the country's human capital endowment, improving the quality of physical infrastructure, reducing the burden on business of needless over-regulation and moving the public finances onto a more sustainable path. Real GDP growth of 8 percent per year over the longer term would allow further gains in poverty reduction, always a central concern of good economic policy. Along the way, provided these challenges are met, there is no reason why India could not join the ranks of the most competitive economies in the world.

Note

- 1 India's average annual real GDP growth during the period 1990–2004 has been about 5.7 percent, compared to close to 9 percent in China. So, during this period Indian GDP doubled but Chinese GDP tripled. Not surprisingly, China has much lower infant mortality, higher life expectancy, and lower illiteracy rates than India.

performance in recent years. In both cases, it has reflected efficiency gains stemming from the elimination of gross distortions in resource allocation (particularly in China); the move to more open and better policies has contributed to major improvements in productivity. Furthermore, in China, the economy has also benefited from several structural transformations, including a massive process of urbanization, which continues to account for a not insignificant share of GDP growth.⁸ However, both countries continue to suffer from institutional weaknesses, which, unless addressed, are likely to slow down their ascension to the top tier of the most competitive economies in the world.

Korea moved up by an impressive 12 places in this year's ranking, certainly the most significant and one of the largest improvements of all 117 countries ranked this year. This is due in part to Korea's recovery from the credit card crisis of 2003. The effects of the crisis on the country's macroeconomic environment brought about an 11 place drop in last year's ranking, while the subsequent improvement over the last year allowed Korea to regain its previous position.

This year's ranking has for the first time included three central Asian economies. While **Kazakhstan**, with a relatively strong performance in the macroeconomic subindex comes in 61st, its neighbors **Tajikistan** and the **Kyrgyz Republic** occupy ranks in the lowest part of the list: 104 and 116, respectively. Several other Asian countries have been added to the ranking this year including **Mongolia** (ranked 96th), **East Timor** (ranked 108th), **Cambodia** (ranked 112th), and **Azerbaijan** (ranked 69th). The agenda for reform in these countries is quite heavy, across a broad range of areas. In the central Asian economies, in particular, there are important issues of concern as regards the role of the government—often heavy-handed—in its relations with the private sector. An additional area of concern is evidence of widespread corruption.

Latin America

As in previous years, **Chile**, ranked 23rd, leads the way in Latin America by a wide margin. Indeed, the gap with respect to the next best performer in the region has widened from 26 places in 2004 to 31 places in 2005, a characteristic not seen in any other region of the world. The country continues to benefit from a combination of remarkably competent macroeconomic management (see the discussion below on the Global Competitiveness Index, where Chile ranks number 1 in the world in the macroeconomy pillar of that index), and public institutions, which have achieved EU levels of transparency and efficiency. Indeed, only eight of the 25 EU members have higher ranks on the public institutions subindex. Chile looks set to grow by 6.1 percent in 2005—the highest

growth in Latin America according to the latest projections by the IMF—and the upcoming presidential election is unlikely to dent this impressive performance. Indeed, a distinguishing feature of Chile's performance over the past decade and a half is the extent to which commitment to sound policies is not a function of political cycles.

Mexico has fallen seven places since last year to 55th, ceding its second spot in the regional ranking to Uruguay, while Brazil fell by eight places to 65th place. Both Mexico and Brazil suffered major plunges in those indicators which capture the quality of their public institutions. In Mexico, the political uncertainties in the run-up to the 2006 presidential election, and the resulting paralysis in policymaking, considerably soured the mood of the business community, contributing to the country's 71st position in the public institutions index. Mexico continues to suffer from high levels of crime and has also seen a gradual erosion of relative rankings in the ICT area reflecting both the incorporation into the index calculations of countries with a more sophisticated technology infrastructure and faster progress made in these areas in other parts of the world (particularly in Asia). In Brazil business confidence may have been adversely affected by a weakening of the ruling party's coalition in the wake of bribery scandals and other events, which have cast the underlying strength of the country's public institutions in an unfavorable light. This is illustrated by Brazil's weak performance with regards to judicial independence (72nd), the wastefulness of government spending (ranked 111th on this indicator), and favoritism in the decisions of government officials (69th).

Argentina has seen an overall improvement over the past year, moving up from a rank of 74 to 72, despite the inclusion of a number of new countries, several of which have entered ahead of Argentina. It is particularly notable that the country's macroeconomic performance rose from a rank of 94 to 86th place, in part reflecting reduced inflation levels, a smaller interest rate spread, and the nation's successful debt restructuring. However, public debt levels remain high, and the country's private sector continues to have deep scepticism about the strength of the institutional environment, with Argentina scoring poorly on property rights, independence of the judiciary, and several measures of corruption. On the other hand, Venezuela, which had a ranking of 62 in 2001, continues its precipitous decline to the bottom of the rankings, falling another four places to 89th position overall this year. Venezuela's performance is quite extraordinary from a number of perspectives: notwithstanding huge terms of trade gains because of high oil prices, the government has managed to run budget deficits for a number of years, suggesting massive waste; indeed, its score for waste in government spending, at 116th, is next to last. It has one of the worst inflation performances in the world (115th) and has the

distinction of having the worst property rights climate in the world (117th). Venezuela performs feebly across all the other dimensions of the contracts and law subindex, including judicial independence (ranked 114th), favoritism in the decisions of government officials (ranked 116th), and organized crime (ranked 104th). Not surprisingly, in this calamitous environment, Venezuela has also suffered an erosion of a broad range of technology indicators: penetration ranks for Internet use, personal computers, and fixed line telephones are all down, as are other indicators, important to the country's future growth potential, such as spending on R&D, FDI, and technology transfer, and the priority given by government to ICT promotion. Finally, Guyana, a new addition to this year's rankings, comes in last in the Latin American and Caribbean region, and third to last overall, at 115th out of the 117 countries.

Middle East-North Africa

Within the Middle East and North Africa (MENA) region, the small Gulf States perform quite well in the overall GCI rankings, including two new entrants to the index from the region this year: Qatar and Kuwait. The United Arab Emirates (UAE) and Qatar are ranked 18th and 19th, respectively. These countries are going through a particularly good phase. Terms-of-trade gains have boosted growth rates and reinforced already high levels of confidence in the business community, resulting from ongoing institutional modernization and improvements in macroeconomic management. The authorities have proven reasonably adept at not squandering the gains from higher oil prices, but, rather, are using these resources to reduce debt, to invest, and to save. Their competitiveness rankings are thus quite high. Kuwait and Bahrain follow relatively closely at positions ranked 33rd and 37th, respectively, while Tunisia and Jordan are ranked somewhat lower, at 40th and 45th respectively. The lowest ranked countries from the region are Morocco, ranked 76th, and Algeria, ranked 78th.

The range of ranks is in keeping with the high degree of heterogeneity of the region. These countries have very different income levels and productive structures, ranging from almost complete reliance on the oil sector (in most of the Gulf States), to much more diversified economies.⁹

Compared to 2004, the competitiveness performance of the region has been rather disappointing. With the exception of Tunisia, all countries covered last year dropped in the rankings. The most extreme case was Morocco, which fell by 20 places. This can be traced to a very significant weakening of the country's macroeconomic environment, and its public institutions. The ranking in the macroeconomic environment subindex went down 21 places (from 46th to 67th) and the contract and law subindex registered an equally precipitous drop of 20 places (from 40th to 60th). In this context, macroeconomic

reforms, involving a substantial trimming of the large and growing budget deficit and public debt, as well as a better targeting of public spending, should be at the top of policymakers' agenda. Improvements in the country's rule of law framework also require immediate attention.

The problems and the challenges faced by policymakers in the MENA region are serious indeed: notwithstanding the encouraging steps and structural reforms undertaken by most countries, the region displays the highest unemployment rate in the world, at 15 percent, with a working population projected to grow from 104 million in 2000 to 185 million by 2020,¹⁰ a heavy dependence on the energy sector, and growing competition from other regions of the world. For this reason, much needs to be done in terms of microeconomic and macroeconomic reforms in order to diversify and increase trade and to attract FDI. Egypt deserves much praise for its initiative to create a National Competitiveness Council to work together with the government to identify obstacles to growth.¹¹

Sub-Saharan Africa

While most of the countries of the sub-Saharan African region are not very competitive, the region does have a number of relative success stories. This includes **South Africa** (42nd), **Botswana** (48th), **Mauritius** (52nd), and **Ghana** (59th), the latter's competitiveness performance being even more notable, having improved by 9 places since 2004. **Tanzania** has also seen a significant improvement over the past year, moving up 11 places in the overall rankings. On the other hand, **Namibia**, a relatively good performer overall, lost 11 places over the past year, as, predictably, did **Madagascar** and **Zimbabwe**, losing 11 and 10, respectively. Zimbabwe is a particularly sad case, whose quick descent to the bottom of the world's competitiveness rankings reflects the continued deterioration of the institutional climate, including the disappearance of property rights, the corruption of the rule of law, and the implications these and other factors have had for macroeconomic management. The country has the world's worst ranking (117th) for the quality of its macroeconomic environment.

Most sub-Saharan African countries continue to lag behind the rest of the world in competitiveness terms, including two countries just added to the index from the region: **Cameroon** and **Benin**. Seven of the 13 lowest-ranked countries in the overall index are from this region. These include **Malawi** (105th), **Ethiopia** (106th), **Madagascar** (107th), **Zimbabwe** (109th), **Cameroon** (111th), **Benin** (114th), and **Chad** (117th). The GCI rankings thus confirm sub-Saharan Africa's status as the world's least developed region, with stagnating foreign trade, investment, and per capita income. In fact, the Millennium Development Goals (MDG) progress report of 2004

predicted that sub-Saharan Africa would not achieve most of the MDG goals—in particular the elimination of extreme poverty and hunger—by 2015, unless it could benefit from a freer and fairer international trading system, and a significantly higher volume of overseas development assistance. The recent decision of the G8 countries to write off US\$40 billion debt owed by 18 mainly African countries is surely a step in the right direction, but African countries must also make a considerable effort *internally* to improve macroeconomic fundamentals, and those governance practices aimed at enhancing the rule of law and boosting the legitimacy of government, through adoption of the practices and institutions of democracy.

The latest in competitiveness research: The new “Global Competitiveness Index”

The Growth Competitiveness Index described above (and in Appendix A) was a major step forward in the Forum's efforts to present a quantified framework for the analysis of the key determinants of growth. When it was put together, it represented an intelligent compromise between the need for complexity, reflecting the multiplicity of factors affecting the evolution of growth, on the one hand, and the need for a structure that was transparent and simple enough that it could be estimated for a large number of countries. The GCI has thus served its purpose well, providing important insights into a number of the key areas central to the growth process. In particular, it provides a useful linkage with the past, especially relevant for countries wanting to see the evolution of a key competitiveness indicator in an inter-temporal perspective. However, it has become increasingly apparent to us that we need a more comprehensive vehicle, one that better reflects changes in the nature of the global economy and the relative importance of key factors in explaining the evolution of growth in a large number of countries, with a considerable degree of institutional and structural diversity.

A few examples will suffice. It is difficult to make a meaningful analysis of the sluggish growth performance of the EU15 without entering into a discussion of structural weaknesses and the slow pace of reform in a number of areas, be it the prevalence of labor market rigidities, or delays in the completion of key elements of the single market, which have prevented the European economies from benefiting from the economies of scale associated with a large, single, truly unified market, such as exists in the United States. The GCI does not address the issue of labor market rigidities, nor does it look more broadly at the issue of efficiencies in the operation of various markets; the GCI framework simply does not encompass the sophistication of financial institutions and their ability to intermediate resources, or the presence of unnecessary

regulatory red tape, or the existence of adequate levels of competition in the domestic economy.

The poor growth performance seen in most of the African continent during the past quarter century cannot be divorced from public health considerations; as important as good management of the public finances is for assessing the macroeconomic environment in African countries, it is not appropriate to analyze competitiveness trends in the region, without taking into consideration the impact on business of HIV/AIDS, or of other major epidemics. The GCI is silent on these issues, not because its original authors did not see these as being central to an understanding of development in Africa,¹² but rather because coverage of Africa in the Forum's competitiveness work in 2001 was still limited, and there was no compelling reason to include factors that were not essential to explaining growth in Europe or Latin America.

Education and the extent to which countries are able to upgrade the skills and training of the labor force have acquired growing importance as indicators of a country's future growth potential. A country's ability to absorb new technologies, to produce goods and services that can reach standards of quality and performance acceptable in international markets, to engage with the rest of the world in ways that are value-creating, is intimately linked to the quality of its schools, to the priority given to training in mathematics and science, and to the existence and accessibility of specialized research and training centers. The GCI brought in some concepts in this area, but we feel there is an obvious need to do more.

In the interest of taking the Forum's competitiveness work further, in order to capture a broader set of factors crucial to understanding more clearly the determinants of economic growth, we have worked closely for the past two years with Professor Xavier Sala-i-Martin, a leading expert on the process of economic growth at Columbia University. In last year's *Report*, we provided a preliminary version of a new, and more comprehensive competitiveness index, which we called the *Global Competitiveness Index* (Global CI). This new index allows us to measure and benchmark many critical factors, which were absent from the Growth Competitiveness Index described in the previous section. The Global CI aims to measure "the set of institutions, policies, and factors that set the sustainable current and medium-term levels of economic prosperity."¹³

The new Global CI is built around nine different pillars, each of which is critical to driving productivity and competitiveness in national economies. The pillars include all of the elements that were previously included in the GCI, as well as many other factors as discussed above. A brief description of these pillars will be useful here; the full details on the construction of the index are provided in Appendix B at the end of this chapter, and in the Technical Notes section (Appendix C).

Pillar 1: Institutions

The institutional environment in an economy is fundamental for establishing the context in which the development process takes place. The quality of a country's public and private institutions constitutes the framework within which the economy's main players interact. Regarding the public sector in particular, factors such as the strength of the property rights environment, the efficiency with which the government uses scarce financial resources, the extent to which public sector officials clearly distinguish between the public good and private gain, the prevalence of crime and its impact on business costs are all of critical importance. It is clear that business cannot be carried out efficiently in an economy where property rights are poorly defined; when property owners (material or intellectual) are not guaranteed owners' rights, they will be unwilling to invest further, while new entrants to the market will have little incentive to join the formal economy, preferring instead to disguise their activities outside the reach of tax authorities, in the outer margins of the "informal sector."¹⁴ Lack of transparency in government operations and evidence of corruption undermine business confidence, lead to misallocation of resources, and may entail large welfare losses to society at large. Favoritism in the decisions of government officials and meddling in the judicial system lead to inefficiency, erode property rights, and hinder dispute settlement, increasing business costs. In addition to these more hidden factors, there are also the more visible inefficiencies created by governments, such as red tape and needless bureaucracy, which create waste. Finally, business is disrupted in an insecure environment, when additional costs are imposed by terrorism, organized crime and violence, especially when combined with a lack of reliable police services.

But "good governance" is not a concept that applies to the public sector only. Quality and transparency of private institutions are also crucial for economic efficiency. 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. Private sector transparency is indispensable to business, notably the financial sector, using standards, auditing, and accounting practices that ensure access to information in a timely manner.¹⁵

Pillar 2: Infrastructure

The existence of high-quality infrastructure is critical for ensuring the efficient functioning of the economy, as it is an important factor determining the location of economic activity, and the kinds of projects or sectors that can develop over time. High-quality infrastructure facilitates closer interaction between regions, encouraging the internal integration of the national market, and the development of linkages with other countries and regions.

Effective modes of transport for goods, people, and services, such as quality railroads, ports, and air transport are vitally important, enabling entrepreneurs to get their goods to market in a secure, cost-effective, and timely manner, and facilitating the movement of workers around the country to the most suitable jobs. Economies must also be able to depend on electricity supplies that are free of interruptions and shortages, to ensure that businesses and factories can work unimpeded. Finally, a solid and extensive telecommunications network, allowing for a rapid and free flow of information, is vital for increasing overall economic efficiency, and by helping to ensure that decisions by economic actors take into account all available, relevant information.

Pillar 3: Macroeconomy

Macroeconomic stability has come to be accepted as an essential ingredient of sustainable growth.¹⁶ It is a challenging task to come up with examples of countries that have grown on a sustained basis without due regard for budget constraints or the importance of price stability. Management of the public finances is particularly important, as far too many countries have suffered the debilitating effects of fiscal indiscipline which, over time, leads to rising levels of public indebtedness, and severely constrains the ability of governments to respond to pressing needs, such as public health, infrastructure, or education. Conversely, governments that have managed the public sector accounts with caution, transparency, and efficiency have been able to allocate resources to these areas, all critical to enhance the country's competitiveness. The macroeconomic indicators captured in this pillar broadly correspond to those included in the Growth Competitiveness Index, although in a more streamlined fashion.

Pillar 4: 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. In the extreme case of death of an employee, selection of new staff and training is also costly. In acute cases, such as the HIV/AIDS epidemic in Africa, which primarily affects the working-age population, we see a shortage of qualified workers in the short term; and in the long term as well, because orphaned children will inevitably have to work to support their families, and will almost certainly receive less education. The health of the workforce is measured by basic health indicators, such as life expectancy and infant mortality, as well as the prevalence and cost to business of three major world illnesses: malaria, tuberculosis, and HIV/AIDS.

In addition to health, this pillar takes into account the years of basic education received by the population, which, as noted above, is increasingly important in today's economy. Basic education increases the efficiency of each individual worker, making the economy more productive. In addition, a workforce that has received little formal education can only carry out basic manual work and finds it much more difficult to adapt to more advanced production processes and techniques. A shortage of qualified administrative staff might also have a negative impact on overall business performance. Lack of basic education can therefore become a constraint on business development, with firms finding it difficult to move up the value chain, by producing more sophisticated or value-intensive products.

Pillar 5: Higher education and training

The quality and quantity of higher education provided within an economy are critical for competitiveness, for preparing qualified staff for more complex roles in areas, such as production, marketing, management, and R&D.¹⁷ More generally, the technological adaptation required in a fast changing globalizing world economy demands a large pool of well-educated talent.

Aside from formal education, on-the-job training has become an increasingly important method of upgrading an economy's human resources. Companies that continuously update and improve the skill level of their employees are more likely to adapt to a changing environment, and to maintain their competitive edge, contributing more to overall economic productivity. Keeping up with constantly improving production processes, introducing new marketing techniques, or entering new markets requires specific professional skills, which firms can provide through staff training, assisted in this task by appropriate professional training institutions in the country.

Pillar 6: Market efficiency

The efficiency with which the various factor markets in the economy function is critical for its underlying productivity and competitiveness, as it ensures the proper allocation of economic factors to their best use. Three vital types of market efficiency are measured in the Global Competitiveness Index: *goods markets*, *labor markets*, and *financial markets*.

Countries with efficient goods markets are positioned to produce the right mix of products and services, given supply and demand conditions, and also 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 survive. And to ensure the best possible environment for the

exchange of goods, there must be a minimum of impediments to business activity from government intervention. For example, competitiveness is hindered by distortionary or burdensome taxes, or an inefficient legal framework which does not provide for businesses to settle disputes in an impartial and timely manner.

Productivity and competitiveness are also boosted by labor market efficiency. In a productive economy, workers are allocated properly to their best use, and provided with incentives to give their best effort in their jobs. Labor markets must have the flexibility to shift workers from one economic activity to another quickly, and to allow for wage fluctuations without social disruption. Efficient labor markets must also ensure a clear relationship between worker incentives and their efforts, as well as equity in the business environment between women and men.

Finally, economies with efficient financial markets see financial resources allocated most effectively in the economy to their best investment use. Most critical to productivity is business investment, so 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, and venture capital.

Pillar 7: Technological readiness

Technology has become an increasingly central element in today's knowledge-based global economy, affecting the range, quality, and price of goods produced in, and ultimately exported by, a country. In this sense, the degree to which a country can sustain rates of growth and productivity depends more and more on its technological readiness, and on whether, and to what extent, it can benefit from new technologies, whether developed internally or imported.¹⁸

Technological readiness specifically relates to those factors which facilitate and enable the technological capacity of a country. This includes the general availability of technologies, and the penetration rate of information and communication technologies (ICT), as these tools are seen as critical indicators of the overall technological readiness of a country. Access to ICT is critical, not only for the establishment of an effective and rapid communication system but also for providing an efficient infrastructure for commercial transactions.

Pillar 7 complements, and is, in turn, complemented by, Pillar 9 (Innovation). While both highlight the importance of technology for overall national competitiveness, Pillar 7 deals with the stock of technology available in a given economy, regardless of its original source, while Pillar 9 addresses the innovation potential of a country, i.e., its capacity to generate new technologies internally.

Pillar 8: Business sophistication

Business sophistication is conducive to higher efficiency in the production of goods and services, which leads, in turn, to increased productivity, thus enhancing a nation's competitiveness. Business sophistication concerns the quality of a country's overall business networks, as well as the quality of individual firms' operations and strategies.¹⁹ This pillar is particularly important for economies in the innovation-driven stage of development (see below).

The quality of a country's business networks and supporting industries, which we capture by using Survey variables on the quantity and quality of local suppliers, is important for a variety of reasons. When companies and suppliers are interconnected in geographically proximate groups ("clusters") efficiency is heightened, leading to greater opportunities for innovation, and to the reduction of 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.

Pillar 9: Innovation

It is widely accepted that one of the principal conditions for a rising living standard is the development of dynamic, national competitive advantages, based on technology and skills-intensive industries, as opposed to static ones, based on lower production costs. Thus, as countries develop, national competitiveness depends to an increasing extent on their innovative potential. Whereas the dimensions captured in the previous eight pillars run into diminishing returns, common sense suggests that there is no limit to the possible number of new ideas.

Innovative capability is particularly crucial for countries already functioning at, or close to, the frontiers of knowledge, and for which the adoption or use of exogenous technology no longer ensures sustained and continuous rates of productivity growth. These countries must focus on research and development, and on the endogenous generation of knowledge and new products.²⁰

The innovative capability of a nation depends on whether it exists in an appropriate and conducive environment, supported by the joint and coherent efforts of both the public and private sectors. It cannot exist without high quality scientific research institutions, a highly skilled workforce, including scientists and engineers, sufficient R&D spending by private companies, and intellectual property protection to make R&D worthwhile. Also vital to innovation is the private-public synergy provided by the active collaboration of universities and R&D companies.

Using these 9 pillars, covering a wide variety of institutional, macroeconomic, and microeconomic factors critical to boosting an economy's productive potential, we are confident that the Global CI will deliver a state-of-the-art

competitiveness index, sufficiently comprehensive in scope to replace the Growth Competitiveness Index, and allow for an enhanced dialogue between the World Economic Forum and the users of our work.

Stages of development and transitions

Beyond the above pillars, which capture a more comprehensive set of growth factors, the Global CI has a number of other important distinguishing features. One of them is the formal incorporation—from its conception—of the notion that countries around the world find themselves at different stages of economic development. The relative importance of particular factors for improving the competitiveness of a country will be a function of its particular stage of development. What presently drives productivity in the United States is necessarily different from what drives it in the Ukraine. Thus, the Global CI separates countries into three specific stages, adding degrees of complexity at each stage, called *factor-driven*, *efficiency-driven*, and *innovation-driven*.

In the first factor-driven stage, countries generally compete based on low prices. They sell commodities or simple products, taking advantage of low-cost labor and readily available natural resources. At this stage of development, the basic ingredients of competitiveness include strong public and private institutions (pillar 1), adequate infrastructure (pillar 2), a healthy macroeconomic environment (pillar 3), and a healthy workforce, with at least a basic level of education (pillar 4).

As countries move into stage 2, the efficiency-driven stage, it becomes important for them to develop more efficient production practices. Product quality, rather than low price, drives competitiveness at this stage, and is dependent on higher education and training programs to prepare the workforce for more advanced production processes (pillar 5), goods, labor, and financial markets that operate at increasing levels of efficiency (pillar 6), as well as access to the latest technologies invented around the world (pillar 7).

In the third innovation-driven stage, countries can no longer compete simply by being efficient. In countries at this advanced stage of development, companies must compete through innovation (pillar 9), producing new and different goods, and using the most sophisticated production processes (pillar 8).

So while, to varying degrees, all nine pillars matter for all countries, the importance of each for national competitiveness depends on a country's particular stage of development. To take this into account, the pillars are organized into three subindexes, each critical to one 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. The innovation and sophistication factor subindex includes all pillars critical to countries in the innovation-driven stage. The three subindexes are composed as follows:

Basic requirements subindex (Stage 1: factor-driven)

- Institutions (pillar 1)
- Infrastructure (pillar 2)
- Macroeconomy (pillar 3)
- Health and basic education (pillar 4)

Efficiency enhancers subindex (Stage 2: efficiency-driven)

- Higher education and training (pillar 5)
- Market efficiency (pillar 6)
- Technological readiness (pillar 7)

Innovation and sophistication factor subindex (Stage 3: innovation-driven)

- Business sophistication (pillar 8)
- Innovation (pillar 9)

The Global CI implements the concept of developmental stages by weighting each of the subindexes differently, depending on the stage of a given country. More specifically, the index places more weight on those pillars that are most important at a given stage of a country's development.

The specific weights given to each of the subindexes for countries in the different stages of development are shown in Table 7. The table shows that for countries at the factor-driven stage, most weight is placed on basic requirements (50 percent), considerable weight is placed on efficiency enhancers (40 percent), and only 10 percent weight is placed on innovation and sophistication factors. For countries at the efficiency-driven stage, the weights between basic requirements and efficiency enhancers are reversed, with little weight still placed on innovation factors. Finally, for the countries at the innovation-driven stage, considerable weight is still placed on the two first subindexes, but the weight placed on the innovation and sophistication factors subindex is higher, reflecting the fact that at this most advanced stage of development, these are the factors that matter the most for improving productivity and competitiveness.

Table 7: Weights of the three main groups of pillars at each stage of development

Weights	Basic requirements	Efficiency enhancers	Innovation and sophistication factors
Factor-driven stage	50%	40%	10%
Efficiency-driven stage	40%	50%	10%
Innovation-driven stage	30%	40%	30%

Table 8: List of countries in each stage of development

Stage 1	Transition from 1 to 2	Stage 2	Transition from 2 to 3	Stage 3
Income of less than US\$2,000	Income US\$2,000–US\$3,000	Income US\$3,000–US\$9,000	Income US\$9,000–US\$17,000	Income more than US\$17,000
Armenia	Albania	Argentina	Bahrain	Australia
Azerbaijan	Algeria	Botswana	Czech Republic	Austria
Bangladesh	Colombia	Brazil	Hungary	Belgium
Benin	Dominican Republic	Bulgaria	Korea	Canada
Bolivia	Ecuador	Chile	Malta	Cyprus
Bosnia and Herzegovina	El Salvador	Costa Rica	Portugal	Denmark
Cambodia	Guatemala	Croatia	Slovenia	Finland
Cameroon	Kazakhstan	Estonia	Taiwan	France
Chad	Macedonia, FYR	Jamaica	Trinidad and Tobago	Germany
China	Namibia	Latvia		Greece
East Timor	Peru	Lithuania		Hong Kong SAR
Egypt	Serbia and Montenegro	Malaysia		Iceland
Ethiopia	Thailand	Mauritius		Ireland
Gambia	Tunisia	Mexico		Israel
Georgia		Panama		Italy
Ghana		Poland		Japan
Guyana		Romania		Kuwait
Honduras		Russia		Luxembourg
India		Slovak Republic		Netherlands
Indonesia		South Africa		New Zealand
Jordan		Turkey		Norway
Kenya		Uruguay		Qatar
Kyrgyz Republic		Venezuela		Singapore
Madagascar				Spain
Malawi				Sweden
Mali				Switzerland
Moldova				United Arab Emirates
Mongolia				United Kingdom
Morocco				United States
Mozambique				
Nicaragua				
Nigeria				
Pakistan				
Paraguay				
Philippines				
Sri Lanka				
Tajikistan				
Tanzania				
Uganda				
Ukraine				
Vietnam				
Zimbabwe				

Of course, countries do not suddenly jump from one stage of development to another, but rather, move along a continuum. We therefore take into account the fact that many countries are in transition between stages. For these countries, the weights change smoothly as a country develops, reflecting the gradual transition from one stage of development to the next. This is an important characteristic of the index, as, by introducing this type of transition between stages into the model—i.e., by placing increasing weight on those areas that are becoming more important for the country’s competitiveness at its particular stage of development—the Global CI can begin to “penalize” those countries that are not yet preparing for the next stage of development.

Countries are separated into stages as follows. The factor-driven stage includes countries that have GDP per

capita below US\$2,000. The efficiency-driven stage includes countries with per capita income between US\$3,000 and US\$9,000. The innovation-driven stage includes countries with GDP per capita higher than US\$17,000. The countries in transition are those between the categories. Table 8 shows how the 117 countries covered in this *Report* are allocated into the different stages of development.

The reason that we use income levels as the separating criterion for the stages is, as the authors explain, because “factor-driven economies are those that compete in low prices. We proxy low wages with low income levels, which is why we assign countries with ... income per capita below US\$2,000 to this group.”²¹ The same reasoning applies to countries in stages 2 and 3: rising GDP per capita proxies for wages that are rising, pulling countries

into higher stages of development, where they must improve their productivity based on more complex factors. Tables 9–12 present the results of the Global Competitiveness Index rankings for 2005.

The top performers in the nine pillars of the Global Competitiveness Index

Table 13 displays the countries with the number one ranking in each of the nine pillars of the Global Competitiveness Index. Singapore, Japan, and the United States are notable for being the three countries that are first in two pillars. Denmark, Chile, and Finland hold the first places in the other three pillars.

Singapore holds first place on the institutions and technological readiness pillars. Singapore performs well on both subindexes of the Institutions pillar, but particularly so on the public institutions subindex where it holds the first place out of the 117 countries. This subindex is made up of five components and Singapore performs remarkably well on all five of them: property rights (6), ethics and corruption (1), undue influence (9), government inefficiency: red tape, bureaucracy and waste (1), and security (6). It is clear that the public has a high level of trust in the financial honesty of politicians; compliance with administrative regulations does not put an unnecessary burden on business; government spending provides the necessary goods and services that are not provided by the market; government decisions are neutral and police services are reliable; all these characteristics serve to make Singapore the country with the best institutions at a global level. Singapore's number one ranking on the technological readiness pillar can be attributed to the existing technological infrastructure (the large penetration rates for the Internet and personal computers), to the high levels of technological absorption by firms, to proficiency at adopting new technologies through FDI, and to a highly developed regulatory environment for ICT. This ranking is fully consistent with Singapore's number one ranking in the Forum's *Global Information Technology Report 2004–2005* and the Networked Readiness Index contained therein.

Japan holds first place on the health and primary education, and business sophistication pillars. Japan has very low levels of HIV/AIDS, high life expectancy, and very low levels of infant mortality. In addition, in Japan the impact on business of worker illness is very low. This makes Japan the top country in the world in terms of the quality of basic human capital. Japan also holds the number one ranking on the business sophistication pillar. Japan has the best business networks (large numbers of high-quality local suppliers) as well as among the best individual company operations and strategies. This includes factors such as local control over international distribution and marketing (2), the production of sophisticated and

high-value added products (1), and high-quality production processes (1).

The United States holds first place on the market efficiency and innovation pillars. Market efficiency is composed of three subindexes (goods markets, labor markets, and financial markets) and the United States holds the number one spot on both goods markets and financial markets, and the second spot on labor markets. In terms of goods markets, the United States has fairly low levels of distortions (9), and a very strong domestic and foreign competition environment. The availability of venture capital, the ease of obtaining bank loans, the highly sophisticated stock markets, and the ease of raising money by issuing shares on local stock markets, all explain the United States' top spot on the financial markets subindex. Finally, the wage-setting process, the flexibility of hiring and firing workers, the relative absence of nepotism, and the fact that salaries are strongly related to worker productivity all boost the efficiency and flexibility of the US labor markets. The United States also occupies first place on the innovation pillar. This can be attributed to the fact that the United States holds the highest ranks on practically all of the variables that enter this index: quality of scientific research institutions (1), company spending on R&D (1), business collaboration with universities on R&D (1), intellectual property protection (1), government procurement of advanced technology products (8), availability of scientists and engineers (13), capacity for innovation (4), and the number of registered patents (1). The United States is clearly ahead of its closest competitor, Japan.

Denmark holds the top spot on the infrastructure pillar. High-quality railroads, ports, telephones, air transport, and electricity supply all contribute to Denmark's having the highest-quality overall infrastructure in the world. Chile ranks in first place on the macroeconomy pillar: the authorities have managed the public finances with admirable caution and consistency and, given the country's strong growth performance, public debt levels have been on a rapidly declining trend (12 percent of GDP in 2004), enabling the government to invest in productivity-enhancing areas, as well as making impressive progress in reducing the incidence of poverty. With an excellent inflation performance, the monetary authorities have focused considerable attention in efficiently regulating an otherwise sophisticated financial sector. Finally, Finland, the number two country overall on the Global Competitiveness Index, holds the top spot on the higher education and training pillar, with the highest tertiary education enrollment ratio in the world (87.5 percent), high-quality math and science education, excellent management schools, and a very high level of employee training and development.

Table 9: The Global Competitiveness Index 2005

Country	OVERALL INDEX		THREE SUBINDEXES					
	Rank	Score	Basic requirements		Efficiency enhancers		Innovation factors	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score
United States	1	5.85	18	5.61	1	5.85	1	6.07
Finland	2	5.73	2	6.05	5	5.54	5	5.68
Denmark	3	5.73	1	6.15	3	5.60	7	5.47
Switzerland	4	5.67	6	5.91	7	5.44	4	5.73
Singapore	5	5.67	3	6.05	2	5.70	14	5.24
Germany	6	5.56	8	5.79	19	5.16	3	5.86
Sweden	7	5.55	7	5.80	9	5.40	6	5.50
Taiwan	8	5.52	19	5.60	6	5.50	8	5.44
United Kingdom	9	5.51	17	5.63	4	5.56	11	5.33
Japan	10	5.50	25	5.43	17	5.19	2	5.98
Netherlands	11	5.39	9	5.77	16	5.21	12	5.26
France	12	5.39	16	5.65	18	5.18	9	5.41
Canada	13	5.39	11	5.73	11	5.32	16	5.14
Hong Kong SAR	14	5.35	4	5.98	12	5.29	21	4.80
Austria	15	5.34	14	5.67	21	5.15	13	5.25
Iceland	16	5.34	13	5.68	10	5.34	18	4.99
Norway	17	5.31	5	5.94	15	5.22	20	4.81
Australia	18	5.31	12	5.71	8	5.43	23	4.75
Korea, Rep.	19	5.28	20	5.58	20	5.16	17	5.06
Belgium	20	5.23	21	5.53	23	5.04	15	5.19
Ireland	21	5.22	22	5.52	14	5.23	19	4.91
New Zealand	22	5.22	15	5.66	13	5.24	22	4.75
Israel	23	5.22	31	5.18	22	5.11	10	5.40
Luxembourg	24	5.04	10	5.77	26	4.76	24	4.69
Malaysia	25	5.03	26	5.42	25	4.79	25	4.67
Estonia	26	5.03	29	5.30	24	5.00	34	4.05
Chile	27	4.84	24	5.46	31	4.49	32	4.09
Spain	28	4.80	28	5.33	27	4.68	28	4.41
Czech Republic	29	4.76	37	5.03	28	4.64	27	4.44
Slovenia	30	4.62	32	5.14	29	4.52	31	4.20
Portugal	31	4.60	30	5.29	32	4.47	35	4.04
United Arab Emirates	32	4.59	23	5.51	33	4.42	42	3.90
Thailand	33	4.59	34	5.10	41	4.22	38	4.01
Lithuania	34	4.51	43	4.84	35	4.36	40	3.94
Hungary	35	4.50	49	4.68	30	4.50	39	3.98
Slovak Republic	36	4.48	47	4.74	34	4.40	43	3.88
Tunisia	37	4.48	33	5.13	48	4.02	33	4.08
Italy	38	4.47	44	4.79	36	4.35	30	4.32
Latvia	39	4.46	41	4.84	37	4.33	62	3.57
South Africa	40	4.43	46	4.77	43	4.17	29	4.32
Cyprus	41	4.40	36	5.05	40	4.26	41	3.93
Jordan	42	4.38	40	4.89	49	3.92	50	3.73
Poland	43	4.38	57	4.60	38	4.30	45	3.87
Malta	44	4.34	39	4.94	39	4.29	70	3.47
India	45	4.32	65	4.47	46	4.09	26	4.48
Qatar	46	4.31	27	5.34	45	4.13	67	3.52
Greece	47	4.28	42	4.84	42	4.19	47	3.84
China	48	4.26	45	4.79	62	3.70	48	3.83
Kuwait	49	4.24	35	5.05	44	4.13	61	3.58
Bahrain	50	4.19	38	5.00	47	4.08	83	3.30
Kazakhstan	51	4.17	51	4.66	56	3.83	58	3.59
Egypt	52	4.10	53	4.64	68	3.59	71	3.47
Russian Federation	53	4.10	60	4.53	53	3.87	66	3.53
Argentina	54	4.09	62	4.52	57	3.81	52	3.72
Mauritius	55	4.08	64	4.51	58	3.78	46	3.85
Costa Rica	56	4.08	73	4.32	50	3.90	37	4.01
Brazil	57	4.08	77	4.32	51	3.89	36	4.03
Colombia	58	4.07	63	4.52	67	3.63	49	3.74
Mexico	59	4.07	55	4.61	61	3.73	57	3.60
El Salvador	60	4.05	50	4.67	73	3.53	73	3.45
Bulgaria	61	4.04	58	4.54	59	3.78	74	3.39
Azerbaijan	62	4.04	48	4.71	79	3.33	64	3.55
Jamaica	63	4.03	72	4.33	52	3.87	59	3.59
Croatia	64	4.01	67	4.46	60	3.75	65	3.54
Panama	65	4.00	59	4.54	65	3.64	54	3.68
Trinidad and Tobago	66	3.99	56	4.60	66	3.63	69	3.49
Romania	67	3.98	76	4.32	55	3.84	76	3.37
Ukraine	68	3.97	74	4.32	64	3.64	60	3.59
Indonesia	69	3.96	71	4.38	74	3.52	55	3.63
Uruguay	70	3.95	54	4.61	71	3.53	75	3.39

(cont'd.)

Table 9: The Global Competitiveness Index 2005 (cont'd.)

Country	OVERALL INDEX		THREE SUBINDEXES					
	Rank	Score	Basic requirements		Efficiency enhancers		Innovation factors	
			Rank	Score	Rank	Score	Rank	Score
Turkey	71	3.94	89	4.05	54	3.86	44	3.88
Botswana	72	3.94	61	4.53	69	3.58	77	3.37
Philippines	73	3.93	81	4.20	63	3.67	56	3.61
Vietnam	74	3.91	68	4.43	77	3.39	79	3.36
Macedonia, FYR	75	3.84	69	4.42	81	3.32	81	3.31
Morocco	76	3.83	70	4.38	84	3.27	78	3.37
Peru	77	3.83	82	4.20	70	3.57	82	3.31
Ghana	78	3.82	86	4.07	72	3.53	53	3.70
Namibia	79	3.80	66	4.46	86	3.25	89	3.15
Sri Lanka	80	3.77	84	4.13	78	3.37	68	3.52
Armenia	81	3.75	80	4.20	82	3.29	80	3.35
Algeria	82	3.75	52	4.66	94	3.02	97	3.01
Nigeria	83	3.74	78	4.26	90	3.17	72	3.46
Venezuela	84	3.71	79	4.23	76	3.42	92	3.11
Serbia and Montenegro	85	3.67	92	3.98	75	3.43	85	3.19
Georgia	86	3.61	88	4.05	88	3.23	103	2.94
Ecuador	87	3.59	75	4.32	104	2.93	101	2.94
Bosnia and Herzegovina	88	3.58	87	4.06	91	3.14	98	2.97
Moldova	89	3.58	93	3.98	89	3.22	96	3.05
Mongolia	90	3.57	98	3.89	80	3.33	105	2.89
Dominican Republic	91	3.56	97	3.91	85	3.26	93	3.10
Tajikistan	92	3.53	85	4.11	99	2.96	102	2.94
Kenya	93	3.52	108	3.67	83	3.29	51	3.72
Pakistan	94	3.51	105	3.70	87	3.25	63	3.57
Guatemala	95	3.50	90	4.05	103	2.93	94	3.08
Nicaragua	96	3.48	91	4.02	97	2.99	107	2.79
Honduras	97	3.47	83	4.14	110	2.77	104	2.93
Bangladesh	98	3.45	95	3.92	100	2.95	90	3.13
Cameroon	99	3.42	101	3.84	101	2.94	84	3.29
Albania	100	3.40	96	3.91	95	3.02	112	2.64
Bolivia	101	3.39	99	3.89	98	2.97	114	2.57
Paraguay	102	3.36	94	3.96	107	2.80	115	2.56
Uganda	103	3.36	107	3.67	96	3.00	86	3.18
Kyrgyz Republic	104	3.35	106	3.69	92	3.08	109	2.75
Tanzania	105	3.35	103	3.75	105	2.90	88	3.16
Benin	106	3.33	100	3.88	111	2.73	100	2.94
Madagascar	107	3.30	102	3.75	109	2.79	95	3.07
Guyana	108	3.27	111	3.64	102	2.93	110	2.75
Gambia	109	3.26	110	3.64	106	2.90	108	2.78
Zimbabwe	110	3.25	113	3.43	93	3.05	87	3.17
Cambodia	111	3.20	104	3.71	114	2.71	113	2.61
Mozambique	112	3.17	112	3.61	113	2.71	106	2.86
East Timor	113	3.09	109	3.66	115	2.55	117	2.39
Malawi	114	3.08	114	3.31	108	2.80	99	2.97
Mali	115	2.94	116	3.08	112	2.72	91	3.13
Ethiopia	116	2.85	115	3.19	116	2.48	111	2.67
Chad	117	2.65	117	3.03	117	2.22	116	2.50

Table 10: Global Competitiveness Index: Basic Requirements

Country	Basic requirements		1. Institutions		2. Infrastructure		3. Macroeconomy		4. Health and primary education	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Albania	96	3.91	107	2.94	116	1.77	85	4.10	36	6.83
Algeria	52	4.66	74	3.42	80	2.88	3	5.69	66	6.63
Argentina	62	4.52	98	3.08	63	3.53	46	4.67	41	6.81
Armenia	80	4.20	77	3.40	95	2.57	70	4.31	75	6.52
Australia	12	5.71	8	5.38	19	5.42	27	5.08	3	6.97
Austria	14	5.67	9	5.38	18	5.47	33	4.89	13	6.95
Azerbaijan	48	4.71	67	3.61	51	3.73	12	5.44	92	6.05
Bahrain	38	5.00	45	4.18	42	4.10	28	5.06	63	6.64
Bangladesh	95	3.92	108	2.90	101	2.38	68	4.35	94	6.03
Belgium	21	5.53	29	4.70	13	5.74	40	4.74	20	6.93
Benin	100	3.88	101	3.04	110	2.09	60	4.41	95	6.00
Bolivia	99	3.89	112	2.81	98	2.49	94	3.89	82	6.37
Bosnia and Herzegovina	87	4.06	106	2.94	100	2.40	52	4.54	84	6.36
Botswana	61	4.53	31	4.59	60	3.57	41	4.72	106	5.24
Brazil	77	4.32	79	3.38	70	3.20	91	3.97	52	6.72
Bulgaria	58	4.54	95	3.12	59	3.61	47	4.65	42	6.80
Cambodia	104	3.71	105	2.94	103	2.32	100	3.73	99	5.84
Cameroon	101	3.84	91	3.14	114	1.97	74	4.26	97	5.97
Canada	11	5.73	21	4.96	11	5.91	25	5.10	8	6.96
Chad	117	3.03	115	2.56	117	1.55	96	3.82	113	4.17
Chile	24	5.46	27	4.76	34	4.40	1	5.78	25	6.91
China	45	4.79	60	3.72	65	3.44	13	5.33	61	6.65
Colombia	63	4.52	69	3.57	71	3.19	51	4.54	48	6.76
Costa Rica	73	4.32	59	3.74	73	3.16	109	3.51	28	6.89
Croatia	67	4.46	72	3.44	54	3.67	86	4.10	67	6.62
Cyprus	36	5.05	30	4.65	30	4.59	81	4.20	49	6.75
Czech Republic	37	5.03	52	3.83	28	4.82	49	4.59	27	6.90
Denmark	1	6.15	2	5.91	1	6.48	16	5.29	23	6.91
Dominican Republic	97	3.91	111	2.83	94	2.58	107	3.59	65	6.63
East Timor	109	3.66	102	3.02	115	1.84	78	4.21	103	5.56
Ecuador	75	4.32	114	2.60	84	2.74	19	5.22	51	6.72
Egypt	53	4.64	49	3.91	55	3.66	50	4.57	79	6.42
El Salvador	50	4.67	57	3.75	52	3.72	59	4.46	46	6.77
Estonia	29	5.30	32	4.58	31	4.59	18	5.24	40	6.81
Ethiopia	115	3.19	80	3.36	105	2.31	101	3.71	116	3.36
Finland	2	6.05	3	5.77	10	6.02	10	5.46	10	6.95
France	16	5.65	20	4.96	3	6.28	61	4.40	6	6.96
Gambia	110	3.64	58	3.74	91	2.62	111	3.27	110	4.95
Georgia	88	4.05	82	3.32	83	2.76	87	4.07	91	6.06
Germany	8	5.79	11	5.33	2	6.44	54	4.49	24	6.91
Ghana	86	4.07	34	4.51	74	3.14	90	4.06	112	4.57
Greece	42	4.84	44	4.19	33	4.49	99	3.74	17	6.94
Guatemala	90	4.05	113	2.69	93	2.60	64	4.36	73	6.55
Guyana	111	3.64	110	2.83	109	2.11	113	3.14	78	6.47
Honduras	83	4.14	103	2.97	82	2.77	82	4.20	62	6.65
Hong Kong SAR	4	5.98	17	5.19	6	6.17	6	5.64	19	6.93
Hungary	49	4.68	43	4.19	45	4.02	105	3.64	33	6.85
Iceland	13	5.68	4	5.70	21	5.37	43	4.70	12	6.95
India	65	4.47	41	4.25	69	3.21	88	4.06	87	6.33
Indonesia	71	4.38	65	3.62	75	3.12	63	4.39	80	6.41
Ireland	22	5.52	14	5.27	32	4.58	15	5.31	21	6.93
Israel	31	5.18	33	4.57	27	4.86	67	4.35	7	6.96
Italy	44	4.79	55	3.77	39	4.18	76	4.23	5	6.97
Jamaica	72	4.33	68	3.59	56	3.64	112	3.25	35	6.83
Japan	25	5.43	26	4.78	9	6.02	93	3.93	1	6.98
Jordan	40	4.89	28	4.71	49	3.89	75	4.25	53	6.70
Kazakhstan	51	4.66	64	3.65	62	3.54	26	5.10	83	6.37
Kenya	108	3.67	90	3.20	89	2.63	104	3.69	107	5.16
Korea, Rep.	20	5.58	38	4.39	20	5.39	5	5.65	30	6.87
Kuwait	35	5.05	39	4.35	43	4.09	2	5.77	96	5.99
Kyrgyz Republic	106	3.69	109	2.85	106	2.31	115	3.03	71	6.58
Latvia	41	4.84	48	3.92	38	4.19	32	4.91	86	6.35
Lithuania	43	4.84	54	3.80	44	4.09	37	4.78	57	6.68
Luxembourg	10	5.77	12	5.32	16	5.54	14	5.33	29	6.88
Macedonia, FYR	69	4.42	100	3.06	79	2.93	22	5.14	72	6.56
Madagascar	102	3.75	84	3.30	104	2.32	110	3.45	98	5.94
Malawi	114	3.31	62	3.69	112	2.04	117	2.39	108	5.14
Malaysia	26	5.42	15	5.22	22	5.24	31	4.93	88	6.29
Mali	116	3.08	61	3.72	111	2.07	97	3.80	117	2.72
Malta	39	4.94	35	4.45	41	4.10	73	4.27	16	6.94

(cont'd.)

Table 10: Global Competitiveness Index: Basic Requirements (cont'd.)

Country	Basic requirements		1. Institutions		2. Infrastructure		3. Macroeconomy		4. Health and primary education	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Mauritius	64	4.51	53	3.83	46	3.97	89	4.06	89	6.18
Mexico	55	4.61	73	3.44	67	3.32	34	4.85	37	6.83
Moldova	93	3.98	94	3.12	78	2.94	80	4.21	102	5.65
Mongolia	98	3.89	96	3.10	107	2.28	102	3.70	76	6.50
Morocco	70	4.38	70	3.53	68	3.26	79	4.21	74	6.54
Mozambique	112	3.61	85	3.27	96	2.51	108	3.55	109	5.09
Namibia	66	4.46	50	3.87	40	4.15	57	4.46	104	5.35
Netherlands	9	5.77	13	5.27	7	6.12	39	4.75	14	6.94
New Zealand	15	5.66	7	5.47	23	5.07	21	5.17	18	6.93
Nicaragua	91	4.02	97	3.08	102	2.36	92	3.97	56	6.68
Nigeria	78	4.26	76	3.40	92	2.61	20	5.20	100	5.82
Norway	5	5.94	5	5.54	14	5.60	4	5.67	9	6.96
Pakistan	105	3.70	75	3.41	76	3.07	69	4.32	115	4.01
Panama	59	4.54	71	3.51	61	3.55	72	4.28	39	6.82
Paraguay	94	3.96	117	2.37	108	2.21	56	4.48	44	6.80
Peru	82	4.20	99	3.06	88	2.64	55	4.48	68	6.60
Philippines	81	4.20	89	3.21	90	2.62	58	4.46	77	6.49
Poland	57	4.60	66	3.61	50	3.80	83	4.14	38	6.83
Portugal	30	5.29	23	4.86	26	4.88	53	4.53	26	6.90
Qatar	27	5.34	19	5.04	47	3.96	8	5.58	45	6.78
Romania	76	4.32	83	3.32	66	3.43	95	3.88	64	6.64
Russian Federation	60	4.53	104	2.94	53	3.71	36	4.81	60	6.65
Serbia and Montenegro	92	3.98	93	3.12	97	2.50	106	3.64	58	6.67
Singapore	3	6.05	1	5.92	5	6.19	9	5.48	69	6.60
Slovak Republic	47	4.74	51	3.84	48	3.91	66	4.35	31	6.86
Slovenia	32	5.14	46	4.13	29	4.69	35	4.84	22	6.92
South Africa	46	4.77	36	4.42	35	4.33	48	4.61	101	5.73
Spain	28	5.33	37	4.40	25	4.95	29	5.01	11	6.95
Sri Lanka	84	4.13	88	3.22	81	2.87	103	3.70	50	6.72
Sweden	7	5.80	18	5.09	12	5.85	17	5.28	2	6.98
Switzerland	6	5.91	6	5.51	4	6.20	30	4.97	4	6.97
Taiwan	19	5.60	22	4.88	15	5.55	23	5.13	32	6.85
Tajikistan	85	4.11	81	3.32	99	2.45	71	4.29	81	6.39
Tanzania	103	3.75	47	4.01	86	2.67	84	4.14	114	4.16
Thailand	34	5.10	40	4.35	37	4.22	11	5.45	85	6.36
Trinidad and Tobago	56	4.60	78	3.39	72	3.19	24	5.13	55	6.69
Tunisia	33	5.13	25	4.80	36	4.28	38	4.78	59	6.65
Turkey	89	4.05	56	3.76	64	3.44	116	2.98	93	6.03
Uganda	107	3.67	87	3.24	113	1.98	77	4.22	105	5.25
Ukraine	74	4.32	92	3.13	58	3.63	65	4.36	90	6.16
United Arab Emirates	23	5.51	24	4.83	24	4.97	7	5.63	70	6.59
United Kingdom	17	5.63	10	5.35	17	5.52	42	4.72	15	6.94
United States	18	5.61	16	5.21	8	6.06	62	4.39	47	6.77
Uruguay	54	4.61	42	4.20	57	3.63	98	3.76	34	6.84
Venezuela	79	4.23	116	2.47	77	2.96	45	4.68	43	6.80
Vietnam	68	4.43	63	3.66	85	2.69	44	4.69	54	6.69
Zimbabwe	113	3.43	86	3.25	87	2.65	114	3.04	111	4.76

Table 11: Global Competitiveness Index: Efficiency Enhancers

Country	Efficiency enhancers		5. Higher education and training		6. Market efficiency		7. Technological readiness	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Albania	95	3.02	93	3.19	100	3.43	98	2.44
Algeria	94	3.02	87	3.35	101	3.42	107	2.29
Argentina	57	3.81	35	4.68	84	3.65	62	3.11
Armenia	82	3.29	67	3.80	93	3.52	91	2.56
Australia	8	5.43	9	5.66	11	5.21	10	5.41
Austria	21	5.15	17	5.46	18	4.97	21	5.04
Azerbaijan	79	3.33	78	3.62	87	3.60	79	2.77
Bahrain	47	4.08	72	3.74	37	4.49	38	4.02
Bangladesh	100	2.95	103	2.68	76	3.85	106	2.31
Belgium	23	5.04	4	5.75	30	4.70	25	4.66
Benin	111	2.73	106	2.65	98	3.46	114	2.09
Bolivia	98	2.97	84	3.43	113	3.21	111	2.26
Bosnia and Herzegovina	91	3.14	81	3.57	91	3.53	105	2.33
Botswana	69	3.58	83	3.52	43	4.30	72	2.92
Brazil	51	3.89	50	4.19	55	4.14	51	3.35
Bulgaria	59	3.78	45	4.30	78	3.84	58	3.18
Cambodia	114	2.71	112	2.44	103	3.40	108	2.28
Cameroon	101	2.94	99	3.01	90	3.53	110	2.27
Canada	11	5.32	11	5.65	6	5.27	22	5.03
Chad	117	2.22	117	1.94	117	2.92	117	1.79
Chile	31	4.49	42	4.45	24	4.86	36	4.16
China	62	3.70	69	3.76	47	4.26	65	3.08
Colombia	67	3.63	64	3.83	53	4.19	75	2.86
Costa Rica	50	3.90	56	4.08	66	4.04	47	3.58
Croatia	60	3.75	54	4.10	77	3.85	54	3.31
Cyprus	40	4.26	39	4.53	51	4.21	37	4.05
Czech Republic	28	4.64	27	4.96	39	4.40	27	4.56
Denmark	3	5.60	3	5.82	5	5.31	2	5.69
Dominican Republic	85	3.26	94	3.18	96	3.49	63	3.10
East Timor	115	2.55	115	2.34	116	3.02	109	2.27
Ecuador	104	2.93	98	3.04	112	3.23	93	2.51
Egypt	68	3.59	66	3.82	68	3.99	70	2.95
El Salvador	73	3.53	86	3.38	50	4.21	69	2.99
Estonia	24	5.00	23	5.18	26	4.78	20	5.04
Ethiopia	116	2.48	116	2.25	114	3.15	116	2.03
Finland	5	5.54	1	6.13	12	5.10	12	5.40
France	18	5.18	5	5.75	20	4.91	24	4.86
Gambia	106	2.90	108	2.62	86	3.61	96	2.46
Georgia	88	3.23	80	3.60	83	3.69	100	2.41
Germany	19	5.16	15	5.48	22	4.90	16	5.11
Ghana	72	3.53	85	3.42	44	4.30	73	2.87
Greece	42	4.19	32	4.78	48	4.21	46	3.59
Guatemala	103	2.93	102	2.79	107	3.36	83	2.64
Guyana	102	2.93	95	3.16	105	3.39	112	2.25
Honduras	110	2.77	107	2.63	111	3.24	95	2.46
Hong Kong SAR	12	5.29	31	4.78	3	5.62	7	5.47
Hungary	30	4.50	30	4.79	36	4.54	35	4.17
Iceland	10	5.34	22	5.39	15	5.01	4	5.61
India	46	4.09	46	4.28	27	4.77	57	3.22
Indonesia	74	3.52	76	3.65	61	4.08	77	2.82
Ireland	14	5.23	21	5.40	13	5.08	13	5.20
Israel	22	5.11	20	5.41	21	4.90	23	5.00
Italy	36	4.35	33	4.69	59	4.10	33	4.26
Jamaica	52	3.87	71	3.75	54	4.15	42	3.71
Japan	17	5.19	16	5.46	16	5.00	17	5.09
Jordan	49	3.92	48	4.21	46	4.26	55	3.28
Kazakhstan	56	3.83	52	4.17	52	4.20	61	3.12
Kenya	83	3.29	90	3.23	75	3.86	78	2.79
Korea, Rep.	20	5.16	19	5.44	32	4.65	11	5.40
Kuwait	44	4.13	60	3.93	28	4.76	41	3.71
Kyrgyz Republic	92	3.08	75	3.69	92	3.52	115	2.03
Latvia	37	4.33	29	4.87	49	4.21	39	3.91
Lithuania	35	4.36	25	5.02	40	4.38	43	3.69
Luxembourg	26	4.76	51	4.19	19	4.92	14	5.17
Macedonia, FYR	81	3.32	62	3.91	97	3.47	88	2.58
Madagascar	109	2.79	110	2.52	94	3.50	103	2.36
Malawi	108	2.80	109	2.60	85	3.64	113	2.18
Malaysia	25	4.79	36	4.63	9	5.22	28	4.51
Mali	112	2.72	113	2.39	102	3.42	102	2.36
Malta	39	4.29	49	4.19	60	4.08	26	4.60

(cont'd.)

Table 11: Global Competitiveness Index: Efficiency Enhancers (cont'd.)

Country	Efficiency enhancers		5. Higher education and training		6. Market efficiency		7. Technological readiness	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Mauritius	58	3.78	63	3.91	71	3.93	48	3.52
Mexico	61	3.73	68	3.79	62	4.08	53	3.32
Moldova	89	3.22	82	3.55	89	3.56	92	2.55
Mongolia	80	3.33	65	3.83	88	3.59	90	2.56
Morocco	84	3.27	89	3.24	80	3.80	80	2.76
Mozambique	113	2.71	111	2.44	110	3.25	97	2.44
Namibia	86	3.25	100	3.01	79	3.83	71	2.92
Netherlands	16	5.21	13	5.55	14	5.03	18	5.05
New Zealand	13	5.24	18	5.46	10	5.22	19	5.05
Nicaragua	97	2.99	91	3.20	108	3.34	99	2.42
Nigeria	90	3.17	96	3.08	70	3.95	94	2.47
Norway	15	5.22	14	5.54	17	5.00	15	5.12
Pakistan	87	3.25	104	2.68	41	4.34	82	2.73
Panama	65	3.64	70	3.75	63	4.06	64	3.10
Paraguay	107	2.80	101	2.99	115	3.08	104	2.35
Peru	70	3.57	74	3.70	69	3.98	68	3.03
Philippines	63	3.67	61	3.92	64	4.05	67	3.06
Poland	38	4.30	28	4.92	42	4.33	45	3.65
Portugal	32	4.47	37	4.61	34	4.57	34	4.21
Qatar	45	4.13	59	3.94	35	4.54	40	3.91
Romania	55	3.84	44	4.33	74	3.87	52	3.32
Russian Federation	53	3.87	34	4.69	65	4.04	74	2.87
Serbia and Montenegro	75	3.43	58	4.00	99	3.46	76	2.84
Singapore	2	5.70	8	5.68	4	5.59	1	5.82
Slovak Republic	34	4.40	40	4.47	38	4.42	32	4.29
Slovenia	29	4.52	24	5.08	58	4.11	31	4.38
South Africa	43	4.17	47	4.22	33	4.63	44	3.66
Spain	27	4.68	26	5.00	31	4.67	30	4.38
Sri Lanka	78	3.37	79	3.61	72	3.89	85	2.61
Sweden	9	5.40	7	5.69	25	4.85	3	5.67
Switzerland	7	5.44	10	5.65	7	5.23	8	5.43
Taiwan	6	5.50	6	5.69	8	5.22	6	5.59
Tajikistan	99	2.96	97	3.06	104	3.40	101	2.41
Tanzania	105	2.90	114	2.36	81	3.77	89	2.57
Thailand	41	4.22	43	4.45	29	4.72	49	3.50
Trinidad and Tobago	66	3.63	73	3.71	67	4.04	59	3.14
Tunisia	48	4.02	38	4.53	45	4.27	56	3.27
Turkey	54	3.86	55	4.10	57	4.11	50	3.38
Uganda	96	3.00	105	2.67	82	3.74	86	2.60
Ukraine	64	3.64	41	4.46	73	3.87	87	2.58
United Arab Emirates	33	4.42	57	4.00	23	4.87	29	4.39
United Kingdom	4	5.56	12	5.63	2	5.64	9	5.42
United States	1	5.85	2	6.04	1	5.91	5	5.61
Uruguay	71	3.53	53	4.15	106	3.38	66	3.07
Venezuela	76	3.42	77	3.63	95	3.49	60	3.13
Vietnam	77	3.39	88	3.32	56	4.12	81	2.74
Zimbabwe	93	3.05	92	3.19	109	3.34	84	2.62

Table 12: Global Competitiveness Index: Innovation Factors

Country	Innovation factors		8. Business sophistication		9. Innovation	
	Rank	Score	Rank	Score	Rank	Score
Albania	112	2.64	107	3.14	115	2.14
Algeria	97	3.01	102	3.24	90	2.78
Argentina	52	3.72	50	4.25	56	3.18
Armenia	80	3.35	81	3.69	73	3.01
Australia	23	4.75	24	5.18	22	4.31
Austria	13	5.25	5	5.85	17	4.65
Azerbaijan	64	3.55	71	3.89	53	3.21
Bahrain	83	3.30	62	4.03	102	2.57
Bangladesh	90	3.13	86	3.59	98	2.68
Belgium	15	5.19	10	5.74	18	4.64
Benin	100	2.94	105	3.19	95	2.69
Bolivia	114	2.57	116	2.90	112	2.24
Bosnia and Herzegovina	98	2.97	94	3.36	101	2.59
Botswana	77	3.37	84	3.60	61	3.15
Brazil	36	4.03	33	4.63	39	3.42
Bulgaria	74	3.39	79	3.76	72	3.01
Cambodia	113	2.61	115	2.91	110	2.32
Cameroon	84	3.29	87	3.56	70	3.03
Canada	16	5.14	17	5.35	12	4.92
Chad	116	2.50	114	2.92	116	2.09
Chile	32	4.09	31	4.77	41	3.41
China	48	3.83	58	4.11	35	3.56
Colombia	49	3.74	48	4.31	58	3.16
Costa Rica	37	4.01	38	4.54	37	3.49
Croatia	65	3.54	67	3.98	64	3.10
Cyprus	41	3.93	35	4.58	50	3.28
Czech Republic	27	4.44	29	4.92	26	3.95
Denmark	7	5.47	4	5.88	10	5.06
Dominican Republic	93	3.10	80	3.74	107	2.45
East Timor	117	2.39	117	2.61	114	2.17
Ecuador	101	2.94	91	3.41	106	2.47
Egypt	71	3.47	74	3.87	66	3.07
El Salvador	73	3.45	51	4.21	96	2.68
Estonia	34	4.05	40	4.51	34	3.59
Ethiopia	111	2.67	113	2.92	108	2.42
Finland	5	5.68	12	5.70	4	5.66
France	9	5.41	6	5.83	11	4.98
Gambia	108	2.78	103	3.22	109	2.35
Georgia	103	2.94	106	3.16	93	2.72
Germany	3	5.86	2	6.23	5	5.49
Ghana	53	3.70	65	3.99	40	3.42
Greece	47	3.84	47	4.32	45	3.36
Guatemala	94	3.08	83	3.64	103	2.52
Guyana	110	2.75	104	3.22	111	2.29
Honduras	104	2.93	93	3.37	105	2.48
Hong Kong SAR	21	4.80	14	5.40	24	4.20
Hungary	39	3.98	49	4.28	32	3.69
Iceland	18	4.99	21	5.29	16	4.68
India	26	4.48	27	5.02	27	3.94
Indonesia	55	3.63	70	3.93	47	3.32
Ireland	19	4.91	15	5.39	19	4.44
Israel	10	5.40	18	5.34	6	5.47
Italy	30	4.32	25	5.12	36	3.52
Jamaica	59	3.59	66	3.98	55	3.20
Japan	2	5.98	1	6.28	2	5.68
Jordan	50	3.73	60	4.04	42	3.41
Kazakhstan	58	3.59	63	4.03	59	3.16
Kenya	51	3.72	55	4.15	48	3.29
Korea, Rep.	17	5.06	19	5.31	15	4.81
Kuwait	61	3.58	53	4.19	78	2.97
Kyrgyz Republic	109	2.75	100	3.28	113	2.23
Latvia	62	3.57	54	4.16	74	2.99
Lithuania	40	3.94	37	4.55	46	3.34
Luxembourg	24	4.69	16	5.38	25	4.00
Macedonia, FYR	81	3.31	82	3.67	82	2.94
Madagascar	95	3.07	99	3.30	87	2.83
Malawi	99	2.97	95	3.34	100	2.60
Malaysia	25	4.67	28	4.98	21	4.37
Mali	91	3.13	98	3.31	81	2.95
Malta	70	3.47	59	4.09	85	2.86

(cont'd.)

Table 12: Global Competitiveness Index: Innovation Factors (cont'd.)

Country	Innovation factors		8. Business sophistication		9. Innovation	
	Rank	Score	Rank	Score	Rank	Score
Mauritius	46	3.85	36	4.57	63	3.12
Mexico	57	3.60	56	4.13	67	3.07
Moldova	96	3.05	97	3.33	92	2.76
Mongolia	105	2.89	112	2.99	89	2.79
Morocco	78	3.37	75	3.85	84	2.88
Mozambique	106	2.86	111	3.04	97	2.68
Namibia	89	3.15	85	3.59	94	2.71
Netherlands	12	5.26	11	5.71	14	4.81
New Zealand	22	4.75	22	5.24	23	4.25
Nicaragua	107	2.79	110	3.06	104	2.51
Nigeria	72	3.46	72	3.88	68	3.05
Norway	20	4.81	23	5.23	20	4.39
Pakistan	63	3.57	57	4.12	71	3.02
Panama	54	3.68	52	4.21	62	3.15
Paraguay	115	2.56	109	3.11	117	2.02
Peru	82	3.31	69	3.97	99	2.64
Philippines	56	3.61	43	4.36	86	2.85
Poland	45	3.87	45	4.34	44	3.40
Portugal	35	4.04	46	4.33	29	3.75
Qatar	67	3.52	73	3.88	60	3.15
Romania	76	3.37	78	3.76	75	2.98
Russian Federation	66	3.53	77	3.78	49	3.29
Serbia and Montenegro	85	3.19	90	3.41	79	2.96
Singapore	14	5.24	20	5.30	9	5.18
Slovak Republic	43	3.88	44	4.35	43	3.40
Slovenia	31	4.20	32	4.74	33	3.65
South Africa	29	4.32	30	4.80	28	3.85
Spain	28	4.41	26	5.11	31	3.71
Sri Lanka	68	3.52	64	3.99	69	3.04
Sweden	6	5.50	9	5.75	8	5.25
Switzerland	4	5.73	7	5.80	3	5.66
Taiwan	8	5.44	13	5.52	7	5.37
Tajikistan	102	2.94	108	3.12	91	2.77
Tanzania	88	3.16	96	3.34	77	2.98
Thailand	38	4.01	39	4.52	38	3.49
Trinidad and Tobago	69	3.49	61	4.04	80	2.95
Tunisia	33	4.08	42	4.45	30	3.72
Turkey	44	3.88	41	4.51	51	3.24
Uganda	86	3.18	101	3.28	65	3.08
Ukraine	60	3.59	68	3.97	54	3.21
United Arab Emirates	42	3.90	34	4.59	52	3.22
United Kingdom	11	5.33	8	5.77	13	4.88
United States	1	6.07	3	6.17	1	5.98
Uruguay	75	3.39	76	3.79	76	2.98
Venezuela	92	3.11	92	3.39	88	2.83
Vietnam	79	3.36	88	3.55	57	3.18
Zimbabwe	87	3.17	89	3.43	83	2.90

Table 13: Top performers in the nine pillars of the Global Competitiveness Index

Country	Institutions	Infrastructure	Macroeconomy	Health and primary education	Higher education and training	Market efficiency	Technological readiness	Business sophistication	Innovation
Singapore	1	5	9	69	8	4	1	20	9
Denmark	2	1	16	23	3	5	2	4	10
Chile	27	34	1	25	42	24	36	31	41
Japan	26	9	93	1	16	16	17	1	2
Finland	3	10	10	10	1	12	12	12	4
United States	16	8	62	47	2	1	5	3	1

Conclusions

This chapter has presented a detailed description of the 2005 results for the Growth Competitiveness Index, an indicator with which the Forum has been associated since 2001. This index represented a major step forward in the Forum's efforts to systematize its work in the area of competitiveness, capturing a broad range of factors seen to be essential to a better understanding of the determinants of growth.

The Global Competitiveness Index is a logical extension of the Forum's competitiveness work. It builds on the strengths of the work done by Sachs and McArthur (2002), by widening the scope of analysis through the introduction of concepts not previously considered, such as the role of gains in efficiency associated with the operation of goods, labor, and financial markets, the quality of a country's infrastructure, the state of its public health and human capital endowment, the degree of sophistication of its firms, among others. Our strategy—already announced last year upon publication of *The Global Competitiveness Report 2004–2005*—is to make the Global Competitiveness Index the centerpiece of our analytical work. The conceptual framework upon which this index has been built and its methodological underpinnings are strong, and its broader coverage of factors central to a proper study of the growth process is yet another attractive feature. Both the Growth and the Global indexes will co-exist for a while longer. The former, because it provides a useful link to the past; the latter, because it represents a deepening of the Forum's competitiveness work. However, the Global Competitiveness Index is expected to become the main analytical tool in our competitiveness work, and in 2006, it will be the results of this index that will be featured.

Notes

1 See Rogoff's contribution in Chapter 2.2 of this volume: "Rethinking Exchange Rate Competitiveness."

2 Indeed, few things make the importance of the exchange rate more evident than the central role it has played in any credible analysis of emerging market crises over the past decade. Unsustainable exchange rate policies, together with other structural and institutional factors, have contributed to major drops in output and income, from East Asia to Russia, Turkey, and Argentina, to name a few. On another front, it is difficult to analyze China's impressive growth performance during the past decade without reference to the key role played by the exchange rate in boosting the profitability of China's manufacturing sector.

3 See Chapter 2.2 in *The Global Competitiveness Report 2004–2005*, p. 51.

4 Acemoglu et al., 2001, p. 1369.

5 McArthur and Sachs, 2002.

6 According to Transparency International, Finland is the least corrupt country on earth. See www.transparency.org/surveys.

7 Daniel Pinto (2005) notes an interesting "French paradox": "While public officials, unions and the majority of the French population scream and shout to defend an antiquated version of capitalism, French companies have quietly been at the forefront of globalization, achieving world leading positions in a number of highly competitive sectors, from automotive to energy, food and banking."

8 The move of peasants from the countryside, where labor productivity is close to zero, into the cities, where it is much higher and captured in official statistics, has been central to the growth performance of the past 20 years.

9 Income per capita levels vary widely, from Egypt's US\$1,049, to Qatar's US\$46,641 (International Monetary Fund, 2005).

10 See World Bank (2003).

11 For more detailed analyses of the region's weaknesses and strong points, see *The Arab World Competitiveness Report 2005*, World Economic Forum.

12 Indeed, Jeffrey Sachs, author of *The End of Poverty* (2005) is painfully and eloquently aware of them.

13 Sala-i-Martin and Artadi, 2004, p. 52.

14 On this and related issues, see the excellent work by de Soto (2000).

15 See Kaufmann and Vishwanath (2001).

16 See, for instance, Fischer (1993).

17 See Lucas (1988) and Kremer (1993).

18 On some aspects of technological diffusion, see Basu and Weil (1998).

19 See Porter (2004) for a fuller discussion.

20 On the role of innovation in development and economic growth, see the works by Grossman and Helpman (1991), Krugman (1979), Romer (1987 and 1990), Barro and Sala-i-Martin (1995), and Schumpeter (1934).

21 Sala-i-Martin and Artadi, 2004, p. 72.

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Appendix A: Composition of the Growth Competitiveness Index

The Growth Competitiveness Index is composed of three component indexes: the technology index, the public institutions index, and the macroeconomic environment index. These indexes are calculated on the basis of both “hard data” and “Survey data.”

As explained in the chapter, the sample of countries is divided into two groups: the core innovators and the non-core innovators. Core innovators are countries with more than 15 US utility patents registered per million population; non-core innovators are all other countries.

For the core innovators, we place extra emphasis on the role of innovation and technology. The weightings for the core innovators are as follows:

$$\begin{aligned} \text{Growth Competitiveness} \\ \text{Index for core innovators} &= 1/2 \text{ technology index} \\ &+ 1/4 \text{ public institutions index} \\ &+ 1/4 \text{ macroeconomic environment} \\ &\text{index} \end{aligned}$$

For the non-core innovators, we calculate the Growth Competitiveness Index values as a simple average of the three component indexes:

$$\begin{aligned} \text{Growth Competitiveness} \\ \text{Index for non-core} \\ \text{innovators} &= 1/3 \text{ technology index} \\ &+ 1/3 \text{ public institutions index} \\ &+ 1/3 \text{ macroeconomic environment} \\ &\text{index} \end{aligned}$$

Technology index components

The technology index is calculated for the core and non-core innovators as follows:

$$\begin{aligned} \text{technology index for} \\ \text{core innovators} &= 1/2 \text{ innovation subindex} \\ &+ 1/2 \text{ information and communication} \\ &\text{technology subindex} \end{aligned}$$

$$\begin{aligned} \text{technology index for} \\ \text{non-core innovators} &= 1/8 \text{ innovation subindex} \\ &+ 3/8 \text{ technology transfer subindex} \\ &+ 1/2 \text{ information and communication} \\ &\text{technology subindex} \end{aligned}$$

Innovation subindex

$$\begin{aligned} \text{innovation subindex} &= 1/4 \text{ Survey data} \\ &+ 3/4 \text{ hard data} \end{aligned}$$

Innovation Survey questions

- 3.01 What is your country's position in technology relative to world leaders'?
- 3.02 Are companies in your country unable/aggressive in absorbing new technology?
- 3.06 How much do companies in your country spend on R&D relative to other countries?
- 3.07 What is the extent of business collaboration in R&D with local universities?

Innovation hard data

- 3.17 US utility patents granted per million population
- 4.17 Gross tertiary enrollment rate

Technology transfer subindex

$$\begin{aligned} \text{technology transfer} \\ \text{subindex} &= \text{unweighted average of two technology} \\ &\text{transfer Survey questions} \end{aligned}$$

- 3.04 Is foreign direct investment in your country an important source of new technology?
- 3.03 Is foreign technology licensing in your country a common means of acquiring new technology?

Information and communication technology (ICT) subindex

$$\begin{aligned} \text{information and} \\ \text{communication} \\ \text{technology subindex} &= 1/3 \text{ information and communication} \\ &\text{technology Survey data} \\ &+ 2/3 \text{ information and communication} \\ &\text{technology hard data} \end{aligned}$$

Information and communication technology Survey questions

- 3.11 How extensive is Internet access in schools?
- 3.12 Is there sufficient competition among ISPs in your country to ensure high quality, infrequent interruptions and low prices?
- 3.13 Is ICT an overall priority for the government?
- 3.14 Are government programs successful in promoting the use of ICT?
- 3.15 Are laws relating to ICT (electronic commerce, digital signatures, consumer protection) well developed and enforced?

Information and communication technology hard data

- 3.18 Cellular mobile subscribers per 100 inhabitants
- 3.19 Internet users per 10,000 inhabitants
- 3.20 Internet hosts per 10,000 inhabitants
- 5.08 Main telephone lines per 100 inhabitants
- 3.21 Personal computers per 100 inhabitants

(cont'd.)

Appendix A: Composition of the Growth Competitiveness Index (cont'd.)

Public institutions index components

public institutions index = $\frac{1}{2}$ contracts and law subindex
+ $\frac{1}{2}$ corruption subindex

Contracts and law subindex

- 6.01 Is the judiciary in your country independent from political influences of members of government, citizens or firms?
- 6.03 Are financial assets and wealth clearly delineated and well protected by law?
- 6.08 Is your government neutral among bidders when deciding among public contracts?
- 6.16 Does organized crime impose significant costs on business?

Corruption subindex

- 6.19 How commonly are bribes paid in connection with import and export permits?
- 6.20 How commonly are bribes paid when getting connected with public utilities?
- 6.21 How commonly are bribes paid in connection with annual tax payments?

Macroeconomic environment index components

macroeconomic
environment index = $\frac{1}{2}$ macroeconomic stability subindex
+ $\frac{1}{4}$ country credit rating
+ $\frac{1}{4}$ government waste

Macroeconomic stability subindex

macroeconomic
stability subindex = $\frac{5}{7}$ macroeconomic stability hard data
+ $\frac{2}{7}$ macroeconomic stability Survey
data

Macroeconomic stability Survey questions

- 2.01 Is your country's economy likely to be in a recession next year?
- 2.07 Has obtaining credit for your company become easier or more difficult over the past year?

Macroeconomic stability hard data

- 2.13 Government surplus/deficit
- 2.14 National savings rate
- 2.16 Inflation
- 2.15 Real effective exchange rate
- 2.17 Lending–borrowing interest rate spread
- 2.20 Government debt

2.21 Institutional Investor country credit rating

Government waste variable

- 6.06 Is the composition of public spending in your country wasteful, or does it provide necessary goods and services not provided by the market?

Appendix B: Composition of the Global Competitiveness Index

This appendix provides details on how the Global Competitiveness Index is constructed. All of the Survey and hard data variables used in this index can be found in the data tables section of this *Report* with more detailed descriptions.

1st Pillar: Institutions

A. Public institutions

1. **Property rights**
 - 6.03 Property rights
2. **Ethics and corruption**
 - 6.24 Diversion of public funds
 - 6.26 Public trust of politicians
3. **Undue influence**
 - 6.01 Judicial independence
 - 6.08 Favoritism in decisions of government officials
4. **Government inefficiency (red tape, bureaucracy and waste)**
 - 6.06 Wastefulness of government spending
 - 6.07 Burden of government regulation
5. **Security**
 - 2.02 Business costs of terrorism
 - 6.14 Reliability of police services
 - 6.15 Business costs of crime and violence
 - 6.16 Organized crime

B. Private institutions

1. **Corporate ethics**
 - 8.04 Ethical behavior of firms
2. **Corporate accountability**
 - 8.16 Efficacy of corporate boards
 - 8.21 Protection of minority shareholders' interests
 - 8.23 Strength of auditing and reporting standards

2nd Pillar: Infrastructure

- 5.01 Overall infrastructure quality
- 5.02 Railroad infrastructure development
- 5.03 Port infrastructure quality
- 5.04 Air transport infrastructure quality
- 5.05 Quality of electricity supply
- 5.08 Telephone lines (hard data)

3rd Pillar: Macroeconomy

- 2.13 Government surplus/deficit (hard data)
- 2.14 National savings rate (hard data)
- 2.16 Inflation (hard data)
- 2.17 Interest rate spread (hard data)
- 2.20 Government debt/GDP ratio (hard data)
- 2.15 Real effective exchange rate (hard data)

4th Pillar: Health and primary education

A. Health

- 4.04 Medium-term business impact of malaria
- 4.05 Medium-term business impact of tuberculosis
- 4.06 Medium-term business impact of HIV/AIDS
- 4.10 Infant mortality (hard data)
- 4.11 Life expectancy at birth (hard data)
- 4.12 Tuberculosis prevalence (hard data)
- 4.13 Malaria prevalence (hard data)
- 4.14 HIV/AIDS prevalence (hard data)

B. Primary education

- 4.15 Gross primary enrollment (hard data)

5th Pillar: Higher education and training

A. Quantity of education

- 4.16 Gross secondary enrollment (hard data)
- 4.17 Gross tertiary enrollment (hard data)

B. Quality of education system

- 4.01 Quality of the educational system
- 4.03 Quality of math and science education
- 8.15 Quality of management schools

C. On-the-job training

- 7.09 Local availability of specialized research and training services
- 8.11 Extent of staff training

6th Pillar: Market efficiency

A. Goods markets: distortions, competition and size

1. **Distortions**
 - 2.12 Agricultural policy costs
 - 6.02 Efficiency of legal framework
 - 6.11 Extent and effect of taxation
 - 7.10 Number of procedures to start business (hard data)
 - 7.11 Time required to start a business (hard data)
2. **Competition**
 - Domestic competition**
 - 7.01 Intensity of local competition
 - 7.02 Effectiveness of anti-trust policy
 - Foreign competition**
 - 2.19 Imports (hard data)
 - 2.09 Prevalence of trade barriers
 - 8.22 Foreign ownership restrictions
3. **Size**
 - Local markets**
 - GDP – exports + imports (hard data)
 - Foreign markets (exports)**
 - 2.18 Exports (hard data)

(cont'd.)

Appendix B: Composition of the Global Competitiveness Index (cont'd.)

B. Labor markets: flexibility and efficiency

1. Flexibility

- 8.17 Hiring and firing practices
- 8.18 Flexibility of wage determination
- 8.19 Cooperation in labor/employer relations

2. Efficiency

- 8.14 Reliance on professional management
- 8.20 Pay and productivity
- 4.08 Brain drain
- 4.09 Private sector employment of women

C. Financial markets: sophistication and openness

- 2.03 Financial market sophistication
- 2.05 Ease of access to loans
- 2.06 Venture capital availability
- 2.04 Soundness of banks
- 2.08 Local equity market access

7th Pillar: Technological readiness

- 3.01 Technological readiness
- 3.02 Firm-level technology absorption
- 3.15 Laws relating to ICT
- 3.04 FDI and technology transfer
- 3.18 Cellular telephones (hard data)
- 3.19 Internet users (hard data)
- 3.21 Personal computers (hard data)

8th Pillar: Business sophistication

A. Networks and supporting industries

- 7.05 Local supplier quantity
- 7.06 Local supplier quality

B. Sophistication of firms operations and strategy

- 8.05 Production process sophistication
- 8.06 Extent of marketing
- 8.08 Control of international distribution
- 8.12 Willingness to delegate authority
- 8.01 Nature of competitive advantage
- 8.02 Value chain presence

9th Pillar: Innovation

- 3.05 Quality of scientific research institutions
- 3.06 Company spending on research and development
- 3.07 University/industry research collaboration
- 3.08 Government procurement of advanced technology products
- 3.09 Availability of scientists and engineers
- 3.17 Utility patents (hard data)
- 6.04 Intellectual property protection
- 8.03 Capacity for innovation

Appendix C: Technical notes on the construction of the competitiveness indexes

Combining hard data and Survey data

The responses to the Executive Opinion Survey are what we refer to as Survey data, with responses ranging from 1 to 7; the hard data were collected from various sources, described in the Technical Notes and Sources at the end of the *Report*. All of the data used in the calculation of the Competitiveness Indexes can be found in the data tables section of the *Report*.

The standard formula for converting each hard data variable to the 1-to-7 scale is:

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

The sample minimum and sample maximum are the lowest and highest values of the overall sample, respectively.

For some variables, a higher value indicates a worse outcome. For example, high levels of budget deficits are bad. In this case, we “reverse” the series, by subtracting the newly created variable from 8.

In some instances, adjustments were made to account for extreme outliers in the data.

How we treat inflation

To capture the idea that both high inflation and deflation are detrimental to the economy, while no consensus yet exists in the literature on the specific threshold at which lower levels of inflation become detrimental, inflation enters the model in a U-shaped manner as follows: for values of inflation between 0 and 3 percent, a country receives the highest possible score of 7. Beyond this range, both inflation and deflation receive negative scores. Scores become more negative as they move away from these values, in a linear fashion. We use this treatment for inflation in both the Growth and Global Competitiveness Indexes.

How we measure the impact of disease

Within the 4th pillar of the Global Competitiveness Index, the impact of a disease on competitiveness depends not only on its incidence, but on how costly this incidence is for business. Therefore, to estimate the economic impact of disease, we combine hard data on incidence (on malaria, tuberculosis, and HIV) with Survey questions on the cost of these diseases to business.

To combine these data we first take the ratio of each country’s disease prevalence, relative to the highest prevalence in the world. We then multiply the inverse of this ratio (to take into account that low values are “good”) with the Survey average. This product is then normalized to a 1-to-7 scale. Note that countries with a zero prevalence rate will always obtain a 7 in the ranking, regardless of what the Survey data says.

How we measure domestic and foreign competition

Within the goods market efficiency subindex of the 6th pillar of the Global Competitiveness Index, the component called *competition* is weighted in a particular fashion. The Survey data provides an indication of the extent to which competition is distorted in both the domestic and the foreign market. The relative importance of these distortions depends, however, on the relative size of domestic versus foreign competition. In order to capture this interaction, we create two new variables that indicate this relative importance. 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 those Survey questions related to local competition, and $M/(C + I + G + X + M)$ to those related to foreign competition.

How we measure market size

Within the goods market efficiency subindex of the 6th pillar of the Global Competitiveness Index, the component called *size* measures the size of the market, to which local firms have access. This has two components: the size of the local market and the foreign market (exports). The local market should be the sum of consumption (C), investment (I), and government spending (G). Although we lack data on these three macro components, we do have data on exports (X), imports (M) and GDP. By definition, $GDP = C + I + G + (X - M)$. Therefore, we compute the local market as $GDP + M - X$.