

Building the Microeconomic Foundations of Prosperity: Findings from the Microeconomic Competitiveness Index¹

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Introduction

Competitiveness has become a central preoccupation of both advanced and developing countries in an increasingly open and integrated world economy. Despite its acknowledged importance, the concept of competitiveness is often misunderstood. Here, we define *competitiveness* concretely and outline its direct relationship to a nation's standard of living. The Microeconomic Competitiveness Index provides a conceptual framework and a data-rich approach to measuring and analyzing the fundamental competitiveness of a large number of countries in a comparative context.

Much discussion of competitiveness and economic development has focused on the macroeconomic, political, legal, and social circumstances that underpin a successful economy. It is well understood that sound fiscal and monetary policies, a trusted and efficient legal context, a stable set of democratic institutions, and progress on social conditions contribute greatly to a healthy economy. However, these broader conditions are necessary but not sufficient, providing the opportunity to create wealth but not by themselves creating wealth. Wealth is actually created in the microeconomic level of the economy, rooted in the sophistication of company strategies and operating practices as well as in the quality of the microeconomic business environment in which a nation's firms compete. Unless there is appropriate improvement at the microeconomic level, macroeconomic, political, legal, and social reforms will not bear full fruit.

Beginning in 1998, we began an effort to examine statistically the microeconomic foundations of competitiveness and prosperity across a wide array of countries, a daunting task given the myriad of attributes involved. The microeconomic approach focuses on measuring and comparing the complex array of national circumstances that support a high and sustainable level of productivity, measured by GDP per capita. The effort aims to move beyond the examination of broad, aggregate variables typical of most economic growth analyses and provide a framework for countries and companies to understand their detailed competitive strengths and weaknesses. The microeconomic approach also highlights the fact that improvement in competitive potential is not a simple linear process in which all nations must progress on a constant set of dimensions. Instead, successful economic development requires nations to develop the ability to compete in increasingly sophisticated ways to support higher levels of wages and national income.

The Microeconomic Competitiveness Index examines the microeconomic bases of a nation's prosperity measured by its level of GDP per capita. The focus is on whether current prosperity is sustainable, and on the specific areas that must be addressed if GDP per capita is to achieve higher levels in the future. A separate Growth Competitiveness Index, discussed in the previous chapter of this *Report*, examines the sources of GDP per capita growth, which is more dependent than microeconomic prosperity on investment rates and other macroeconomic policies. The sustainable level of current GDP per capita and its rate of growth are related in the long term, and each area requires its own distinctive policy agenda.

This year's Microeconomic Competitiveness Index includes 80 countries, up from 75 last year. One country, Egypt, had to be dropped because its government chose not to make all the Survey responses available. In this chapter, we present findings on the competitiveness of individual countries, on the different challenges of countries on different stages of economic development, and on the patterns of change in microeconomic conditions across all countries.

The analysis here proceeds pragmatically, making use of available data and statistical methods that remain far from perfect. It would be desirable to supplement our Survey with more "hard" data but there are simply no such data available. However, our Survey data prove to be powerful in revealing differences across countries and in capturing national conditions. We provide new tests to document the statistical validity of the Survey data. Establishing causality also remains a challenge because of still limited time-series data. However, even if definitive tests of causality are not yet possible, understanding the microeconomic correlates of prosperity remains crucial. There may be a natural tendency for some microeconomic conditions to improve as GDP per capita grows but the differences across countries reveal that this improvement is far from automatic. Microeconomic conditions can be influenced markedly by purposeful action in both government and the private sector, so that the findings here carry strong implications for policy.

Despite more countries and enhancements in the model, the statistical findings are remarkably stable and robust compared with the 2001 and earlier *Reports*. The results again provide strong support for the importance of microeconomic competitiveness for economic development and prosperity. Our findings also verify the striking and regular pattern of microeconomic changes that accompany economic development.

The measured microeconomic differences among nations prove to account for 81 percent of the variation across countries in the level of GDP per capita.² These findings highlight the pressing need to better incorporate microeconomic competitiveness into efforts to stimulate economic growth. In advanced countries, which have largely gotten their macro policies right, it is micro reform that holds the key to reversing unemployment problems, to growing exports, and to translating economic growth into a rising standard of living. The United Kingdom, which improved its ranking markedly this year, is an example of a country that has begun to address microeconomic reforms after a phase of macroeconomic consolidation.

Developing countries, again and again, are tripped up by microeconomic failures. By accessing global capital markets, countries can engineer spurts of growth through macroeconomic and financial reforms that bring floods of capital and create the illusion of progress as construction cranes dot the skyline. Without microeconomic reforms, however, growth will be snuffed out as exports and jobs fail to materialize, wages stagnate, and the return on investments proves disappointing. This disappointment, and the austerity that results from such cycles, is at the heart of the backlash against globalization.

Argentina is a vivid example of this problem. Argentina's progress on macroeconomic conditions and investments in physical infrastructure masked severe weaknesses at the microeconomic level. These weaknesses meant that exports did not grow, few jobs were created, and productivity growth was slow. Pegging the Argentine peso to the US dollar, while valuable in establishing macroeconomic stability, meant that Argentine productivity growth had to match or exceed US productivity growth rates to avoid growing overvaluation. Microeconomic weaknesses held back productivity growth, and collapse was inevitable.

Successful economic development requires progress on multiple fronts simultaneously. Reform efforts need to be tightly connected to the country's current stage of development. As an economy progresses, the constraints to its continued advancement shift. At strategic points in the development process, the whole basis of national competitiveness must be transformed. This requires changing many aspects of company strategy as well as new requirements for the national business environment. Our analysis provides the conceptual framework and comparative data to define such national agendas and measure progress.

What is competitiveness?

Competitiveness remains a concept that is not well understood, despite widespread acceptance of its importance. The most intuitive definition of *competitiveness* is a country's share of world markets for its products. This makes competitiveness a zero-sum game, because one country's gain comes at the expense of others. This view of competitiveness is used to justify intervention to skew market outcomes in a nation's favor (so-called industrial policy). It also underpins policies to hold down local wages and devalue the nation's currency, both aimed at expanding exports. In fact, it is still often said that lower wages or devaluation "make a nation more competitive." Business leaders are drawn to the market-share view because these policies seem to address their immediate competitive concerns.

The misleading metaphor of direct market competition, however, is a deeply flawed view of competitiveness, and acting on it works against national economic progress. The need for low wages reveals a lack of competitiveness and holds down prosperity. Devaluation causes a nation to take a collective pay cut by discounting its products and services in world markets while paying more for the goods and services it purchases abroad. Exports based on low wages or a cheap currency, then, do not support an attractive standard of living.

To understand competitiveness, the starting point must be the sources of a nation's prosperity. A nation's standard of living is determined by the productivity of its economy, which is measured by the value of goods and services produced per unit of the nation's human, capital, and natural resources. Productivity depends both on the value of a nation's products and services, measured by the prices they can command in open markets, and the efficiency with which they can be produced.

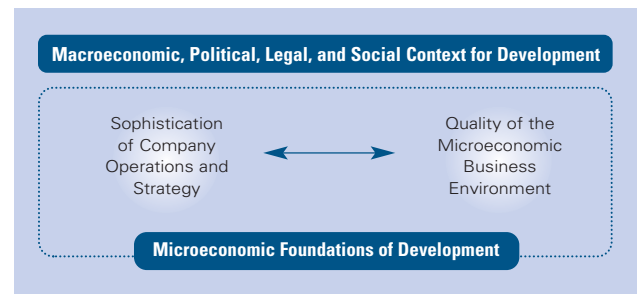
True competitiveness, then, is measured by productivity. Productivity allows a nation to support high wages, a strong currency, and attractive returns to capital—and with them a high standard of living. Productivity is the goal, not exports *per se*. Only if a nation expands exports of products or services it can produce productively will national productivity rise. Domestic or foreign firms are neither good nor bad for competitiveness *per se*; what matters is the productivity of their activities in a country. The productivity of local industries has a major influence on the cost of living and the cost of doing business, not to mention their level of wages. The productivity of the entire economy matters for the standard of living, then, not just the traded sector.

The world economy is not a zero-sum game. Many nations can improve their prosperity if they can improve productivity. The central challenge in economic development, then, is how to create the conditions for rapid and sustained productivity growth.

Microeconomic foundations of productivity

Stable political, legal, and social institutions and sound macroeconomic policies create the potential for improving national prosperity. But wealth is actually created at the microeconomic level—in the ability of firms to create valuable goods and services using efficient methods. Only in this way can a nation support high wages and the attractive returns to capital necessary to support sustained investment (see Figure 1).

Figure 1: Determinants of productivity and productivity growth



The microeconomic foundations of productivity rest on two interrelated areas: (1) the sophistication with which domestic companies or foreign subsidiaries operating in the country compete, and (2) the quality of the microeconomic business environment.

The productivity of countries is ultimately set by the productivity of their companies. An economy cannot be competitive unless companies operating there are competitive, whether they are domestic firms or subsidiaries of foreign companies. However, the sophistication of companies is inextricably intertwined with the quality of the national business environment. More sophisticated company strategies require more highly skilled people, better information, improved infrastructure, better suppliers, more advanced research institutions, and stronger competitive pressure, among other things.

Companies in a nation must upgrade their ways of competing if successful economic development is to occur. A nation's companies must shift from competing on comparative advantages (low-cost labor or natural resources) to competing on competitive advantages arising from unique products and processes. Companies must move from tapping foreign distribution channels to building their own channels. Some of the transitions in corporate strategies and operating practices required for successful development are shown in Figure 2.

Figure 2: Company sophistication and economic development

Low-Income Countries	Middle-Income Countries	High-Income Countries
<ul style="list-style-type: none"> • Competitive advantages beyond cheap inputs • Production process sophistication • Degree of customer orientation • Extent of marketing • Extent of regional sales • Reliance on professional management 	<ul style="list-style-type: none"> • Broad value chain presence • Control of international distribution • Extent of branding • Company spending on R&D • Prevalence of foreign technology licensing • Extent of staff training 	<ul style="list-style-type: none"> • Capacity for innovation • Breadth of international markets • Extent of incentive compensation • Willingness to delegate authority

What were strengths in competing at earlier stages of development become weaknesses at more advanced levels of development. Rapid copying of foreign technology, for example, must give way to internal development of innovative technology if a country is to compete on the advanced-economy level. Necessary changes are often resisted by the corporate sector because past approaches were profitable and because old habits are deeply ingrained.

Moving to more sophisticated ways of competing depends on parallel changes in the microeconomic business environment. The business environment can be understood in terms of four interrelated areas: the quality of factor (input) conditions, the context for firm strategy and rivalry, the quality of local demand conditions, and the presence of the related and supporting industries. Because of their graphical representation (see Figure 3), the four areas have collectively become referred to as the *diamond*.

Government plays an inevitable role in economic development because it affects many aspects of the business environment. Government shapes factor conditions, for example, through its training and infrastructure policies. The sophistication of home demand derives in part from regulatory standards, consumer protection laws, government purchasing practices, and openness to imports. Similar policy influences are present in all four parts of the diamond. There are distinct roles for government in improving the business environment at the national, state, and local levels.³ National productivity can also be enhanced through coordinating policies among neighboring countries. A concerted effort to improve the business environment is needed at all these governmental levels.

In addition to government, however, many other national and local institutions in an economy have a role in economic development. Universities, schools, infrastructure providers, standard-setting agencies, and a myriad of

other organizations contribute in some way to the microeconomic business environment. Such institutions must not just develop and improve their capabilities, but must also become more connected to the economy and better linked with the private sector.

The private sector itself is not only a consumer of the business environment, but it also can and must play a role in shaping it. Individual firms can take steps such as establishing schools, attracting suppliers, or defining standards that not only benefit themselves but also improve the overall national environment for competing. Collective industry bodies, such as trade associations and chambers of commerce, also have important roles to play in improving infrastructure, providing training, and export marketing that are often overlooked. The private sector can also take collective steps to enhance the ability of individual companies to improve operating practices and strategies, such as quality certification programs and manufacturing assistance centers.

Clusters and economic development

An improving business environment gives rise to the formation of clusters. *Clusters* are geographically proximate groups of interconnected companies, suppliers, service providers, and associated institutions in a particular field, linked by commonalities and complementarities. Clusters such as software in India or high-performance cars in Germany are often concentrated in a particular region within a larger nation, and sometimes in a single town.

Clusters affect competitiveness in three broad ways: first, by increasing the productivity of constituent firms or industries. In the California Wine Cluster, for example, the local presence of specialized suppliers of machinery and inputs enables wineries to lower transaction costs and reduce capital costs by keeping stocks of material inputs low. The intense local rivalry between competing wineries then provides incentives to mobilize these assets and drives the productivity to allow wineries to support the high costs of real estate and labor in northern California.

Second, clusters increase the capacity for innovation and thus for productivity growth. Opportunities for innovation can often be perceived more easily within clusters, and the assets, skills, and capital are more available to pursue them. For example, new prototypes can be tested with sophisticated local customers.

Third, clusters stimulate and enable new business formation that supports innovation and expands the cluster. The local presence of experienced workers and access to all the needed inputs and services, for example, reduces the barriers to entry. In California, introducing a new line of wine or starting a new winery are much easier than at other locations.

Figure 3: The microeconomic business environment

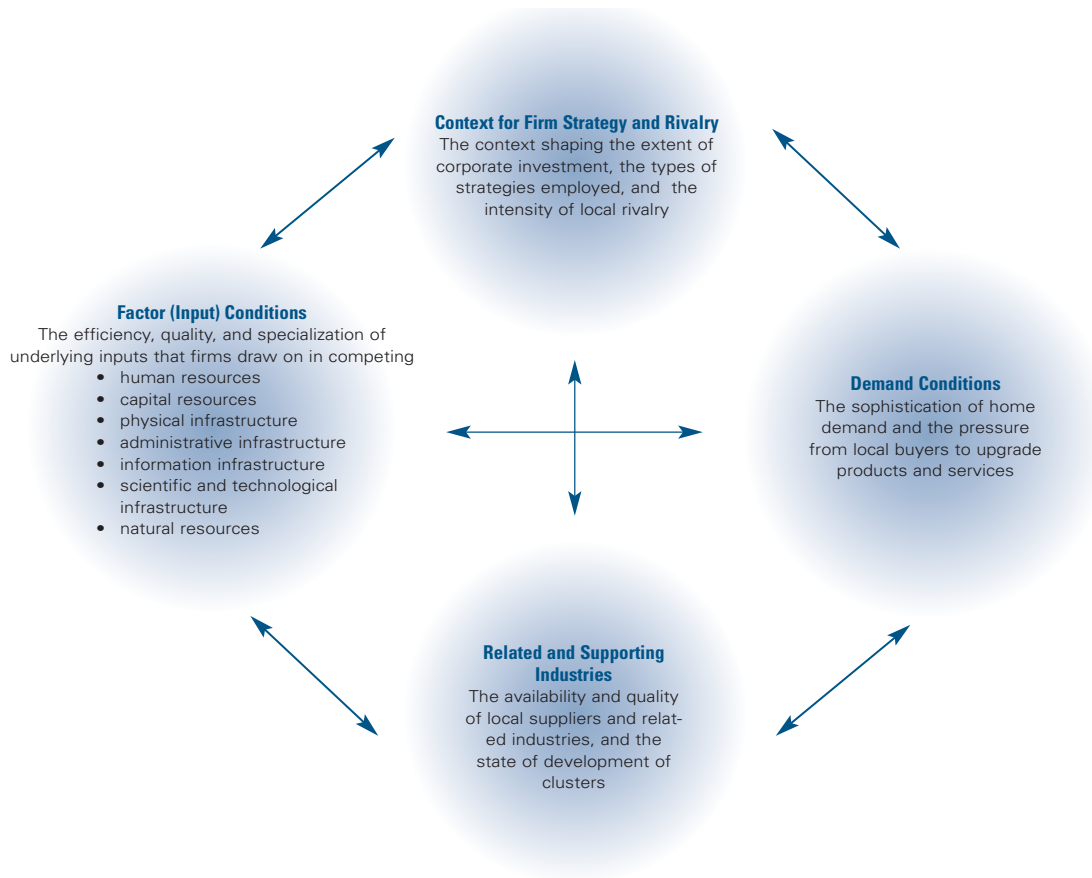
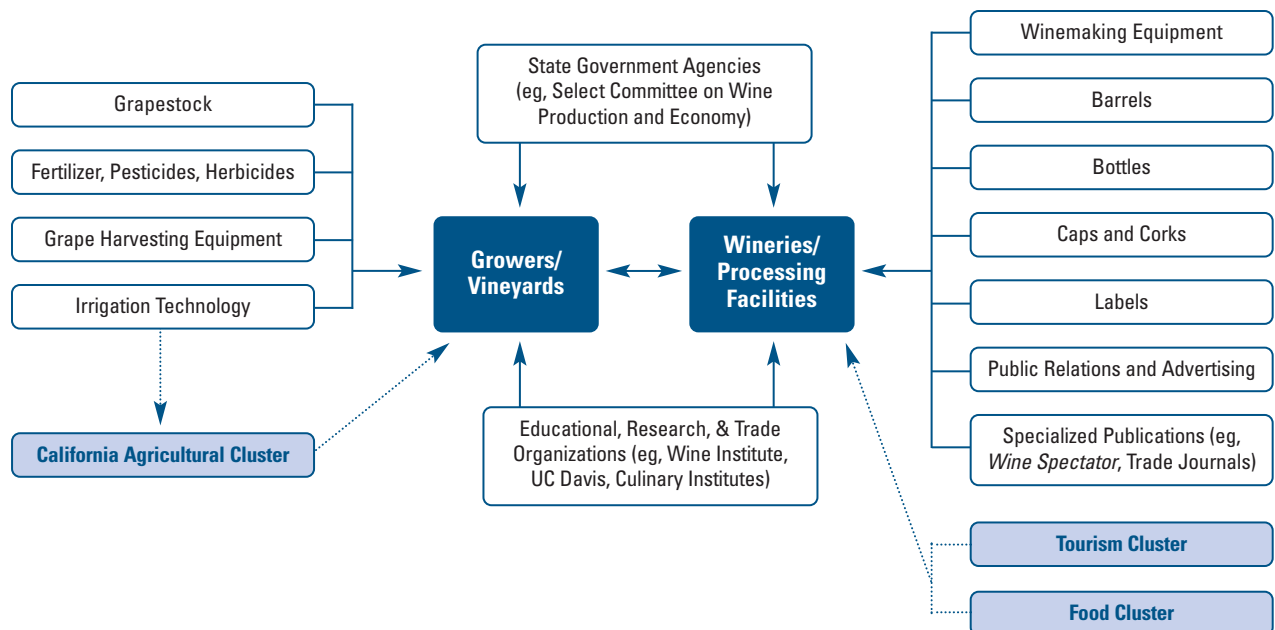


Figure 4: The California Wine Cluster



Source: Based upon research by R. Alexander, R. Arney, N. Black, E. Frost, and A. Shivananda

National economies tend to specialize in particular clusters, which account for a disproportionate share of their output and exports. The shape of clusters varies with the state of development of the economy. In developing countries, clusters are normally shallow or underdeveloped. Firms compete based on cheap labor or local natural resources, and they depend heavily on imported components, machinery, and technology. Specialized local infrastructure and institutions are absent. As economies advance, clusters develop and deepen to include suppliers of specialized inputs, components, machinery, and services; specialized infrastructure; and institutions providing specialized training, education, information, research, and technical support. More-developed clusters also include trade associations and other collective private-sector bodies that support cluster members.

It is rare that there is only a single cluster in the world in a given field. In most cases, there is an array of clusters in different locations with different levels of sophistication and specialization. Only a small number of clusters tend to be true innovation centers, such as Silicon Valley and Japan in semiconductors. These may tend to specialize in particular market segments. Other locations may be manufacturing centers. Still other clusters can be regional assembly and service centers. Firms based in the most-advanced clusters often seed or enhance clusters in other locations as they disperse some activities to reduce risk, access inputs, or seek to better serve particular regional markets. The challenge for an economy is to move from isolated firms to an array of clusters, and upgrade the sophistication of clusters to more advanced activities.

Stages of competitive development

Successful economic development is a process of successive upgrading, in which a nation's business environment evolves to support and encourage increasingly sophisticated and productive ways of competing by firms and subsidiaries based there. Nations at different levels of development face distinctly different challenges (see Figure 5).

Figure 5: Stages of economic development



Source: Porter (1990)

As nations develop, they progress in terms of their characteristic competitive advantages and modes of competing.⁴ In the Factor-Driven stage, basic factor conditions such as low-cost labor and access to natural resources are the dominant sources of competitive advantage and exports. Firms produce commodities or relatively simple products designed in other, more-advanced countries. Technology is assimilated through imports, foreign direct investment, and imitation. In this stage, companies compete on price and lack direct access to consumers. They have limited roles in the value chain, focusing on assembly, labor-intensive manufacturing, and resource extraction. A Factor-Driven economy is highly sensitive to world economic cycles, commodity price trends, and exchange rate fluctuations.

In the Investment-Driven stage, efficiency in producing standard products and services becomes the dominant source of competitive advantage. Heavy investment in efficient infrastructure, business-friendly government administration, and strong investment incentives and access to capital allow major improvements in productivity. The products and services produced become more sophisticated, but technology and designs still largely come from abroad. Technology is accessed through licensing, joint ventures, foreign direct investment, and imitation. However, nations at this stage not only assimilate foreign technology but also develop the capacity to improve on it. Companies serve a mix of original equipment manufacturer (OEM) customers and their own customers. They extend capabilities more widely in the value chain. An Investment-Driven economy is concentrated on manufacturing and on outsourced service exports. It is susceptible to financial crisis and external, sector-specific demand shocks.

In the Innovation-Driven stage, the ability to produce innovative products and services at the global technology frontier using the most advanced methods becomes the dominant source of competitive advantage. The national business environment is characterized by strengths in all areas together with the presence of deep clusters. Institutions and incentives supporting innovation are well developed. Companies compete with unique strategies that are often global in scope. An Innovation-Driven economy has a high share of services in the economy and is resilient to external shocks.

Seeing economic development as a sequential process of building interdependent microeconomic capabilities, shifting company strategies, improving incentives, and increasing rivalry exposes important pitfalls in economic policy. The influence of one part of the microeconomic business environment depends on the state of others. Lack of improvement in any important area can lead to a

plateau in productivity growth and stalled development. Worse yet, it can undermine the whole economic reform process. When well-trained college graduates cannot find appropriate jobs because companies are still competing based on cheap labor, for example, a backlash against business is created.

This analysis also begins to make it clear why countries find the transition to a new stage of development so difficult. Such inflection points require wholesale transformation of many interdependent dimensions of competition. In Asia, for example, successful economies at the Investment-Driven stage such as Taiwan and Singapore have found that their reliance on OEM manufacturing for multinationals, heavy infrastructure investments, and government guidance of the economy to boost efficiency were insufficient to support higher levels of prosperity. Yet relatively high levels of wages and domestic costs made them vulnerable to competition from lower-wage countries such as China. The challenge for both Taiwan and Singapore is to move to an Innovation-Driven economy and develop deep clusters. This is a slow process, however, as companies need to move to new types of strategies, investment priorities must change, and new institutions must be developed. Although government policy can have comparatively rapid (5 to 10 years) effects at the Investment-Driven stage, the move to the Innovation-Driven stage is a slow process in which government must rely more on the private sector.

The relationship between macroeconomic and microeconomic policy

Our analysis makes it clear why the traditional focus on macroeconomic policy alone is insufficient. Macroeconomic policies fostering high rates of capital investment, for example, will not translate into rising productivity unless the forms of investment are appropriate, the company skills and supporting industries are present to make the investments efficient, and strong competitive pressures and adequate corporate governance provide the needed market discipline. The prudence of foreign debt levels depends on exactly what the foreign capital is invested in, together with the microeconomic fundamentals surrounding its deployment and governance. Regulating overall debt levels is less important, in many ways, than improving the microeconomic foundations. High rates of public investment in human capital will not pay off unless a nation's microeconomic circumstances create the demand for skills in companies. Privatization will not boost prosperity unless companies can improve efficiency and are pressured by local competition.

Sound monetary and fiscal policies and the removal of distortions in exchange rates and other prices will eliminate impediments to productivity, but microeconomic foundations must be in place if productivity is actually to increase. For sound policies at the macroeconomic level to translate into an increasingly productive economy, then, parallel microeconomic improvements must take place.

The effects of trade agreements and other market opening measures, a major focus in today's international economic policymaking, also depend on microeconomic policies. Market opening is good, but its benefits in terms of prosperity depend on microeconomic progress. If the local business environment does not become more efficient and local companies do not improve their productivity and sophistication, market opening will boost imports but there will be slow growth in exports. Improvement in the microeconomic business environment is also necessary if the country is to win its fair share of foreign investment even if investment is opened.

In Asia, for example, it was weaknesses in these sorts of areas that brought down economies that looked solid in terms of macroeconomic indicators. Although macroeconomic reforms and the selective opening of foreign exchange markets created a huge inflow of foreign capital, the absence of microeconomic reforms in areas such as competition policy, financial market regulations, and corporate governance encouraged a misallocation of this capital into nonproductive investments such as real estate, trophy infrastructure projects, and excess productive capacity. Imports boomed but the lack of improvements in fundamental competitiveness led to unsustainable trade deficits and the inability to service loans. Without microeconomic reforms, this pattern of boom and bust repeats itself over and over again.

A greater focus on microeconomic reforms will pay another essential dividend. Although macro reforms almost inevitably inflict hardship in the short and medium run through raising interest rates and prices while cutting public expenditures, micro reforms can produce tangible and visible benefits for citizens. Breaking up local cartels and monopolies, for example, lowers the cost of food, housing, electricity, telephone service, and other costs of living. Regulatory reform can rapidly begin to ease inefficiencies, reduce pollution, raise product and service quality, and improve unsafe practices. Bold steps to improve the quality of education and training are particularly important, because they offer the hope of a better life for children. If citizens see businesses reforming themselves and having to confront tough competitive challenges, they themselves will be more willing to live with personal sacrifices and less likely to side with antireform interest groups. The political will and public support to make real economic change will be elevated.

Measuring competitiveness

The Microeconomic Competitiveness Index (MICI) is constructed from measures drawn primarily on a survey of more than 4,700 senior business leaders in 80 countries. The 80 countries included in this year's index are shown in Table 1. Compared to 2001 we have added six countries: Botswana, Croatia, Haiti, Morocco, Namibia, and Tunisia. One country, Egypt, had to be dropped, as mentioned earlier, because its government declined to make the Survey responses available.

Only through a detailed survey can textured measures of the competitive environment and company practices be assembled across many countries. The Survey questions aim to capture the state of circumstances in a nation, but do so in way that is meaningful for Survey respondents. For example, we get at the stock of basic human capital with a question on the quality of public schools because this is something that respondents can compare more readily across countries. The quality of schools, a flow measure, will be highly correlated with the stock of basic skills. We use quantitative measures for patenting rates, Internet penetration, and cellular phone penetration. For all of the other dimensions we measure, however, quantitative data are simply unavailable, especially for so many countries. The Survey not only offers many unique measures, but it also captures the informed judgments of thousands of actual participants in the economies examined. The Survey responses are important in their own right, because they reflect the attitudes of the decision makers who ultimately determine economic activity.

We use the *average* response of Survey respondents within each country as independent variables. To assess the validity of responses within countries, we conducted an ANOVA analysis for each GCR Survey measure. Regressing individual Survey responses on a complete set of country dummy variables allows us to calculate the share of the variation (across individual responses) that results from systematic differences in the average response across countries. The results are reported in Appendix A.

Considering that there is an average of more than 60 respondents per country, the degree of within-country consensus is striking. For all measures, the proportion of variation due to country differences is statistically significant. For most measures, between one third and one half of the overall variation in the responses is driven by country-specific differences for that measure. As would be expected, the within-country consensuses are higher for cross-cutting business environment indicators, such as overall infrastructure quality, and lower for measures where there would be variation within the country across companies and clusters, such as stage of cluster development. The country averages, then, capture meaningful differences across countries in competitive circumstances while

limiting idiosyncratic biases that would result if there were only a handful of responses per country.

The dependent variable used to develop the MICI is the level of GDP per capita in 2001, adjusted for purchasing power parity (PPP). GDP per capita is the broadest measure of national productivity and is strongly tied over time to a nation's standard of living.⁵ It is the best single, summary measure of microeconomic competitiveness available across all countries.⁶ GDP per employee is also a desirable measure of overall productivity, but it relies on comparative employment levels that are considerably less reliable than population data; consistent data are not available for all countries. Using the best available numbers, we find a very high correlation between GDP per capita and GDP per employee ($R^2 = 0.94$). We utilize GDP per capita because of its broader coverage and lower susceptibility to biases.

To explore differences in the sources of competitiveness across countries at different levels of development, we divided countries into three groups based on income. There were 31 low-income countries with a purchasing power-adjusted US-dollar GDP per capita in 2001 below \$6,800; 26 middle-income countries with GDP per capita between \$6,800 and \$20,000; and 23 high-income countries with a GDP per capita above \$20,000. As will be reported, these groups exhibited different patterns of statistical relationships among variables.

Although GDP per capita will reflect structural fundamentals over the medium and long term, it is also influenced by a wide array of short-term and idiosyncratic factors such as natural disasters, macroeconomic shocks, and windfalls in particular export industries. The proportion of the variation in GDP per capita across all countries that can be explained by microeconomic fundamentals is interesting in its own right.

Measuring sources of competitiveness

To construct an overall index of competitiveness, we validated the statistical relationship of a wide array of measures of microeconomic competitiveness with GDP per capita. Table 2 gives bivariate regressions of the Survey responses and available quantitative measures on GDP per capita reporting variables that are statistically significant. Variables are grouped into those measuring the sophistication of company operations and strategy and those measuring the quality of the national business environment. Included in the table is the slope of the regression relationship, a measure of statistical significance, and the adjusted R^2 (or proportion of variation in GDP per capita adjusted for statistical degrees of freedom).⁷ Microeconomic indicators individually and collectively explain a meaningful proportion of the variation in the level of GDP per capita across countries. This compares favorably with macroeconomic variables, such as the national savings rate,

Table 1: The Microeconomic Competitiveness Index

Country	MICI ranking					Company operations and strategy ranking					Quality of the national business environment ranking					2001 GDP per capita (PPP-adjusted)
	2002	2001*	2000	1999	1998	2002	2001	2000	1999	1998	2002	2001	2000	1999	1998	
United States	1	2	2	1	1	1	1	2	1	2	1	2	2	1	1	34,888
Finland	2	1	1	2	2	4	2	3	7	8	2	1	1	2	2	25,611
United Kingdom	3	7	8	10	5	3	7	11	13	9	3	8	9	8	5	24,421
Germany	4	4	3	6	4	2	4	1	5	1	4	4	6	5	8	25,715
Switzerland	5	5	5	5	9	5	5	5	2	3	6	5	10	9	10	29,587
Sweden	6	6	7	4	7	6	6	6	3	4	8	6	11	7	9	24,978
Netherlands	7	3	4	3	3	8	3	7	8	5	10	3	3	3	4	26,242
Denmark	8	8	6	7	8	9	9	8	9	10	9	10	4	6	7	28,342
Singapore	9	9	9	12	10	14	15	15	14	12	5	9	5	12	6	23,250
Canada	10	12	11	8	6	13	14	16	12	15	7	11	8	4	3	28,611
Japan	11	10	14	14	18	7	8	4	4	7	17	16	19	19	19	27,101
Austria	12	11	13	11	16	12	11	12	10	11	12	12	12	13	17	27,518
Belgium	13	15	12	15	19	11	12	10	11	13	15	14	13	15	18	27,912
Australia	14	14	10	13	15	19	24	20	19	22	11	7	7	10	12	26,552
France	15	13	15	9	11	10	10	9	6	6	21	13	15	11	13	25,074
Taiwan	16	21	21	19	20	16	20	18	17	16	13	21	21	22	21	22,559
Iceland	17	16	17	22	24	17	16	14	21	28	14	15	16	21	23	30,725
Israel	18	17	18	20	21	20	18	13	18	21	18	18	20	20	20	19,867
Hong Kong SAR	19	18	16	21	12	24	21	23	24	17	16	17	14	18	11	25,581
Ireland	20	22	22	17	13	15	17	19	20	18	22	22	22	17	14	27,457
Norway	21	19	20	18	14	23	23	21	23	14	19	19	18	16	15	30,727
New Zealand	22	20	19	16	17	25	19	22	16	19	20	20	17	14	16	20,725
Korea	23	26	27	28	28	21	26	25	27	24	23	29	28	30	28	18,149
Italy	24	23	24	25	26	18	13	17	15	20	24	24	26	27	27	24,510
Spain	25	24	23	23	22	22	22	24	22	23	25	23	23	23	22	20,374
Malaysia	26	37	30	27	27	27	37	30	25	34	26	37	30	31	26	8,424
Slovenia	27	32	—	—	—	26	28	—	—	—	27	35	—	—	—	18,233
Hungary	28	27	32	33	31	29	33	34	36	39	29	25	31	33	31	12,941
South Africa	29	25	25	26	25	31	25	26	28	33	33	27	25	25	25	9,565
Estonia	30	28	—	—	—	36	32	—	—	—	28	26	—	—	—	10,380
Chile	31	29	26	24	23	35	30	27	26	25	31	30	24	24	24	9,753
Tunisia	32	—	—	—	—	37	—	—	—	—	30	—	—	—	—	6,769
Brazil	33	30	31	35	35	28	29	29	32	27	36	32	32	37	39	7,759
Czech Republic	34	34	34	41	30	34	41	41	55	31	34	31	34	36	33	14,885
Thailand	35	38	40	39	37	33	42	47	43	37	35	39	40	39	36	6,630
Portugal	36	33	28	29	33	41	38	35	37	48	32	28	27	26	30	17,571
India	37	36	37	42	44	40	43	40	48	50	37	34	37	43	42	2,464
China	38	43	44	49	42	38	39	38	31	35	38	46	45	50	44	4,329
Costa Rica	39	48	43	38	—	32	34	39	35	—	47	51	42	41	—	8,490
Lithuania	40	50	—	—	—	39	47	—	—	—	39	47	—	—	—	7,764
Dominican Republic	41	60	—	—	—	30	59	—	—	—	53	61	—	—	—	6,198
Slovak Republic	42	40	36	48	36	43	57	31	51	40	40	36	36	47	37	11,739
Greece	43	46	33	36	38	47	51	32	45	32	41	43	33	34	38	17,482
Trinidad and Tobago	44	31	—	—	—	44	27	—	—	—	44	38	—	—	—	10,018
Latvia	45	41	—	—	—	48	35	—	—	—	42	42	—	—	—	7,750
Poland	46	42	41	37	41	46	55	36	38	38	45	40	41	38	40	9,327
Sri Lanka	47	58	—	—	—	52	58	—	—	—	43	56	—	—	—	3,634
Morocco	48	—	—	—	—	50	—	—	—	—	46	—	—	—	—	3,787
Mauritius	49	51	38	30	—	42	49	37	29	—	50	50	38	29	—	10,400
Panama	50	49	—	—	—	54	40	—	—	—	52	49	—	—	—	5,986
Namibia	51	—	—	—	—	58	—	—	—	—	49	—	—	—	—	6,650
Croatia	52	—	—	—	—	53	—	—	—	—	54	—	—	—	—	8,414
Jordan	53	47	35	32	32	59	56	46	44	42	48	41	35	28	32	4,080
Turkey	54	35	29	31	29	56	44	28	33	26	55	33	29	32	29	6,716
Mexico	55	52	42	34	39	45	46	42	30	29	60	52	43	35	41	8,969
Colombia	56	57	48	52	49	51	52	48	40	43	57	59	48	53	49	6,202
Botswana	57	—	—	—	—	64	—	—	—	—	51	—	—	—	—	8,196
Russian Federation	58	56	52	55	46	62	54	33	42	45	56	55	53	55	47	8,948
Jamaica	59	39	—	—	—	60	31	—	—	—	59	44	—	—	—	3,890
Vietnam	60	62	53	50	43	67	64	50	41	36	58	62	52	49	43	2,130
Philippines	61	53	46	44	45	49	45	43	34	41	67	54	46	46	45	4,113
Uruguay	62	45	—	—	—	63	48	—	—	—	61	45	—	—	—	8,781
El Salvador	63	64	51	47	—	61	66	57	46	—	62	64	50	48	—	4,603
Indonesia	64	55	47	53	51	55	50	51	47	52	65	58	47	52	51	3,059
Argentina	65	54	45	40	34	57	53	45	39	30	68	53	44	40	34	12,098
Peru	66	63	49	46	47	65	65	53	56	49	66	63	51	44	46	4,797
Romania	67	61	—	—	—	69	63	—	—	—	64	60	—	—	—	7,036
Bulgaria	68	68	55	54	—	72	70	54	52	—	63	65	54	54	—	6,182
Ukraine	69	59	56	56	52	66	62	52	50	51	69	57	56	56	52	4,224
Zimbabwe	70	65	50	45	48	68	60	56	54	46	70	67	49	45	48	2,406
Nigeria	71	66	—	—	—	71	61	—	—	—	71	68	—	—	—	898
Venezuela	72	67	54	51	50	73	67	49	53	44	72	66	55	51	50	5,966
Guatemala	73	69	—	—	—	70	69	—	—	—	73	69	—	—	—	3,879
Bangladesh	74	73	—	—	—	76	72	—	—	—	74	73	—	—	—	1,644
Nicaragua	75	71	—	—	—	75	73	—	—	—	76	70	—	—	—	2,514
Paraguay	76	70	—	—	—	77	68	—	—	—	75	71	—	—	—	4,379
Ecuador	77	72	57	57	—	74	71	55	57	—	77	72	58	57	—	3,295
Honduras	78	74	—	—	—	78	74	—	—	—	79	75	—	—	—	2,505
Bolivia	79	75	58	58	—	79	75	58	58	—	78	74	57	58	—	2,439
Haiti	80	—	—	—	—	80	—	—	—	—	80	—	—	—	—	1,444

* Using 2002 formula

investment as a percentage of GDP, and the level of taxation, that are either not significantly related to the level of GDP per capita or are associated with a minor share of its variation across countries.⁸

In addition to last year's variables, one new variable measuring the quality of the nation's electricity supply has been included; the question measuring the presence of corruption has also been modified. Hard data have been substituted for two Survey variables: Internet penetration and mobile phone penetration. All the reported variables are highly statistically significant in the full sample of countries. A wide range of company practices and multiple dimensions of the business environment prove strongly related to competitiveness. These findings are highly consistent with results from earlier *Global Competitiveness Reports*.

Among the company variables, production process sophistication, the nature of the competitive advantage of a nation's companies (reliance on low cost inputs versus unique products and processes), the extent of training, and the extent of marketing have the strongest bilateral association with per capita GDP. By itself, the measure of overall competitive approach—the nature of competitive advantage—explains a remarkable 65 percent of the variance in GDP per capita.

All four parts of the business environment prove important. Among factor conditions, overall infrastructure quality, the quality of electricity supply, venture capital availability, the quality of public schools, and university-industry research collaboration have the strongest bilateral association with GDP per capita. Many of the most important influences on GDP per capita relate to policies and institutions rather than factor stocks.

Measures of local demand conditions perform particularly strongly. Demanding regulatory standards, stringent environmental regulations, and buyer sophistication, among others, are strongly associated with the variation in GDP per capita. These results run counter to the perceived wisdom that local demand and local market conditions are not important in a global economy. Cluster linkages, especially the quality of local suppliers and the presence of specialized local research and training providers, also prove significant and suggest a powerful role of clusters in competitiveness. Finally, the rules and context governing competition are strongly related to measured productivity. Intellectual property protection, the influence of illegal payments (corruption), and the effectiveness of antitrust policy are particularly potent variables.

It is important to acknowledge that causality can be argued in both directions for some of the variables, though the Survey questions were worded to avoid spurious reverse causality. The quality of scientists and engineers or the sophistication of buyers, for example, could be partly the result of high per capita GDP and not the

cause. Note that the same causality issue applies in macroeconomic and economic growth analyses. We provide some evidence of causality from microeconomic conditions to GDP per capita later in this chapter, but more years of surveying will be required to establish definitive cause and effect relationships.

Competitiveness and economic development

As has been discussed, the appropriate company strategies and operating practices and the influence of particular elements of the business environment will differ for countries at different levels of development. The transition is likely to be particularly challenging, as economies must shift from, for example, Factor-Driven to Investment-Driven to Innovation-Driven. Each stage involves very different bases of competitive advantage, very different forms of integration with the global economy, and different priorities in the diamond.

To examine these issues, we explored the impact of measures of microeconomic competitiveness in the three country groups based on per capita GDP. All the reported variables are statistically significant across the entire sample, and strongly distinguish countries across groups. However, as expected, individual variables differ in their influence within groups.

The right-hand side of Table 2 presents income subgroup regressions. We explore the pattern of statistical significance of each variable as well as the differences in slope. Limitations on subgroup sample size and the variation of the dependent variable within subgroups reduce statistical power, so that only robust variables will register high levels of statistical significance.

Low-income countries

For low-income countries at the Factor-Driven stage of development, the ability to move beyond competing solely on cheap labor/natural resources *per se* is the essential challenge revealed in the regressions. At the company level, improving the sophistication of production processes, becoming more customer-oriented, and beginning to practice marketing are revealed as most significant. At this stage, progress on other dimensions of corporate strategy and operations, especially those related to technology, is premature.

Low-income countries score low on many measures of the business environment, especially on cluster development and measures related to technology and innovation. Priorities for improving the business environment in low-income countries revealed in the regressions start with upgrading the quality of infrastructure, including electricity, communications, and transportation networks. Also revealed as important are establishing a sound regulatory environment (eg, environmental standards,

laws governing IT), reducing barriers to competition (eg, hidden trade barriers and distortive government subsidies), and strengthening antitrust policy. All these steps create a foundation of efficiency, transparency, and competitive pressure that support Factor-Driven competition. Other aspects of the business environment, such as financing, venture capital, and expanding the availability of scientists and engineers, are not yet priorities at this stage of development.

Middle-income countries

Moving into middle income, the challenge is to move beyond Factor-Driven competition to the Investment-Driven stage. The regressions suggest the following patterns: corporate priorities must expand to include building brands (versus relying on commodities or products designed by foreign OEMs), licensing foreign technology, company spending on R&D, and widening the presence in the value chain.

To reach middle income, countries must have achieved improvements in basic factor conditions such as physical infrastructure and human resources. Middle-income countries score higher on such measures in absolute terms than do low-income countries. The regressions reveal that to progress as a middle-income country requires new challenges in the business environment. University-industry research collaboration and the quality of research institutions start to become important. The quality of financial markets becomes much more important, as better financial markets are needed to mobilize debt and equity capital. Improving local demand conditions are needed to pressure improvements in producer quality. Cluster development begins to become essential to support higher levels of efficiency, though middle-income countries still score relatively low in absolute terms on measures of cluster development and of company innovation. As nations reach upper middle income, companies must have also developed the capacity to absorb the best available foreign technology, and to produce products at quality levels reaching world standards.

High-income countries

To reach high-income status, improvement in quality and efficiency are no longer enough. The hurdle is to move to the Innovation-Driven stage. The patterns of regressions suggest the following priorities: companies must develop the ability to innovate at the world technology frontier, create unique product designs, and sell their products and services globally. Reliance on foreign technology becomes a negative. In order to accomplish this transformation, a series of organizational changes such as greater incentive compensation and the ability to delegate authority becomes necessary.

High-income countries have all achieved strengths in many aspects of the business environment. The differences in success among high-income countries are concentrated in areas connected to innovation: the supply of scientists and engineers, the quality of research institutions, the extent of research collaboration with universities, venture capital availability, the sophistication of demand conditions (eg, demanding regulatory standards), and intense local competition.

Trends in competitiveness in the global economy

Now that there are several years of consistent Survey data, we can examine the overall patterns of change in dimensions of competitiveness between the 1998 Survey and the 2002 Survey.⁹ Table 3 identifies those areas where substantial absolute changes in company practices and the quality of the business environment (either positive or negative) were registered in eight more countries, or 10 percent of our sample. Overall, there is clear upgrading in national business environments. The bar is rising, and improvement here is needed just to maintain position vis-à-vis other countries. In company operations and strategy, there are clear areas where companies in many countries are progressing but also signs that the growing intensity of competition is making it hard to keep up.

Table 3 shows that governments around the world are continuing to improve infrastructure, upgrade financial markets, lower tariffs, and reduce bureaucratic red tape. Progress in these areas is increasingly becoming a *given* if countries are to participate fully in the world economy.

This year's data revealed a new trend: *developing economies were less successful in improving their business environments than advanced economies*. Hence, the competitive gap between economies at different stages of development is rising again; this is a trend especially pronounced in overall infrastructure quality. The recent economic conditions, coupled with debates about globalization, appear to have made it more difficult for less-developed countries to sustain the investments and policies needed to improve their competitiveness, an ominous development.

Global trends among companies are also shown in Table 3. Companies are working to professionalize management in increasingly competitive markets, the single most widespread global development among companies. However, companies from less-developed countries are finding it hard to keep up with the pace of improvement by competitors from more-advanced countries. Improvements in marketing and customer orientation are more prevalent in middle- and high-income countries compared with previous years, while there is only a slight improvement on this dimension in low-income countries. Companies in high-income countries are also gaining in staff training, an indicator of the increasing competitive pressure to attract and retain talent.

Table 2: Bivariate regression results, dependent variable: 2001 GDP per capita (PPP-adjusted)

	All countries (N = 80)		Low-income countries GDP per capita < \$6,800 (N = 31)		Middle-income countries GDP per capita > \$6,800 and < \$20,000 (N = 26)		High-income countries GDP per capita > \$20,000 (N = 23)	
	Slope	Adj. R ²	Slope	Adj. R ²	Slope	Adj. R ²	Slope	Adj. R ²
I. COMPANY OPERATIONS & STRATEGY								
Production Process Sophistication	7387.66**	0.835	1690.02**	0.318	3761.03**	0.307	3271.62**	0.167
Nature of Competitive Advantage	6886.32**	0.647	1636.95**	0.228	2362.42**	0.180	1020.99	0.024
Extent of Staff Training	8394.08**	0.737	1485.58**	0.246	2914.42**	0.163	3074.21**	0.142
Extent of Marketing	8563.98**	0.692	1458.79**	0.226	2198.63	0.070	2184.68	0.048
Willingness to Delegate Authority	8023.01**	0.702	1547.73**	0.241	2003.44	0.029	2387.62**	0.226
Capacity for Innovation	7203.04**	0.714	1191.34**	0.111	3150.27**	0.295	936.61	0.001
Company Spending on R&D	7838.43**	0.659	1447.16**	0.119	2586.00**	0.196	1566.64*	0.092
Value Chain Presence	6023.44**	0.621	1052.80**	0.173	2569.28**	0.259	197.56	-0.044
Breadth of International Markets	6202.84**	0.680	994.64**	0.147	1948.74**	0.138	40.77	-0.048
Degree of Customer Orientation	9950.43**	0.674	1595.67**	0.296	3115.55**	0.117	5150.22**	0.156
Control of International Distribution	10760.47**	0.617	1665.21**	0.148	1084.26	-0.028	1964.16	0.037
Extent of Branding	6760.75**	0.703	1450.90**	0.218	4248.05**	0.407	395.69	-0.036
Reliance on Professional Management	7087.02**	0.564	140.43	-0.030	1478.89	0.018	1743.11	0.033
Extent of Incentive Compensation	9052.86**	0.645	1524.38**	0.204	1984.30	0.043	1770.95	0.026
Extent of Regional Sales	6259.20**	0.505	886.06**	0.163	76.56	-0.041	1879.54	-0.006
Prevalence of Foreign Technology Licensing	6331.88**	0.180	666.42*	0.062	3462.10**	0.149	-4581.96**	0.153
II. NATIONAL BUSINESS ENVIRONMENT								
A. FACTOR (INPUT) CONDITIONS								
1. Physical Infrastructure								
Overall Infrastructure Quality	5507.30**	0.684	1039.40**	0.335	2138.11**	0.177	1233.79	0.057
Railroad Infrastructure Quality	4141.32**	0.471	279.78	0.002	894.40	0.036	-62.68	-0.047
Port Infrastructure Quality	5199.12**	0.569	756.18**	0.199	1380.57*	0.073	575.51	-0.026
Air Transport Infrastructure Quality	6336.32**	0.512	970.85**	0.246	1671.12*	0.088	565.51	-0.037
Electricity Supply Quality	5526.18**	0.682	972.76**	0.393	3013.30**	0.331	3260.02**	0.240
Telephone/Fax Infrastructure Quality	5029.39**	0.479	789.54**	0.390	2105.74**	0.208	4396.72*	0.094
Cellular Telephones per 100 people (2001)	289.26**	0.782	120.65**	0.323	151.46**	0.806	-61.63	0.025
Internet users per 100 people (2001)	484.21**	0.816	420.69**	0.323	231.12**	0.458	127.56**	0.199
2. Administrative Infrastructure								
Police Protection of Businesses	5665.35**	0.586	674.34**	0.162	2223.03**	0.232	2194.59*	0.090
Judicial Independence	4749.43**	0.533	447.76*	0.062	1326.24*	0.113	1358.16	0.075
Adequacy of Public Sector Legal Recourse	5397.78**	0.563	537.54*	0.065	1283.09	0.068	1284.61	0.048
Administrative Burden for Startups	5267.95**	0.280	524.45	0.033	1387.46	0.048	582.56	-0.019
Extent of Bureaucratic Red Tape	9298.68**	0.167	824.68	0.015	-893.63	-0.033	244.28	-0.047
3. Human Resources								
Quality of Management Schools	7171.45**	0.537	566.41	0.035	1556.86	0.020	1340.93	0.020
Quality of Public Schools	5224.64**	0.649	830.12**	0.198	1545.93*	0.104	793.42	-0.029
Quality of Math and Science Education	5530.09**	0.377	621.68*	0.074	1089.93	0.029	-355.21	-0.044
4. Technology Infrastructure								
Patents per Capita (2001)	107.76**	0.530	2828.98**	0.122	73.34**	0.335	15.80*	0.113
Availability of Scientists and Engineers	6704.53**	0.366	421.69	0.006	1487.41	0.046	3101.19*	0.102
Quality of Scientific Research Institutions	7750.44**	0.599	618.74	0.020	2724.06**	0.198	2052.59*	0.110
University/Industry Research Collaboration	7808.58**	0.630	986.15*	0.090	3092.10**	0.285	1224.49	0.016
Intellectual Property Protection	6495.56**	0.753	1249.89**	0.318	3039.71**	0.324	1978.78*	0.093
5. Capital Markets								
Financial Market Sophistication	6178.36**	0.570	1008.21**	0.181	936.95	0.003	985.93	0.007
Venture Capital Availability	8249.44**	0.655	633.01	0.012	2989.94**	0.222	1660.77	0.036
Ease of Access to Loans	8260.16**	0.560	1263.15**	0.200	2355.93*	0.107	1518.44	0.025
Local Equity Market Access	4858.16**	0.317	70.82	-0.032	690.23	-0.010	435.04	-0.043
B. DEMAND CONDITIONS								
Buyer Sophistication	7495.61**	0.730	754.91*	0.081	4065.31**	0.343	1854.61	0.000
Consumer Adoption of Latest Products	8663.17**	0.635	1011.76**	0.141	3779.82**	0.254	1794.19	0.000
Government Procurement of Advanced Technology Products	7816.57**	0.368	564.45	0.030	3371.51**	0.208	-40.36	-0.048
Presence of Demanding Regulatory Standards	7793.06**	0.786	1600.79**	0.362	3782.11**	0.271	3632.80**	0.173
Laws Relating to Information Technology	7960.61**	0.575	1476.24**	0.367	2533.06**	0.198	1453.70	-0.012
Stringency of Environmental Regulations	6431.95**	0.731	1539.68**	0.435	2244.56*	0.107	1011.46	0.001

(cont'd.)

Table 2: Bivariate regression results, dependent variable: 2001 GDP per capita (PPP-adjusted)

	All countries (N = 80)		Low-income countries GDP per capita < \$6,800 (N = 31)		Middle-income countries GDP per capita > \$6,800 and < \$20,000 (N = 26)		High-income countries GDP per capita > \$20,000 (N = 23)	
	Slope	Adj. R ²	Slope	Adj. R ²	Slope	Adj. R ²	Slope	Adj. R ²
II. NATIONAL BUSINESS ENVIRONMENT (cont'd.)								
C. RELATED AND SUPPORTING INDUSTRIES								
Local Supplier Quality	8827.00**	0.732	1627.87**	0.277	3118.34**	0.198	2610.87	0.038
State of Cluster Development	8364.15**	0.509	372.52	-0.024	904.06	-0.028	176.81	-0.046
Local Availability of Process Machinery	6290.92**	0.396	417.27	0.000	272.77	-0.039	939.81	0.002
Local Availability of Specialized Research and Training Services	8190.66**	0.643	1177.55**	0.151	2707.17**	0.156	1308.73	0.002
Extent of Product and Process Collaboration	8856.66**	0.498	773.65	0.033	583.48	-0.035	475.72	-0.042
Local Supplier Quantity	8978.12**	0.516	868.48	0.053	1116.24	-0.013	1127.49	-0.023
Local Availability of Components and Parts	6128.00**	0.255	685.15*	0.061	306.52	-0.038	-348.27	-0.044
D. CONTEXT FOR FIRM STRATEGY AND RIVALRY								
1. Incentives								
Extent of Distortive Government Subsidies	5638.22**	0.174	1294.81**	0.206	2006.43*	0.089	-1406.33	0.049
Favoritism in Decisions of Government Officials	7251.22**	0.536	786.31**	0.108	1912.70	0.037	712.14	-0.029
Cooperation in Labor-Employer Relations	7371.04**	0.357	1211.01**	0.151	363.46	-0.039	1077.37	0.019
Efficacy of Corporate Boards	7423.17**	0.363	970.35	0.059	-328.94	-0.040	764.13	-0.005
2. Competition								
Hidden Trade Barrier Liberalization	7673.10**	0.602	1489.11**	0.224	2600.79**	0.222	-1050.45	-0.018
Intensity of Local Competition	9622.97**	0.409	876.75*	0.077	2802.14	0.069	533.10	-0.045
Extent of Locally Based Competitors	8488.91**	0.384	975.10**	0.096	1410.17	0.007	574.87	-0.041
Effectiveness of Antitrust Policy	7417.24**	0.631	1170.54**	0.172	2349.63**	0.212	1093.52	-0.014
Decentralization of Corporate Activity	6663.13**	0.519	211.31	-0.022	1528.17	0.004	1350.02	0.038
Costs of Other Firms' Illegal/Unfair Activities	7767.63**	0.753	1301.35**	0.153	3430.64**	0.205	1391.60	0.014
Tariff Liberalization	10420.89**	0.525	1369.36**	0.155	3182.09**	0.173	-7750.32**	0.197

Note: * denotes p < 0.10, ** denotes p < 0.05

Table 3: Changes in microeconomic conditions, 1998–2002

	Improving international microeconomic conditions				Worsening international microeconomic conditions					
	Total	L	M	H	Total	L	M	H		
Sophistication of Company Operations and Strategy	Reliance on Professional Management.....	41	9	13	19	Value Chain Presence.....	27	13	10	4
	Extent of Marketing.....	18	2	6	10	Extent of Branding.....	23	9	10	4
	Extent of Regional Sales.....	17	4	5	8	Breadth of International Markets.....	23	11	10	2
	Degree of Customer Orientation.....	14	1	4	9	Production Process Sophistication.....	16	8	5	3
	Extent of Staff Training.....	12	3	4	5	Capacity for Innovation.....	14	5	3	6
	Breadth of International Markets.....	9	—	—	9	Control of International Distribution.....	14	3	3	8
	Prevalence of Foreign Technology Licensing.....	8	4	2	2					
	Nature of Competitive Advantage.....	8	5	—	3					
Quality of the Business Environment	Extent of Bureaucratic Red Tape.....	47	13	15	19	Adequacy of Public-Sector Legal Recourse.....	25	9	9	7
	Tariff Liberalization.....	41	12	13	16	Extent of Distortive Government Subsidies.....	22	7	4	11
	Overall Infrastructure Quality.....	31	5	10	16	Judicial Independence.....	22	6	8	8
	Financial Market Sophistication.....	23	7	9	7	Venture Capital Availability.....	20	9	5	6
	Quality of Scientific Research Institutions.....	22	7	10	5	Quality of Public Schools.....	17	10	5	2
	Railroad Infrastructure Quality.....	18	4	8	6	Intellectual Property Protection.....	16	5	4	7
	Port Infrastructure Quality.....	18	3	7	8	Administrative Burden for Startups.....	15	5	5	5
	Extent of Locally Based Competitors.....	18	6	2	10	Local Equity Market Access.....	11	3	3	5
	Local Supplier Quality.....	16	5	8	3	Buyer Sophistication.....	11	4	2	5
	Air Transport Infrastructure Quality.....	15	7	6	2	Efficacy of Corporate Boards.....	10	3	1	6
	Favoritism in Decisions of Government Officials.....	14	1	3	10	Favoritism in Decisions of Government Officials.....	9	4	3	2
	Quality of Public Schools.....	14	—	3	11	Police Protection of Businesses.....	8	3	—	5
	Police Protection of Businesses.....	11	3	5	3	Local Supplier Quantity.....	8	1	2	5
	Efficacy of Corporate Boards.....	11	2	4	5					
	Quality of Management Schools.....	11	3	4	4					
	Telephone/Fax Infrastructure Quality.....	10	4	6	—					
Hidden Trade Barrier Liberalization.....	10	4	3	3						
Effectiveness of Antitrust Policy.....	10	3	5	2						
University/Industry Research Collaboration.....	8	4	2	2						

Note: L, M, and H refer to low-, middle-, and high-income countries, respectively.

Although companies are improving in some respects, however, they are struggling to cope with tough international competition. Companies in many countries report difficulties in mastering the full value chain. Companies in less-developed economies report greater difficulties in developing brands. Companies from advanced economies struggle with the ability to innovate on the global knowledge frontier. Overall, these observations are consistent with a global marketplace that has, in many ways, become more sophisticated and more demanding.

Ranking competitiveness

To derive an overall Microeconomic Competitiveness Index (MICI), we compute subindexes measuring the quality of the national business environment and the sophistication of company operations and strategy. Because many of the dimensions of company sophistication and the quality of the business environment tend to move together and the number of countries is relatively small in statistical terms, the impact of individual variables is difficult to distinguish statistically. Hence we use common factor analysis instead of multiple regressions to compute the subindexes.

The weighted average of the two subindexes is defined as the MICI. The weights are determined from the coefficients of a multiple regression of the subindexes on GDP per capita. This procedure results in a weight of 0.63 for national business environment and 0.37 for company operations and strategy. When we include an interaction term in the regression on GDP per capita of the two subindexes, it proves positive and significant. This means that the benefits of a better business environment for prosperity are increasing with the sophistication of company operations and strategy, and vice versa. Countries that improve both the business environment and company sophistication in tandem reap disproportionate benefits, while countries where there is an imbalance bear disproportionate costs.

Figure 6 plots the MICI against 2001 GDP per capita for each country in the sample. The regression line is shown, together with bands above and below the regression line that delineate the 95 percent confidence forecast region.¹⁰ Only two countries, Norway and India, fall just outside the forecast region. *Differences in the MICI account for a remarkable 81 percent of variation in GDP per capita across a widely disparate group of countries.*

As noted earlier, competitiveness is not a zero-sum game. Many countries can improve productivity and prosperity. The MICI tracks both the absolute and relative progress of countries in building a productive economy.

The overall MICI rankings for 2002 are shown in Table 1, along with the rankings of the previous four years. Also included are separate subindex rankings. Of the countries newly added to the sample, Tunisia is the top-ranked performer. Morocco, Namibia, and Croatia enter at around 50. The inclusion of six new countries makes year-to-year comparisons difficult, especially for developing countries. Appendix B gives comparative rankings for the countries common to both years.

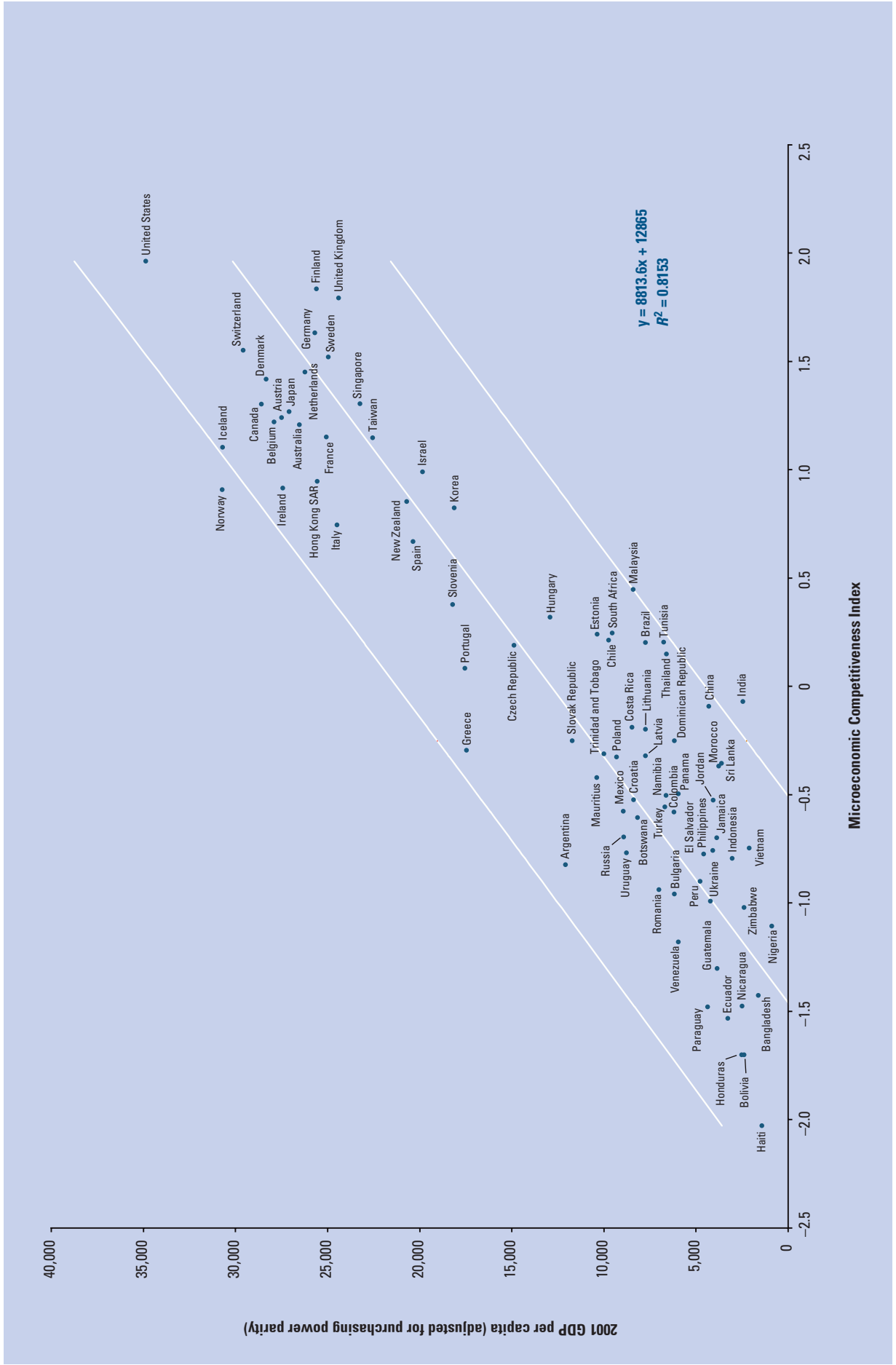
Please refer to Section 4: Country Profiles and Data Presentation at the end of the Report for detailed descriptions of the competitive advantages and disadvantages of each country.

The United States retakes the leading position over Finland after two years ranked second. Advanced nations improving their rankings include the United Kingdom, Canada, Belgium, Taiwan, and Ireland. The United Kingdom has made the most dramatic progress, jumping from rank 7 to 3. This improvement reflects notable relative improvements in venture capital availability, intellectual property rights protection, the effectiveness of antitrust policy, and buyer sophistication. UK company sophistication advanced less markedly; though the capacity for innovation registered the strongest gain. The increasing policy focus in the United Kingdom on microeconomic fundamentals appears to be beginning to bear fruit.

Advanced countries slipping in the rankings include the Netherlands, France, and New Zealand. The Netherlands experienced the largest drop in rank, from 3 to rank 7, primarily because of a deteriorating business environment: Falling markedly were measures of financial market sophistication (eg, equity market access, venture capital availability, and access to loans), context for firm strategy and rivalry (cooperation in labor-employee relations and intensity of local competition), and public administrative effectiveness (bureaucratic red tape, favoritism, and administrative burden for startups). Company sophistication in the Netherlands fell back as well, with control of international distribution, R&D spending, and marketing recording the highest drops. These findings raise questions about the future sustainability of the Dutch policy of wage-moderation and reducing business costs that was successful in the 1990s.

Developing nations improving their microeconomic competitiveness rankings include Malaysia, Slovenia, Lithuania, the Dominican Republic, and Sri Lanka. Malaysia's jump of 11 ranks comes as a result of strong improvements in measures of cluster vitality, the rules governing competition (eg, adequacy of public-sector legal recourse and effectiveness of antitrust policy), and measures of company operations and strategy (eg, value chain presence, branding, and nature of competitive advantage). Malaysia's results indicate a determined response to the weaknesses exposed by the Asian crisis.

Figure 6: The relationship between microeconomic competitiveness and GDP per capita



Developing countries falling in microeconomic competitiveness include Turkey, Argentina, the Philippines, and Indonesia. Turkey's drop by 19 ranks (15 for a constant sample of countries) is driven by a relative decline in factor quality (eg, university-industry research collaboration, quality of management schools, administrative burden for startups, and others) and context for strategy and rivalry (eg, effectiveness of antitrust policy). Company sophistication is holding up better, but technology licensing and staff training have suffered. Turkey's political and macroeconomic problems seem to have taken their toll on the ability to make progress in competitiveness.

Argentina's economic crisis of 2002 was a vivid illustration of the importance of microeconomic policy. The country made significant progress on macroeconomic stabilization, market opening, and investments in the physical infrastructure, but not enough attention was focused on serious weaknesses on the microeconomic level. Without microeconomic reforms, few jobs were being created and unemployment remained stubbornly high, putting pressure on the government budget. Internationally, pegging the Argentine peso to the US dollar added to the problems: in the short run, the currency peg helped the country to overcome a legacy of high inflation and achieve macroeconomic stability. In the medium run, however, the fixed exchange rate to the US dollar had to be matched by productivity growth equal or above the US productivity growth rate in order to avoid a real appreciation of the peso. In the absence of sufficient microeconomic upgrading in Argentina, such high levels of productivity growth did not materialize. The subsequent real appreciation of the peso further increased the pressure on the trade balance, reducing the country's foreign reserves. Deteriorating public finances and unsustainable external balances culminated in the Argentine crisis of 2002.

Country overperformance and underperformance

We can gain insights into the sustainability of a country's prosperity by looking at its level of microeconomic competitiveness versus its current income. Table 4 lists countries in order of the absolute divergence between actual GDP per capita and the expected GDP given their microeconomic competitiveness. Countries lying above the regression line in Figure 6 are those whose current GDP per capita *exceeds* that predicted by their microeconomic competitiveness, as measured by the MICI factor. This is a danger sign, because it means that a country's per capita income may be unsustainable. Among high-income countries, Norway, Iceland, Ireland, and Canada all continue to enjoy a level of prosperity that exceeds their microeconomic fundamentals. Greece, Argentina, and, to a lesser extent, Portugal are among a group of middle-income countries whose levels of income will be unsustainable without substantial microeconomic reform. Bolivia and Haiti are among other low-income countries in this category.

Reasons for country overperformance seem to vary and can be either stable over time or transitory. Overperformance can persist for many years if it is based on natural resource endowments, as in Norway, Bolivia, and Canada, as long as the natural resources are not exhausted and commodity price levels are maintained at high enough levels. Persistent foreign aid inflows can also support otherwise unsustainable prosperity levels, which may explain the overperformance of countries such as Bangladesh. Overperformance can be more transitory if it is based on a boom in foreign investment inflows, as in Ireland. Overperformance can also reflect a lag in income behind deteriorating microeconomic conditions, as in Argentina.

Countries lying below the regression line in Figure 6 are those whose microeconomic competitiveness is *stronger* than current GDP per capita. We term them *underperformers*. Underperformance bodes well for the future, because the platform is in place to support higher GDP per capita if macro, political, or other constraints can be eased.

The United Kingdom leads the advanced countries with upside potential. Malaysia, Brazil, Chile, Estonia, and Lithuania are among the middle-income countries that should be able to support a higher GDP per capita given microeconomic fundamentals. India continues to head the list of low-income countries with upside potential.

Table 4: GDP per capita relative to microeconomic competitiveness

	High-income countries	Middle-income countries	Low-income countries
	UPSIDE POTENTIAL		
Microeconomic competitiveness would support higher per capita income	Finland United Kingdom	Korea Hungary Estonia Chile South Africa Costa Rica Malaysia Lithuania Brazil Latvia Romania	Tunisia Turkey Namibia Thailand Colombia Dominican Republic Panama El Salvador China Philippines Jordan Jamaica Morocco Sri Lanka Indonesia India Zimbabwe Vietnam Nigeria
	NEUTRAL		
Competitiveness and income are balanced	Netherlands Germany France Sweden Singapore Taiwan New Zealand Spain	Israel Czech Republic Slovak Republic Trinidad and Tobago Poland Croatia Botswana	Peru Ukraine
	CURRENT OVERACHIEVERS		
Per capita income is high relative to microeconomic competitiveness	United States Norway Iceland Switzerland Canada Denmark Belgium Austria Ireland Hong Kong SAR Italy Japan Australia	Slovenia Portugal Greece Argentina Mauritius Mexico Russian Federation Uruguay	Bulgaria Venezuela Paraguay Guatemala Ecuador Nicaragua Honduras Bolivia Bangladesh Haiti

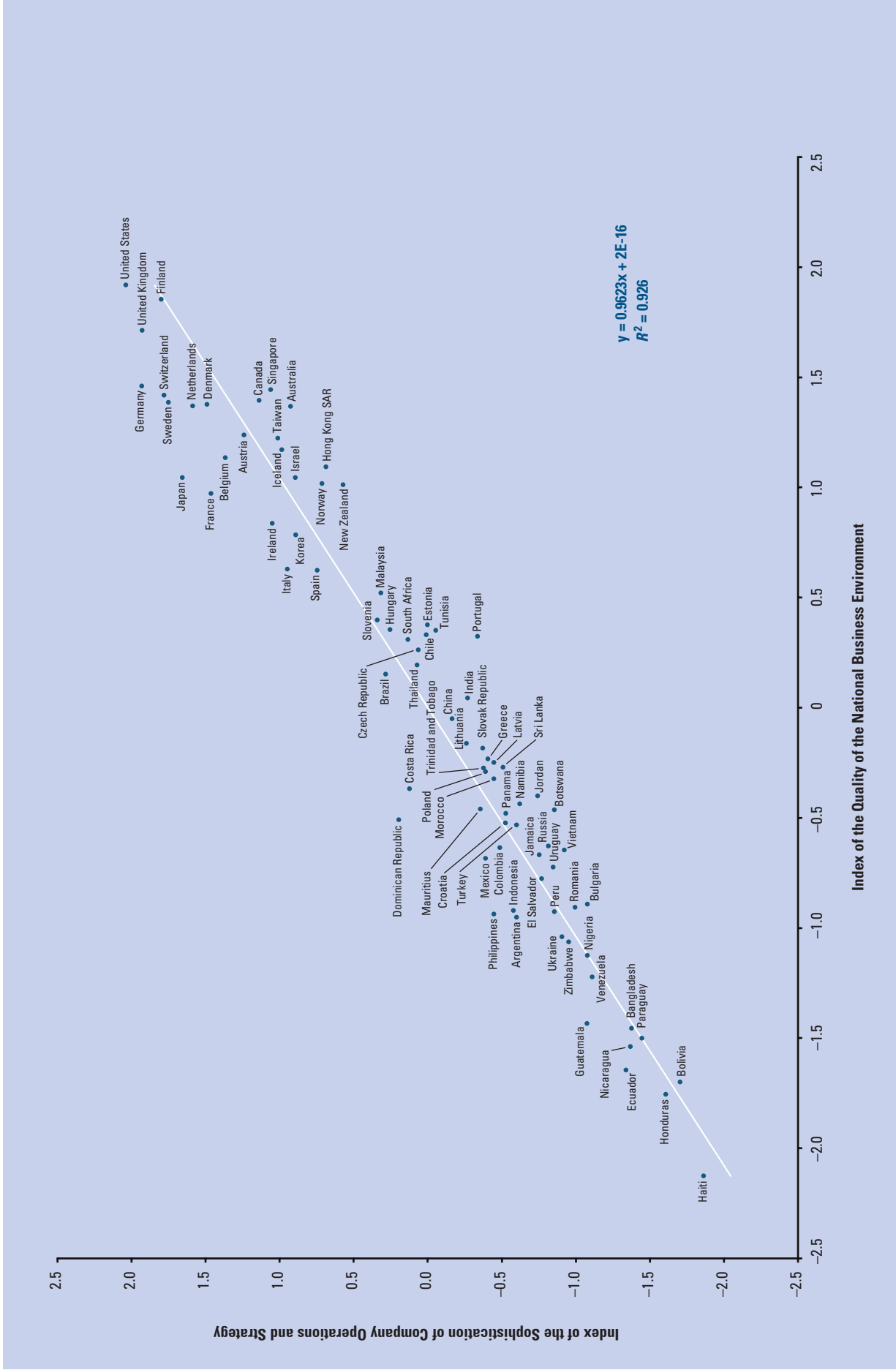
Reasons for country underperformance also seem to vary. Stable underperformance results from persistent structural, political, or social challenges. For India and China, for example, measured underperformance on a per capita basis may well result from the sheer number of people living at the subsistence level outside the mainstream economy. The average prosperity of these countries will remain below measured microeconomic potential until reforms are spread throughout the country. Transitory underperformance can occur in the aftermath of a macroeconomic crisis that has not led to a deterioration of the microeconomic fundamentals, as in Thailand. Underperformance may also reflect a lag prosperity adjusting upward to improving microeconomic conditions. This seems to be the case in Estonia, Finland, and the United Kingdom.

Company competitiveness versus the quality of the business environment

Normalized subindexes of company sophistication and the quality of the microeconomic business environment are plotted against each other in Figure 7. Countries near the line enjoy the positive interaction of the two subindexes. Countries lying above the 45-degree line are those whose companies are more advanced than the state of their business environment. Those below the line are countries whose business environment is more advanced than their companies.

Countries whose company development is ahead of the business environment include Japan, Germany, France, Sweden, Italy, Argentina, the Dominican Republic, and Indonesia. Significant changes in public policy are necessary in these countries to improve the environment for competition. Unless the business environment improves, companies will be prone to *move operations or make new investments outside the country*. Japan remains the advanced economy with the most glaring weaknesses in the business environment, despite strong companies. The consequences for Japan's economic growth have been severe, and Japanese companies have fled the country.¹¹

Figure 7: The relative development of companies and the microeconomic business environment



Countries whose business environment ranks ahead of current company sophistication include Portugal, New Zealand, Australia, Tunisia, Botswana, Hong Kong, Estonia, and Singapore. Many leading companies in these countries still rely on natural resource extraction (eg, Australia), depend heavily on OEM production, or depend on local subsidiaries of foreign multinationals that are not competing with sophisticated enough strategies (eg, Portugal, Singapore, and Tunisia). In some countries, such as Australia, part of the problem stems from rapid improvements in the business environment that have not yet been taken advantage of by companies who remain focused on traditional ways of competing. Efforts to improve entrepreneurship, strategic thinking, managerial practice, and business education are high priorities in these countries.

Change in microeconomic competitiveness and the growth of prosperity

A final area of analysis is addressed by examining whether changes that are improving or worsening their ranking register corresponding results in terms of GDP per capita growth. MICI rank changes should affect per capita GDP growth as prosperity responds to a new sustainable level. Microeconomic adjustments and other shocks may also affect growth, but the relationship between shifts in MICI ranking and prosperity growth provides a tentative indication of causality.

Regressing GDP per capita growth between 1998 and 2001 on countries' MICI rank changes between 1999 and 2002, we find a statistically significant relationship that explains about 25 percent of the total variation in GDP per capita growth across countries. Two outliers, Ireland and Zimbabwe, reduce the fit. Ireland's foreign direct investment inflows have been extraordinary and probably unsustainable; the severe political crisis for Zimbabwe has been devastating. Dropping the outliers and introducing a dummy variable for the low-rank and high-ranked countries to control for the boundedness of the ranking from above and below, the R^2 moves up to 35 percent. The coefficient is highly significant and implies that a 1.9 percent higher GDP per capita growth rate is associated with an increase of 10 ranks over the four-year time period.

Conclusions

National prosperity is strongly affected by competitiveness, which is the productivity with which a nation uses its human, capital, and natural resources. Competitiveness is rooted in a nation's microeconomic fundamentals, manifested in the sophistication of its companies and the quality of its microeconomic business environment. Political stability, sound macroeconomic policies, market opening, and privatization have long been considered the cornerstones for economic development. The results here suggest that these are necessary but not sufficient. More than 80 percent of the variation of GDP per capita across countries is accounted for by microeconomic fundamentals. We find strong evidence that microeconomic upgrading is a sequential process in which countries at different levels of development face distinctly different challenges.

Although institutions such as the International Monetary Fund (IMF) have strongly encouraged macro reforms, our findings suggest that micro reforms are equally if not more important. Without micro reforms, growth in GDP induced by sound macro policies, market opening, and privatization will be unsustainable or will not translate into improvements in GDP per capita. Appropriate micro reforms, which boost productivity and productivity growth, can greatly ease the challenge of meeting government's fiscal obligations and reducing macroeconomic distortions. Microeconomic reforms can also ease the political pressure on governments trying to defend macroeconomic stabilization and market opening against vested interests. Citizens who see monopolies losing their grip, businesses reforming themselves, and opportunities for employment and entrepreneurship increasing are much less likely to be seduced by populism and government intervention.

Our results again challenge the notion that microeconomic improvement is automatic if proper macroeconomic policies are instituted. Although there may be a tendency for microeconomic conditions to improve because GDP per capita rises, such improvement appears to be far from automatic. Moreover, the rate of improvement in microeconomic competitiveness can be affected markedly by purposeful action in both government and the private sector. As our results reveal, microeconomic conditions can move ahead of or fall behind current GDP per capita, and shifts in rankings have a significant influence on future economic growth.

Our findings indicate that it is unwise to view micro reforms narrowly as reducing the role of government and abolishing market distortions. Such steps remain a critical challenge for many countries to master. Yet government has a range of positive roles that are fundamental to prosperity, such as investing in human resources, stimulating advanced demand via regulatory standards, and building innovative capacity. Many nations need to move beyond first-stage reforms and address these agendas. The private sector too has an important role in improving a nation's competitive platform through collective activities and cluster development initiatives. Second-stage micro reforms require a new perspective on the role of the private sector.

Our analysis also makes it clear that microeconomic reform is much more than cluster development. The proliferating efforts to develop and enhance clusters around the world are highly encouraging. Yet countries also need to pursue the full range of areas in the microeconomic business environments, or cluster initiatives will ultimately be stymied.

Finally, our results highlight the need to align a nation's economic priorities with its level of development. We describe the differing challenges for low-, middle-, and high-income countries, and the difficult transitions between broad development stages. Countries that have been very successful in one mode of competing need to recognize the multifaceted adjustments necessary for managing the transition to the next one.

If there is to be continued momentum for economic reform in nations around the world, there is a pressing need to move to the next level of thinking and practice about economic development. Approaches centered largely on responding to international financial markets and ceding choices to impersonal global forces are producing a backlash that erodes the consensus for global economic progress and encourages populist national policies that are fundamentally self-defeating. Economic reform must move beyond now-standard approaches and embrace domestic competition, stringent environmental standards, and policies that meaningfully boost the skills and opportunities of citizens.

Countries are converging on macroeconomic stabilization, trade opening, privatization, and financial markets that penalize laggards. The central challenge to the world economy is now microeconomic reform. Progress in improving the sophistication of companies and the quality of the business environment is the only way to produce real improvements in efficiency, product quality, and new business opportunities that support a rising standard of living for citizens.

Notes

- 1 I would like to thank Christian Ketels and Weifeng Weng for their major role in the analyses reported here. Lyn Pohl provided able supervision of the final production of the paper, and Janice Long provided production assistance.
- 2 The proportion has grown modestly over the last several years as the model has been improved.
- 3 See the *Clusters of Innovation* reports (Porter, Council on Competitiveness, and Monitor Group, 2001a; 2001b; 2001c; 2001d; 2002a; and 2002b).
- 4 Stages of economic development were first introduced in Porter (1990).
- 5 GDP per worker is employed as a productivity measure in some studies. We used the broader measure here because GDP per worker can be increased by high unemployment or low workforce participation, which do not increase wealth. Also, holders of capital, not only workers, contribute to national productivity. In comparing the United States and France, for example, the United States has absorbed a huge influx of new workers (higher workforce participation) over the last decade, while France has maintained high GDP per worker but with high unemployment and a large student population not counted as part of the potential workforce.
- 6 In the case of Ireland, we used GNP instead of GDP because of the size of dividend outflows to foreign investors. Ireland's GDP is about 20 percent higher than its GNP.
- 7 Statistical significance at ** = 5 percent and * = 10 percent (all two-tailed tests) is noted in the table.
- 8 We conducted additional bivariate regressions (not reported here) using macroeconomic indicators collected for the *Global Competitiveness Report*. These regressions show no statistical relationship between GDP per capita and individual macroeconomic indicators. See also Easterly (2001), who shows similar results.
- 9 This analysis covers the questions that have been common over the years, which comprise the great majority of questions.
- 10 The forecast region has wider bands than a 95 percent mean confidence region. The latter provides a confidence interval for a given level of competitiveness over repeated observations. The forecast region method, in contrast, reflects a higher degree of inherent uncertainty in predicting a single observation. As a result, interpretation of the proximity of data points to the regression line should be undertaken with appropriate caveats. Note that the forecast region widens slightly as it moves away from the "center" of the graph. The center is the point located at the intersection of the mean GDP per capita level and mean factor score.
- 11 For a more detailed examination of Japan's competitive situation, see Porter, Takeuchi, and Sakakibara (2000).

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Appendix A: ANOVA Analysis for Survey Responses

I. COMPANY OPERATIONS & STRATEGY		R^2
Production Process Sophistication	0.471	
Nature of Competitive Advantage	0.376	
Extent of Staff Training	0.387	
Extent of Marketing	0.391	
Willingness to Delegate Authority	0.330	
Capacity for Innovation	0.427	
Company Spending on R&D	0.362	
Value Chain Presence	0.436	
Breadth of International Markets	0.441	
Degree of Customer Orientation	0.265	
Control of International Distribution	0.188	
Extent of Branding	0.426	
Reliance on Professional Management	0.362	
Extent of Incentive Compensation	0.252	
Extent of Regional Sales	0.362	
Prevalence of Foreign Technology Licensing	0.162	

II. NATIONAL BUSINESS ENVIRONMENT		R^2
A. FACTOR (INPUT) CONDITIONS		
1. Physical Infrastructure		
Overall Infrastructure Quality	0.612	
Railroad Infrastructure Quality	0.633	
Port Infrastructure Quality	0.514	
Air Transport Infrastructure Quality	0.447	
Electricity Supply Quality	0.555	
Telephone/Fax Infrastructure Quality	0.533	
2. Administrative Infrastructure		
Police Protection of Businesses	0.459	
Judicial Independence	0.477	
Adequacy of Public-Sector Legal Recourse	0.471	
Administrative Burden for Startups	0.310	
Extent of Bureaucratic Red Tape	0.121	
3. Human Resources		
Quality of Management Schools	0.399	
Quality of Public Schools	0.527	
Quality of Math and Science Education	0.389	
4. Technology Infrastructure		
Availability of Scientists and Engineers	0.303	
Quality of Scientific Research Institutions	0.329	
University/Industry Research Collaboration	0.292	
Intellectual Property Protection	0.464	
5. Science & Technology		
Financial Market Sophistication	0.509	
Venture Capital Availability	0.268	
Ease of Access to Loans	0.260	
Local Equity Market Access	0.329	

II. NATIONAL BUSINESS ENVIRONMENT (Cont'd.)		R^2
B. DEMAND CONDITIONS		
Buyer Sophistication	0.377	
Consumer Adoption of Latest Products	0.304	
Government Procurement of Advanced Technology Products	0.249	
Presence of Demanding Regulatory Standards	0.443	
Laws Relating to Information Technology	0.298	
Stringency of Environmental Regulations	0.466	
C. RELATED AND SUPPORTING INDUSTRIES		
Local Supplier Quality	0.354	
State of Cluster Development	0.252	
Local Availability of Process Machinery	0.292	
Local Availability of Specialized Research and Training Services	0.270	
Extent of Product and Process Collaboration	0.220	
Local Supplier Quantity	0.248	
Local Availability of Components and Parts	0.216	
D. CONTEXT FOR FIRM STRATEGY AND RIVALRY		
1. Incentives		
Extent of Distortive Government Subsidies	0.257	
Favoritism in Decisions of Government Officials	0.324	
Cooperation in Labor-Employer Relations	0.260	
Efficacy of Corporate Boards	0.206	
2. Competition		
Hidden Trade Barrier Liberalization	0.293	
Intensity of Local Competition	0.181	
Extent of Locally Based Competitors	0.155	
Effectiveness of Antitrust Policy	0.345	
Decentralization of Corporate Activity	0.342	
Costs of Other Firms' Illegal/Unfair Activities	0.240	
Tariff Liberalization	0.286	

Appendix B: The Microeconomic Competitiveness Index (Constant Country Sample)

Country	MICI ranking					Company operations and strategy ranking					Quality of the national business environment ranking					2001 GDP per capita (PPP-adjusted)
	2002	2001*	2000	1999	1998	2002	2001	2000	1999	1998	2002	2001	2000	1999	1998	
United States	1	2	2	1	1	1	1	2	1	2	1	2	2	1	1	34,888
Finland	2	1	1	2	2	4	2	3	7	8	2	1	1	2	2	25,611
United Kingdom	3	7	8	10	5	3	7	11	13	9	3	8	9	8	5	24,421
Germany	4	4	3	6	4	2	4	1	5	1	4	4	6	5	8	25,715
Switzerland	5	5	5	5	9	5	5	5	2	3	6	5	10	9	10	29,587
Sweden	6	6	7	4	7	6	6	6	3	4	8	6	11	7	9	24,978
Netherlands	7	3	4	3	3	8	3	7	8	5	10	3	3	3	4	26,242
Denmark	8	8	6	7	8	9	9	8	9	10	9	10	4	6	7	28,342
Singapore	9	9	9	12	10	14	15	15	14	12	5	9	5	12	6	23,250
Canada	10	12	11	8	6	13	14	16	12	15	7	11	8	4	3	28,611
Japan	11	10	14	14	18	7	8	4	4	7	17	16	19	19	19	27,101
Austria	12	11	13	11	16	12	11	12	10	11	12	12	12	13	17	27,518
Belgium	13	15	12	15	19	11	12	10	11	13	15	14	13	15	18	27,912
Australia	14	14	10	13	15	19	24	20	19	22	11	7	7	10	12	26,552
France	15	13	15	9	11	10	10	9	6	6	21	13	15	11	13	25,074
Taiwan	16	21	21	19	20	16	20	18	17	16	13	21	21	22	21	22,559
Iceland	17	16	17	22	24	17	16	14	21	28	14	15	16	21	23	30,725
Israel	18	17	18	20	21	20	18	13	18	21	18	18	20	20	20	19,867
Hong Kong SAR	19	18	16	21	12	24	21	23	24	17	16	17	14	18	11	25,581
Ireland	20	22	22	17	13	15	17	19	20	18	22	22	22	17	14	27,457
Norway	21	19	20	18	14	23	23	21	23	14	19	19	18	16	15	30,727
New Zealand	22	20	19	16	17	25	19	22	16	19	20	20	17	14	16	20,725
Korea	23	26	27	28	28	21	26	25	27	24	23	29	28	30	28	18,149
Italy	24	23	24	25	26	18	13	17	15	20	24	24	26	27	27	24,510
Spain	25	24	23	23	22	22	22	24	22	23	25	23	23	23	22	20,374
Malaysia	26	37	30	27	27	27	37	30	25	34	26	37	30	31	26	8,424
Slovenia	27	32	—	—	—	26	28	—	—	—	27	35	—	—	—	18,233
Hungary	28	27	32	33	31	29	33	34	36	39	29	25	31	33	31	12,941
South Africa	29	25	25	26	25	31	25	26	28	33	33	27	25	25	25	9,565
Estonia	30	28	—	—	—	36	32	—	—	—	28	26	—	—	—	10,380
Chile	31	29	26	24	23	35	30	27	26	25	31	30	24	24	24	9,753
Brazil	33	30	31	35	35	28	29	29	32	27	36	32	32	37	39	7,759
Czech Republic	34	34	34	41	30	34	41	41	55	31	34	31	34	36	33	14,885
Thailand	35	38	40	39	37	33	42	47	43	37	35	39	40	39	36	6,630
Portugal	36	33	28	29	33	41	38	35	37	48	32	28	27	26	30	17,571
India	37	36	37	42	44	40	43	40	48	50	37	34	37	43	42	2,464
China	38	43	44	49	42	38	39	38	31	35	38	46	45	50	44	4,329
Costa Rica	39	48	43	38	—	32	34	39	35	—	47	51	42	41	—	8,490
Lithuania	40	50	—	—	—	39	47	—	—	—	39	47	—	—	—	7,764
Dominican Republic	41	60	—	—	—	30	59	—	—	—	53	61	—	—	—	6,198
Slovak Republic	42	40	36	48	36	43	57	31	51	40	40	36	36	47	37	11,739
Greece	43	46	33	36	38	47	51	32	45	32	41	43	33	34	38	17,482
Trinidad and Tobago	44	31	—	—	—	44	27	—	—	—	44	38	—	—	—	10,018
Latvia	45	41	—	—	—	48	35	—	—	—	42	42	—	—	—	7,750
Poland	46	42	41	37	41	46	55	36	38	38	45	40	41	38	40	9,327
Sri Lanka	47	58	—	—	—	52	58	—	—	—	43	56	—	—	—	3,634
Mauritius	49	51	38	30	—	42	49	37	29	—	50	50	38	29	—	10,400
Panama	50	49	—	—	—	54	40	—	—	—	52	49	—	—	—	5,986
Jordan	53	47	35	32	32	59	56	46	44	42	48	41	35	28	32	4,080
Turkey	54	35	29	31	29	56	44	28	33	26	55	33	29	32	29	6,716
Mexico	55	52	42	34	39	45	46	42	30	29	60	52	43	35	41	8,969
Colombia	56	57	48	52	49	51	52	48	40	43	57	59	48	53	49	6,202
Russian Federation	58	56	52	55	46	62	54	33	42	45	56	55	53	55	47	8,948
Jamaica	59	39	—	—	—	60	31	—	—	—	59	44	—	—	—	3,890
Vietnam	60	62	53	50	43	67	64	50	41	36	58	62	52	49	43	2,130
Philippines	61	53	46	44	45	49	45	43	34	41	67	54	46	46	45	4,113
Uruguay	62	45	—	—	—	63	48	—	—	—	61	45	—	—	—	8,781
El Salvador	63	64	51	47	—	61	66	57	46	—	62	64	50	48	—	4,603
Indonesia	64	55	47	53	51	55	50	51	47	52	65	58	47	52	51	3,059
Argentina	65	54	45	40	34	57	53	45	39	30	68	53	44	40	34	12,098
Peru	66	63	49	46	47	65	65	53	56	49	66	63	51	44	46	4,797
Romania	67	61	—	—	—	69	63	—	—	—	64	60	—	—	—	7,036
Bulgaria	68	68	55	54	—	72	70	54	52	—	63	65	54	54	—	6,182
Ukraine	69	59	56	56	52	66	62	52	50	51	69	57	56	56	52	4,224
Zimbabwe	70	65	50	45	48	68	60	56	54	46	70	67	49	45	48	2,406
Nigeria	71	66	—	—	—	71	61	—	—	—	71	68	—	—	—	898
Venezuela	72	67	54	51	50	73	67	49	53	44	72	66	55	51	50	5,966
Guatemala	73	69	—	—	—	70	69	—	—	—	73	69	—	—	—	3,879
Bangladesh	74	73	—	—	—	76	72	—	—	—	74	73	—	—	—	1,644
Nicaragua	75	71	—	—	—	75	73	—	—	—	76	70	—	—	—	2,514
Paraguay	76	70	—	—	—	77	68	—	—	—	75	71	—	—	—	4,379
Ecuador	77	72	57	57	—	74	71	55	57	—	77	72	58	57	—	3,295
Honduras	78	74	—	—	—	78	74	—	—	—	79	75	—	—	—	2,505
Bolivia	79	75	58	58	—	79	75	58	58	—	78	74	57	58	—	2,439

*Using 2002 formula