
Enhancing the Microeconomic Foundations of Prosperity: The Current Competitiveness Indexⁱ

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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 show its direct relationship to a nation's standard of living. The Current Competitiveness Index provides a conceptual framework and a data-rich basis to analyze the fundamental competitiveness of countries in a comparative context.

Much discussion of competitiveness has focused on the macroeconomic, political, and legal circumstances that underpin a successful economy. These circumstances are becoming increasingly well understood. A stable set of political institutions, a trusted legal context, and sound fiscal and monetary policies contribute greatly to a healthy economy. However, these macroeconomic conditions are necessary but not sufficient. They provide the opportunity to create wealth, but do not by themselves create wealth. Wealth is actually created in the microeconomic foundations of the economy, rooted in company operating practices and strategies as well as in the quality of the inputs, infrastructure, institutions, and array of regulatory and other policies that constitute the business environment in which a nation's firms compete. Unless there is appropriate improvement at the microeconomic level, political, legal, and monetary and fiscal 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. The microeconomic approach focuses on the detailed conditions that support a high level of sustainable productivity and prosperity, measured by GDP per capita. The approach aims to move beyond the examination of broad, aggregate variables characteristic of most economic growth models, such as marginal savings and investments rates, and examines the complex array of national circumstances that support productivity. These microeconomic differences between nations prove to account for a very high proportion of the variation across countries in the level GDP per capita.ⁱⁱ The approach also recognizes that improvement in competitive potential and prosperity is not a simple linear process in which nation's progress on a constant set of dimensions. Instead, successful economic development involves the successive focus on competing on increasingly sophisticated dimensions. This year's *Report* highlights especially the shifting priorities that arise at different stages of economic development.

In the *Global Competitiveness Report 2001–2002*, we again present separate indexes for current (sustainable) competitiveness and growth competitiveness. These indexes focus on different dimensions of the challenge of improving prosperity, and provide greater insight into the strengths and challenges of nations than is possible in a single index.

The Current Competitiveness Index examines the microeconomic bases of a nation's GDP per capita. While nations can over- or underperform their fundamentals in the short and medium run, the index provides insights into the level of GDP per capita that is sustainable in the long term. The Growth Competitiveness Index looks at the more macroeconomic sources of GDP per capita growth, and generates predictions about the ability of a country to improve its per capita income over time at more/less than the convergence growth rate. Although the sustainable level of current GDP per capita and the rate of growth are correlated in the long term, each requires its own distinctive agenda.

This year's Current Competitiveness Index includes further enhancements in country coverage, variables measured, and methods compared with previous years. We are particularly pleased to have added more countries, bringing the total to 75, up from 58 last year. The countries added are all developing countries, providing a much richer platform for exploring the earlier stages of development.

Despite the significant expansion of the sample, the statistical findings are remarkably stable compared with the 2000 *Report*. The results again provide strong support for the importance of microeconomic competitiveness for prosperity and economic development. Our findings also verify the striking and regular pattern of microeconomic changes that accompany economic development.

This chapter presents six sets of results: First, we analyze the impact of individual microeconomic indicators on the level of GDP per capita to verify statistical validity, and test for the functional form of the relationship. Second, we create an aggregate measure of microeconomic competitiveness, the Current Competitiveness Index (CCI), together with two subindexes focusing on company sophistication and the quality of the national business environment. We analyze the impact of these overall indexes on GDP per capita.

Third, we use the statistical models to generate strengths and weaknesses for each country as well as insights into the overall patterns of competitive development in the world economy.

Fourth, we investigate the variations in the causes of prosperity at different stages of economic development. This allows us to highlight the most salient challenges for low-income, middle-income, and high-income nations and the major challenges those nations face in making the transition from one stage to another.

Fifth, we briefly analyze the impact of microeconomic indicators on economic growth and the relationship of imbalances between actual and predicted income levels with growth of GDP per capita.

Finally, we utilize the Index to generate the country current competitiveness rankings (see Table 1) and identify those countries whose current competitiveness will support higher incomes and who may be poised for improvement, as well as those countries whose current performance is ahead of their measured competitiveness and may face challenges in sustaining it.

As in any such investigation of a complex topic in a large number of countries, the data and the methods that are available are far from perfect. There are simply no available "hard" data on most of the salient dimensions of competitiveness, especially for a broad array of countries. Another challenge is establishing causality, because a strong statistical association does not prove the direction in which causality proceeds. We proceed pragmatically, while aiming to improve the effort each year. What is heartening is the consistency of the findings over time, and the remarkable robustness of the results to sensitivity analysis.

We believe strongly that insights into the microeconomic correlates of rising prosperity are important even if causality remains unproven. Although there may be a natural tendency for some microeconomic conditions to improve as GDP per capita grows, such improvement is clearly far from automatic. Along virtually all dimensions, microeconomic circumstances *can be influenced markedly* by purposeful action in both government and the private sector. It will be many years before definitive tests of causality will be possible, but this does not diminish the importance of understanding the microeconomic changes that accompany successful development and the patterns by which nations improve them.

Our results again highlight the pressing need to incorporate microeconomic and competitive thinking better 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 and translating economic growth into a rising standard of living. The process of microeconomic reform also needs to move to a new stage: In countries such as New Zealand and the United Kingdom, microeconomic reforms so far have been focused on the

Table 1: The Current Competitiveness Index

Country	CCI Ranking				Company Operations and Strategy Ranking				Quality of the National Business Environment Ranking				2000 GDP per Capita (ppp adjusted)
	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998	
Finland	1	1	2	2	2	3	7	8	1	1	2	2	24,864
United States	2	2	1	1	1	2	1	2	2	2	1	1	33,886
Netherlands	3	4	3	3	3	7	8	5	3	3	3	4	25,598
Germany	4	3	6	4	4	1	5	1	4	6	5	8	24,931
Switzerland	5	5	5	9	5	5	2	3	5	10	9	10	28,518
Sweden	6	7	4	7	6	6	3	4	6	11	7	9	23,884
United Kingdom	7	8	10	5	7	11	13	9	8	9	8	5	23,197
Denmark	8	6	7	8	9	8	9	10	10	4	6	7	27,120
Australia	9	10	13	15	24	20	19	22	7	7	10	12	25,758
Singapore	10	9	12	10	15	15	14	12	9	5	12	6	23,000
Canada	11	11	8	6	14	16	12	15	11	8	4	3	27,783
France	12	15	9	11	10	9	6	6	12	15	11	13	24,032
Austria	13	13	11	16	11	12	10	11	13	12	13	17	26,314
Belgium	14	12	15	19	12	10	11	13	14	13	15	18	26,958
Japan	15	14	14	18	8	4	4	7	18	19	19	19	25,796
Iceland	16	17	22	24	16	14	21	28	15	16	21	23	29,167
Israel	17	18	20	21	18	13	18	21	17	20	20	20	19,577
Hong Kong SAR	18	16	21	12	21	23	24	17	16	14	18	11	24,448
Norway	19	20	18	14	23	21	23	14	19	18	16	15	29,500
New Zealand	20	19	16	17	19	22	16	19	20	17	14	16	20,010
Taiwan	21	21	19	20	20	18	17	16	21	21	22	21	17,223
Ireland ^v	22	22	17	13	17	19	20	18	22	22	17	14	25,200
Spain	23	23	23	22	22	24	22	23	23	23	23	22	19,202
Italy	24	24	25	26	13	17	15	20	24	26	27	27	23,304
South Africa	25	25	26	25	25	26	28	33	27	25	25	25	9,189
Hungary	26	32	33	31	33	34	36	39	25	31	33	31	12,335
Estonia	27	—	—	—	32	—	—	—	26	—	—	—	9,178
Korea	28	27	28	28	26	25	27	24	30	28	30	28	17,311
Chile	29	26	24	23	30	27	26	25	28	24	24	24	9,187
Brazil	30	31	35	35	29	29	32	27	32	32	37	39	7,389
Portugal	31	28	29	33	38	35	37	48	29	27	26	30	16,882
Slovenia	32	—	—	—	28	—	—	—	35	—	—	—	17,127
Turkey	33	29	31	29	44	28	33	26	31	29	32	29	6,870
Trinidad and Tobago	34	—	—	—	27	—	—	—	37	—	—	—	8,771
Czech Republic	35	34	41	30	41	41	55	31	33	34	36	33	13,721
India	36	37	42	44	43	40	48	50	34	37	43	42	2,403
Malaysia	37	30	27	27	37	30	25	34	38	30	31	26	8,924
Thailand	38	40	39	37	42	47	43	37	39	40	39	36	6,469
Slovakia	39	36	48	36	57	31	51	40	36	36	47	37	11,035
Jamaica	40	—	—	—	31	—	—	—	44	—	—	—	3,657
Poland	41	41	37	41	55	36	38	38	40	41	38	40	8,971
Latvia	42	—	—	—	35	—	—	—	43	—	—	—	6,838
Greece	43	33	36	38	51	32	45	32	42	33	34	38	16,326
Jordan	44	35	32	32	56	46	44	42	41	35	28	32	4,079
Egypt	45	39	43	40	36	44	49	47	46	39	42	35	3,602
Uruguay	46	—	—	—	48	—	—	—	45	—	—	—	8,904
China	47	44	49	42	39	38	31	35	47	45	50	44	3,953
Panama	48	—	—	—	40	—	—	—	49	—	—	—	6,169
Lithuania	49	—	—	—	47	—	—	—	48	—	—	—	6,999
Costa Rica	50	43	38	—	34	39	35	—	52	42	41	—	9,236
Mexico	51	42	34	39	46	42	30	29	53	43	35	41	8,914
Mauritius	52	38	30	—	49	37	29	—	50	38	29	—	9,512
Argentina	53	45	40	34	53	45	39	30	51	44	40	34	12,314
Philippines	54	46	44	45	45	43	34	41	54	46	46	45	3,956
Indonesia	55	47	53	51	50	51	47	52	57	47	52	51	3,014
Colombia	56	48	52	49	52	48	40	43	59	48	53	49	5,923
Sri Lanka	57	—	—	—	58	—	—	—	55	—	—	—	3,512
Russia	58	52	55	46	54	33	42	45	56	53	55	47	8,213
Dominican Republic	59	—	—	—	59	—	—	—	58	—	—	—	5,962
Ukraine	60	56	56	52	62	52	50	51	60	56	56	52	3,693
Romania	61	—	—	—	63	—	—	—	61	—	—	—	6,309
Vietnam	62	53	50	43	64	50	41	36	64	52	49	43	1,974
Peru	63	49	46	47	65	53	56	49	62	51	44	46	4,797
El Salvador	64	51	47	—	66	57	46	—	63	50	48	—	4,477
Zimbabwe	65	50	45	48	60	56	54	46	67	49	45	48	2,697
Venezuela	66	54	51	50	67	49	53	44	66	55	51	50	5,677
Nigeria	67	—	—	—	61	—	—	—	68	—	—	—	871
Bulgaria	68	55	54	—	70	54	52	—	65	54	54	—	5,469
Guatemala	69	—	—	—	69	—	—	—	69	—	—	—	3,784
Paraguay	70	—	—	—	68	—	—	—	71	—	—	—	4,396
Nicaragua	71	—	—	—	73	—	—	—	70	—	—	—	2,396
Ecuador	72	57	57	—	71	55	57	—	72	58	57	—	3,068
Bangladesh	73	—	—	—	72	—	—	—	73	—	—	—	1,561
Honduras	74	—	—	—	74	—	—	—	75	—	—	—	2,469
Bolivia	75	58	58	—	75	58	58	—	74	57	58	—	2,408

opening of markets and reducing the role of the government. Microeconomic reforms need to move to a second stage in which investments are made to upgrade the business environment and enhance the productivity of clusters.

Developing countries, again and again, are tripped up by microeconomic failures. With global capital markets, countries can engineer spurts of growth through macroeconomic and financial reforms that bring floods of capital and cause the illusion of progress as construction cranes dot the skyline. Such reforms allow countries to exploit current comparative advantages. Unless firms are fundamentally improving their operations and strategies and competition is moving to a higher level, however, growth will be snuffed out as jobs fail to materialize, wages stagnate, and returns to investment prove disappointing. Capital flows and attention then shifts elsewhere. The austerity that results from such cycles is at the core of the backlash against globalization that is becoming perhaps the most important global economic problem.

Successful economic development requires progress on multiple fronts simultaneously. Reform efforts also need to be tightly connected to the current stage of each country's development. As an economy progresses, the constraints to continued advancement shift. Also, at strategic points in the development process, the whole basis of national competitiveness must be transformed. This requires a change in many aspects of company strategy as well as new requirements for the national business environment. We investigate these inflection points in this chapter.

What is competitiveness?

Despite widespread acceptance of its importance, competitiveness remains a concept that is not well understood. 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 each country's gains come at the expense of others. This view of competitiveness is used to justify intervention to skew market outcomes in a nation's favor, as well as policies to hold down local wages and devalue the nation's currency to expand exports. In fact, it is still often said that devaluation "makes a nation more competitive." Business leaders are prone to the market share view, because the policies seem to help solve their short-term problems in coping with international rivals.

The market share view of competitiveness, however, is deeply flawed. Where this thinking is entrenched, it becomes a principal reason why nations fail to progress economically. The goal of economic development is a rising standard of living. The need for low wages reveals a lack of competitiveness rather than competitive strength. Devaluation means that a nation takes a collective pay cut by discounting its products and services in world markets and paying more for the goods it purchases abroad. Nations with substantial export shares are often poor, while those with focused positions are often prosperous.

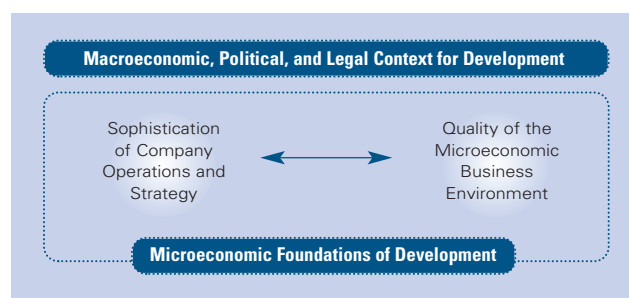
To understand competitiveness, it is necessary to move beyond the misleading metaphor of direct market competition and relate competitiveness to the sources of a nation's prosperity. A nation's standard of living is determined by the productivity of its economy, which is measured by the value of goods 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, rests on productivity. This reveals the fundamental flaw in market share-based thinking. Productivity allows a nation to support a strong currency, and with it a high standard of living. Productivity is the goal, not exports per se. Exports of low-priced products, which support only subsistence wages, are not sufficient to make a nation prosperous. It is the productivity to manufacture high-quality products that support rising wages that really matters. The productivity underpinnings of competitiveness also make it clear that the entire economy matters for standard of living, not just the traded sector. The productivity of domestic industries has a major influence on the cost of living and the cost of doing business, not to mention the level of wages in the domestic economy.

The world economy is not a zero-sum game. Many nations can improve their prosperity if they can improve productivity and specialize in the products and services where they are most productive.

The central challenge in economic development, then, is how to create the conditions for rapid and sustained productivity growth. Stable political/legal 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 productive methods. Only in this way can a nation support high wages and attractive returns to capital. Political and legal institutions coupled with macroeconomic policies set the overall context, yet prosperity depends on improving a nation's capabilities at the microeconomic level (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 companies or subsidiaries based in the country compete, and (2) the quality of the microeconomic business environment. National productivity is ultimately set by the productivity of a nation's companies. An economy cannot be competitive unless companies operating there are competitive, whether they are domestic or subsidiaries of foreign companies. However, the sophistication of companies is inextricably intertwined with the quality of the national business environment. More sophisticated strategies by companies require more highly skilled people, better information, improving infrastructure, more advanced institutions, and stronger competitive pressure.

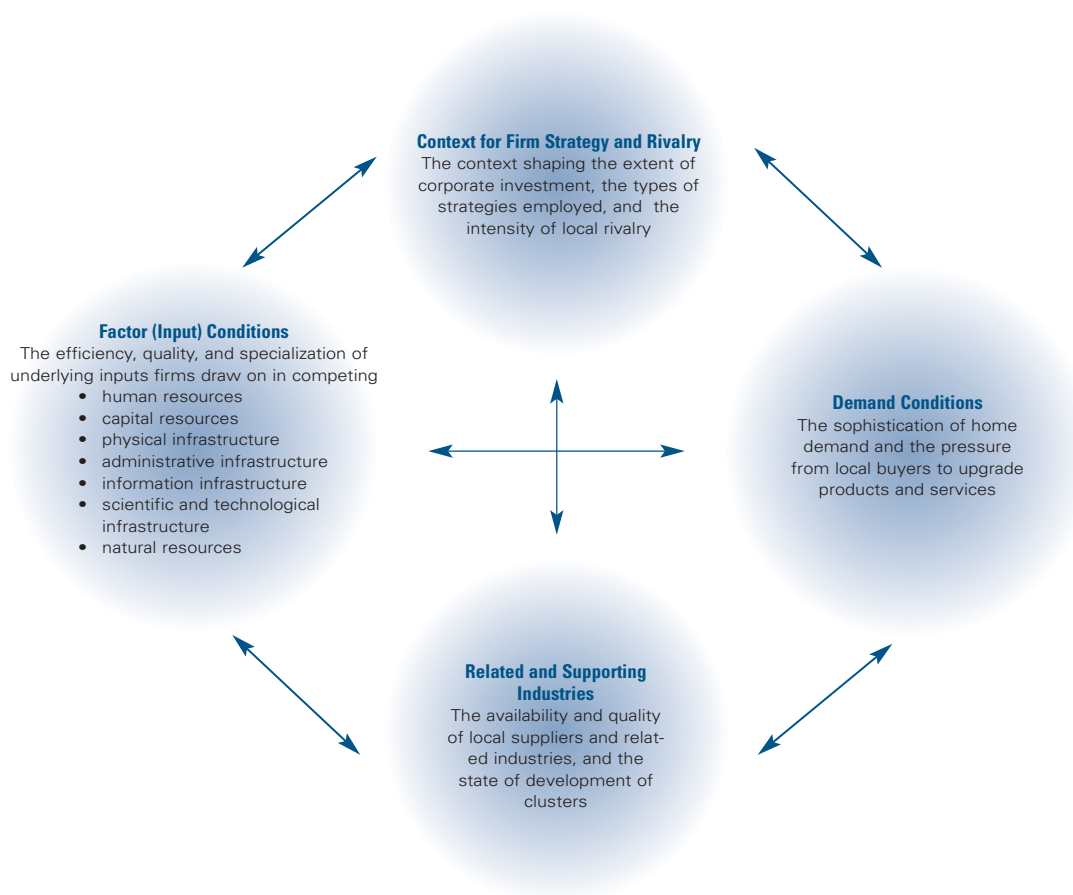
To support rising prosperity, companies must transform their ways of competing. The types of competitive advantages a nation's companies enjoy must shift from comparative advantages (low-cost labor or natural resources) to competitive advantages due to more distinctive products made with more productive methods. The transitions in goals, operating practices, and strategies required for successful development are described in detail in previous years' *Reports*. What were strengths in competing at earlier stages become weaknesses at more advanced levels of development. Rapid copying of foreign technology, for example, must give way to internal development of indigenous technology. Changes are often resisted by the corporate sector, because past approaches were profitable and because old habits are deeply ingrained in companies.

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 influences: the quality of factor (input) conditions, the context for firm strategy and rivalry, the quality of demand conditions, and the presence of locally related and supporting industries (see Figure 2).

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

In addition to government, however, many other 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 themselves, 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 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 environment for competing. Collective industry bodies, such as trade associations and chambers of commerce, also have important roles to play in improving infrastructure, upgrading training institutions, and the like, that are often not recognized. The private sector can also take collective steps to enhance the ability of individual companies to improve operating practices and strategies.

Figure 2: The microeconomic business environment

Economic development

Successful economic development is a process of successive upgrading, in which the *business environment in a nation evolves to support and encourage increasingly sophisticated and productive ways of competing*. Nations at different levels of development face distinctly different challenges. The succession of improvements in the microeconomic environment that accompany successful development were explored in detail in previous years' *Reports*.

Seeing economic development as a sequential process of building interdependent microeconomic capabilities, evolving the modes of competing, improving incentives, and increasing rivalry also exposes important pitfalls in economic policy. The influence of one part of the microeconomic business environment depends on 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 reform process. When well-trained college graduates cannot find appropriate jobs because companies are still competing based on cheap labor, a backlash against business is created.

This analysis makes it clear why macroeconomic policy alone is insufficient. Macroeconomic policies fostering

high rates of capital investment will not translate into rising productivity, for example, 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. In Asia, for example, it was weaknesses in these areas that brought down economies that looked solid in terms of macroeconomic indicators. Moreover, 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. Removing 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. The prudence of foreign debt levels depends on exactly what the 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. For sound policies at the macroeconomic level to translate into an increasingly productive economy, then, parallel microeconomic improvements must take place.

Figure 3: Stages of economic development

As nations develop, they progress through a number of stages in terms of their characteristic competitive advantages and modes of competing (see Figure 3).ⁱⁱⁱ 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 international products. 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, are focused 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. 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 in this stage not only assimilate foreign technology, but also develop the capacity to improve on it. The national business environment supports heavy investment in efficient infrastructure and modern production methods. Companies largely serve OEM customers and 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 service share, and is resilient to external shocks.

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 Investment-Driven economies such as Taiwan and Singapore are finding that their reliance on sustained infrastructure investments, OEM manufacturing for multinationals, and government guidance of the economy to boost efficiency are insufficient to support higher levels of prosperity. Yet their current level of wages and domestic costs makes 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 with a presence of deep clusters. To do so, however, companies need to move to new types of strategies, investment priorities must change, and government's role in the economy needs to shift.

Measuring microeconomic competitiveness

The Current Competitiveness Index (CCI) is constructed from measures of microeconomic competitiveness based primarily on Survey data drawn primarily from senior business leaders and, to a much lesser extent, from government officials. Only through a detailed survey can textured measures of the competitive environment and company practices be assembled across many countries. Although quantitative measures are available for some variables for some countries, a consistent ranking of a large number of countries is simply impossible at this time without the Survey. Moreover, the informed judgments of thousands of actual participants in the economies or companies are important in their own right.

This year's Survey involves more than 4,600 respondents from 75 countries. Approximately 37 percent of the respondents were from largely domestic companies, 34 percent were from significant exporters, 15 percent were from multinationals operating in the country, and 4 percent were from government. Survey data from the various categories of respondents in a country were quite similar, and the Survey findings have been quite consistent from year to year.

Appendix A lists the questions included in this year's Survey about the sophistication of company operations and strategy and the quality of the microeconomic business environment, grouped by part of the diamond. Questions on company operations and strategy were similar to 2000. New questions were added on the willingness to delegate authority and the extent of incentive compensation.

To assess the microeconomic business environment better, new questions were added in all four parts of the business environment: In the area of factor conditions, we added questions on the quality of math and science education and the availability of scientists and engineers. To measure demand conditions, we added questions on the extent of government procurement of advanced technology products and the laws relating to information technology. A series of new questions measured cluster depth and vitality. We added questions on the extent of product and process collaboration, the local availability of components and parts, the local availability process machinery, local access to specialized research and training services, and local information technology services. In the area of the context for firm strategy and rivalry, we added a question on the extent of cooperation in labor–employee relations.

The questions aim to capture the state of practice or the quality of capabilities 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 in 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.

The sample of 75 countries extends our previous sample by adding almost 20 countries. The countries included in this year’s index are shown in Table 1. In Appendix B, we report the results for the same set of countries as last year’s index to facilitate comparisons.

To estimate the CCI, the principal dependent variable used is the level of GDP per capita in 2000, adjusted for purchasing power parity (PPP). GDP per capita is the broadest measure of national productivity and is tightly connected over time to a nation’s standard of living.^{iv} It is the best single, summary measure of current competitiveness available across all countries.^v Purchasing power parity adjustments for 2000 are not yet available. To derive the 2000 GDP per capita figures used in our models, we started with the 1999 GDP per capita adjusted for purchasing power parity, grew it at the growth rate of real GDP per capita in each country, and adjusted for inflation using the US GDP deflator.

In our analysis, we sometimes explored differences across countries at different income levels. Three groups of countries were defined based on their purchasing power–adjusted US–dollar GDP per capita in 2000: 28 low-income countries with a GDP below \$6,500; 28 middle-income countries with a GDP per capita between \$6,500 and \$23,000; and 19 high-income countries with a GDP per capita above \$23,000. The cut-off points were selected based on an analysis of Survey reply patterns.

Elements of microeconomic competitiveness

To construct an overall index of competitiveness, we must identify the most important individual dimensions of microeconomic capability and validate their statistical relationship to GDP per capita. In this section, we identify the most important explanatory variables.

Table 2 shows the bivariate relationships between the available set of microeconomic variables in this year’s Survey and GDP per capita. We also include US patents per capita for each country, a measure of scientific and technological prowess that is available for all countries. The variables are grouped into those measuring the sophistication of company operations and strategy and variables measuring the quality of the national business environment. Included in the table is the slope of the regression relationship, an indication of statistical significance, and the adjusted R^2 (or proportion of variation in GDP per capita explained adjusted for statistical degrees of freedom).^{vi}

All the reported variables are highly statistically significant in the full set of countries. A wide range of company practices and multiple dimensions of the business environment prove strongly related to competitiveness. Of the new indicators available from this year’s Survey, all are statistically significant. These findings are highly consistent with results from the earlier *Global Competitiveness Reports*. The stability of the results provides an important indication that the relationship between microeconomic circumstances and GDP per capita is robust and not an artifact of a single year or set of respondents.

Among the company variables, production process sophistication, the nature of the competitive advantage of a nation’s companies and subsidiaries, the extent of training, and the extent of marketing have the strongest bilateral association with per capita GDP. By itself, the measure of whether competitive advantage rests on cheap labor/natural resources versus innovative products and processes explains a remarkable 75 percent of the variance in GDP per capita. The overall competitive approach of local companies thus represents a powerful indicator of the state of economic development. Of the new company variables, the measure of willingness to delegate authority has a very strong association (R^2 of 70 percent) with GDP per capita.

Table 2: Bivariate regression results, dependent variable: 2000 GDP per capita (PPP-adjusted)

	All Countries (n=75)		Low GDP Countries GDP per capita < \$6,500 (N = 28)		Moderate GDP Countries GDP per capita > \$6,500 and < \$23,000 (N = 28)		High GDP Countries GDP per capita > \$23,000 (N = 19)	
	Slope	Adj. R ²	Slope	Adj. R ²	Slope	Adj. R ²	Slope	Adj. R ²
I. COMPANY OPERATIONS & STRATEGY								
Production Process Sophistication	8184.71**	0.806	964.66	0.087	4621.84**	0.323	1027.15	0.017
Nature of Competitive Advantage	6111.00**	0.754	997.38*	0.117	3496.76**	0.484	-136.85	0.002
Extent of Staff Training	8263.19**	0.751	797.71	0.065	3922.71**	0.243	2088.32*	0.157
Extent of Marketing	8091.45**	0.716	1003.97**	0.176	4158.14**	0.271	727.71	0.011
n Willingness to Delegate Authority	8141.51**	0.700	953.76	0.081	4017.67**	0.236	1206.29	0.098
Capacity for Innovation	7396.04**	0.687	782.33	0.066	3910.86**	0.343	248.71	0.004
Company Spending on R&D	7606.92**	0.677	-187.31	0.003	4158.02**	0.374	598.79	0.031
Value Chain Presence	6746.92**	0.673	590.42	0.034	3264.57**	0.281	-316.66	0.009
Breadth of International Markets	6329.62**	0.665	416.97	0.030	3249.32**	0.348	-940.91	0.065
Uniqueness of Product Designs	8023.89**	0.658	365.66	0.011	2903.52*	0.121	-131.17	0.001
Degree of Customer Orientation	9746.03**	0.653	637.65	0.061	4767.19**	0.230	3734.92*	0.170
Control of International Distribution	10553.50**	0.647	646.69	0.032	5578.89**	0.288	646.10	0.013
Extent of Branding	7194.89**	0.638	921.85*	0.101	4262.93**	0.336	-273.10	0.006
Reliance on Professional Management	7456.50**	0.543	102.92	0.002	2822.89**	0.145	1141.45	0.060
n Extent of Incentive Compensation	8365.11**	0.528	56.64	0.000	4652.96**	0.339	322.74	0.006
Extent of Regional Sales	6866.33**	0.516	190.83	0.007	575.87	0.009	-2283.83	0.067
Prevalence of Foreign Technology Licensing	6337.95**	0.251	351.02	0.037	3878.54**	0.199	-1400.29	0.044
II. NATIONAL BUSINESS ENVIRONMENT								
A. FACTOR (INPUT) CONDITIONS								
1. Physical Infrastructure								
Overall, Infrastructure Quality	5380.61**	0.740	1149.16**	0.367	3017.68**	0.333	744.41	0.066
a. Basic								
n Road Infrastructure Quality	7314.57**	0.308	468.29	0.027	1734.43	0.043	41.37	0.000
Railroad Infrastructure Development	3548.73**	0.413	42.73	0.001	1739.60**	0.224	-519.64	0.085
Port Infrastructure Quality	5657.46**	0.621	694.93**	0.156	2345.19**	0.211	375.47	0.011
Air Transport Infrastructure Quality	5751.99**	0.519	1015.18**	0.353	1514.00*	0.109	1150.81	0.043
b. Advanced								
Telephone/Fax Infrastructure Quality	4960.14**	0.494	652.94**	0.337	2708.61**	0.250	769.29	0.007
Availability and Cost of Cellular Phones	7021.03**	0.361	863.67**	0.206	2437.21**	0.144	-450.81	0.001
Speed and Cost of Internet Access	6259.46**	0.647	1938.23**	0.571	2223.78**	0.182	597.99	0.037
2. Administrative Infrastructure								
Police Protection of Businesses	5419.61**	0.680	439.55	0.085	3123.24**	0.496	1434.99	0.084
Judicial Independence	5046.87**	0.631	93.67	0.004	2485.05**	0.273	1014.93	0.053
Administrative Burden for Start-Ups	5731.16**	0.331	-77.02	0.001	1786.74*	0.105	878.64	0.065
Adequacy of Public Sector Legal Recourse	5787.16**	0.680	91.44	0.003	2696.93**	0.239	1137.59	0.041
Extent of Bureaucratic Red Tape	13206.03**	0.476	-115.34	0.001	4547.71**	0.168	1873.19	0.045
3. Capital Availability								
Ease of Access to Loans	7688.69**	0.692	355.72	0.019	3610.15**	0.253	1473.22	0.094
Financial Market Sophistication	5885.85**	0.657	653.75	0.086	2022.18**	0.155	403.85	0.012
Local Equity Market Access	4769.81**	0.407	-383.55	0.086	1973.30**	0.199	891.39	0.022
Venture Capital Availability	7005.05**	0.718	-186.27	0.004	3815.33**	0.403	865.22	0.052
4. Human Resources								
Quality of Public Schools	5006.30**	0.673	714.45**	0.184	2276.11**	0.277	528.01	0.012
n Quality of Math and Science Education	5148.26**	0.413	421.90	0.085	2027.69**	0.164	-1532.57	0.098
n Availability of Scientists and Engineers	6548.85**	0.355	371.78	0.050	3055.10**	0.166	2217.21	0.101
Quality of Management Schools	6351.34**	0.485	442.69	0.047	1469.08	0.057	1004.14	0.070
5. Science & Technology								
Patents per capita (2000)	107.32**	0.520	2544.00**	0.198	54.12**	0.277	16.50**	0.228
Quality of Scientific Research Institutions	7726.51**	0.660	34.59	0.000	4367.60**	0.357	1531.69	0.090
University/Industry Research Collaboration	7849.99**	0.685	61.71	0.001	4257.33**	0.364	809.44	0.020
B. DEMAND CONDITIONS								
Buyer Sophistication	7864.18**	0.735	39.98	0.000	5400.97**	0.529	1768.98	0.074
Consumer Adoption of Latest Products	8553.92**	0.693	498.01	0.036	4813.36**	0.413	1687.84	0.069
Presence of Demanding Regulatory Standards	7132.39**	0.805	860.26*	0.123	4886.87**	0.422	1410.50	0.036
Stringency of Environmental Regulations	6170.81**	0.809	991.30**	0.165	4005.35**	0.425	998.22	0.058
n Government Procurement of Advanced Technology Products	9967.47**	0.528	167.40	0.004	5362.12**	0.384	561.55	0.004
n Laws Relating to Information Technology	7368.22**	0.742	880.41*	0.121	3800.17**	0.393	993.97	0.027

(cont'd.)

Table 2: Bivariate regression results, dependent variable: 2000 GDP per capita

	All Countries (n=75)		Low GDP Countries GDP per capita < \$6,500 (N = 28)		Moderate GDP Countries GDP per capita > \$6,500 and < \$23,000 (N = 28)		High GDP Countries GDP per capita > \$23,000 (N = 19)	
	Slope	Adj. R ²	Slope	Adj. R ²	Slope	Adj. R ²	Slope	Adj. R ²
II. QUALITY OF THE BUSINESS ENVIRONMENT (cont'd.)								
C. Related and Supporting Industries								
Local Supplier Quantity	11287.11**	0.580	582.40	0.030	4903.60*	0.129	-26.16	0.000
Local Supplier Quality	9400.61**	0.767	1785.27**	0.257	4253.02**	0.178	992.45	0.019
State of Cluster Development	7797.84**	0.490	604.81	0.046	1909.25	0.078	-539.17	0.012
n Extent of Product and Process Collaboration	10177.43**	0.583	882.13	0.053	3405.46**	0.156	546.58	0.009
n Local Availability of Components and Parts	5144.44**	0.226	674.23**	0.143	1215.54	0.029	-613.71	0.033
n Local Availability of Process Machinery	4904.12**	0.262	441.17	0.065	1104.88	0.027	3.39	0.000
n Local Availability of Specialized Research and Training Services	8286.02**	0.603	714.08	0.059	2201.04	0.085	839.70	0.026
n Local Availability of Information Technology Services	8666.74**	0.585	386.07	0.022	2824.35*	0.114	1380.16	0.046
D. Context for Firm Strategy and Rivalry								
Favoritism in Decisions of Government Officials	7621.17**	0.642	755.78*	0.102	4344.58**	0.403	-217.08	0.002
Extent of Irregular Payments	7275.30**	0.719	1337.44**	0.350	3229.07**	0.255	1888.55	0.077
Extent of Distortive Government Subsidies	6557.01**	0.275	317.55	0.013	3278.33**	0.215	-1048.91	0.082
Decentralization of Corporate Activity	6597.65**	0.545	234.49	0.016	2509.01*	0.140	1158.65	0.085
n Cooperation in Labor-Employer Relations	6150.76**	0.247	540.74	0.033	2098.02	0.092	410.53	0.018
Tariff Liberalization	9260.09**	0.590	585.41	0.045	4475.84**	0.276	-2517.04	0.079
Hidden Trade Barrier Liberalization	6695.28**	0.664	898.09*	0.124	3318.45**	0.321	-927.23	0.038
Intellectual Property Protection	6446.12**	0.834	1185.60**	0.248	4550.83**	0.505	1018.75	0.035
Intensity of Local Competition	8366.32**	0.374	-188.15	0.006	2295.62	0.045	667.94	0.012
Extent of Locally Based Competitors	7539.95**	0.334	-58.87	0.001	1787.01	0.038	825.18	0.019
Effectiveness of Anti-Trust Policy	7473.45**	0.726	1432.50**	0.230	3603.66**	0.355	358.22	0.006
Efficacy of Corporate Boards	7344.27**	0.430	946.92*	0.125	2256.99*	0.111	996.55	0.081

NOTE: * denotes $p < 0.10$, ** denotes $p < 0.05$, n denotes new question introduced into model in 2001.

Moving to the measures of the quality of the business environment, the findings again provide strong support for the relationship between all four dimensions of the competitive context and economic performance. Among factor conditions, overall infrastructure quality, venture capital availability, quality of public schools, adequacy of legal recourse, police protection of business, and university-business research collaboration have the strongest bilateral association with GDP per capita. Many of the most important influences are in institutions and rules, not in sheer accumulation of assets.

Measures of local demand conditions (IIB) perform particularly strongly in explaining the variation in GDP per capita. They range from buyer sophistication to consumer adoption of the latest products to the presence of stringent regulatory standards. These results run counter to the perceived wisdom that local demand and local markets are irrelevant in a global economy. Linkages among related industries and cluster development (IIC) are also important. These results suggest a powerful role of cluster linkages in competitiveness. Connections *across* entities and industries prove important to competitiveness, as do conditions within firms themselves. Finally, the rules and context governing competition itself are strongly related to measured productivity. The strongest are intellectual property protection and the application of antitrust that are particularly potent.

Of the new business environment variables, the quality of laws relating to IT has particularly great explanatory power. The local availability of components and parts proves to be an especially powerful predictor of GDP per capita in the low-income country group.

As in previous years, many of the individual variables are quite highly correlated with each other. This suggests that economic progress involves multiple dimensions of competitiveness moving together. Also evident is that individual elements have different influences at different levels of development, a subject we will turn to later in this chapter.

As with previous years' results, 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. Note that the same causality issue applies in macroeconomic and economic growth analyses. 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. We provide provocative 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.

Table 3: Significant changes in microeconomic conditions, 1998–2001

	Improving International Microeconomic Conditions <small>No. of countries</small>	Worsening International Microeconomic Conditions <small>No. of countries</small>
Sophistication of Company Operations and Strategy	Reliance on Profess. Management 34 l,m,h Extent of Regional Sales 28 l,m,h Extent of Marketing 23 h Degree of Customer Orientation 21 h Uniqueness of Product Designs 11 m Breadth of International Markets 8 l,m,h	Value Chain Presence 27 l,m Breadth of International Markets 21 l,m,h Extent of Branding 20 l,m Control of International Distribution 15 h Uniqueness of Product Designs 10 m
Quality of the Business Environment	Quality of Scientific Research Institutions 37 l,m,h Overall, Infrastructure Quality 33 m,h Availability and Cost of Cellular Phones 31 l,m,h Road Infrastructure Quality 30 l,m,h Railroad Infrastructure Development 30 l,m,h Financial Market Sophistication 26 m,h Extent of Locally Based Competitors 22 h Port Infrastructure Quality 21 m,h Air Transport Infrastructure Quality 19 l,m University/Industry Research Collaboration 18 m Effectiveness of Anti-Trust Policy 17 m Quality of Management Schools 17 m Administrative Burden for Start-Ups 17 m,h Quality of Public Schools 17 l,m,h Local Equity Market Access 15 m Efficacy of Corporate Boards 13 h Intensity of Local Competition 13 h Venture Capital Availability 12 l,m,h Favoritism in Decisions of Gov. Officials 12 h	Venture Capital Availability 17 l,m,h Extent of Distortive Government Subsidies 15 h Intellectual Property Protection 15 l,m Quality of Public Schools 12 l,m,h

NOTE: l (low), m (medium), and h (high) indicates 8 or more countries from this income group included in the total number

Patterns of competitive development in the global economy

Now that there are several years of consistent Survey data, analysis of the overall patterns of change in the individual dimensions of competitiveness between the 1998 Survey and the 2001 Survey are possible.^{vii} Table 3 identifies those areas where substantial changes in company practice and the quality of the business environment (either positive or negative) were reported in eight or more countries (about 10 percent). This data provides a picture of the evolution of microeconomic capability in the world economy. Overall, there is clear upgrading in national business environments, which means that the bar is rising. Among company operations and strategy, there are clear areas of broad progress, but signs of the growing intensity of competition.

The standard that must be met in terms of national business environments is clearly rising. The quality of physical infrastructure, especially, is improving in countries at all development stages. Nations at all income levels are working to improve research institutions. In middle-income countries, there are widespread improvements in antitrust policy, the sophistication of financial markets, the quality of management education, and the extent of

research collaboration between industry and universities. In high-income countries, there is widespread improvement in the vigor of local competition, upgrading of corporate boards, and improvements in the fairness and transparency of government.

Two areas of the business environment represent fault lines where some countries are progressing while others fall behind. The quality of public schools and the availability of venture capital are increasingly dividing countries. Broader challenges include the following: In low- and medium-income countries, protection of intellectual property rights is perceived as worsening in relative terms as competition moves to more knowledge-based activities. In high-income countries, the extent of distortive government subsidies is on the rise as governments are struggling to cope with international competition.

Companies are working to professionalize management in increasingly competitive markets, the single most widespread global development. Companies in nations at all levels of development are expanding sales within neighboring countries. In high-income countries, stepped-up marketing and a greater customer orientation are the rule.

While companies are improving in some respects, they are struggling to cope with tough international competition. Companies in many countries report a decreasing breadth of international markets. In low- and medium-income countries, companies are reporting narrower presence in the value chain and have difficulty building brands. Uniqueness of product designs is a strong differentiating factor in medium-income countries, with about an equal number of countries gaining versus falling back. In high-income countries, control of international distribution is weakening.

Measuring overall microeconomic competitiveness

To compute an overall measure of current competitiveness, we combine all the individual dimensions using common factor analysis to provide a single composite picture of the relative microeconomic competitiveness of each country.^{viii} Because many of the dimensions of company sophistication and the quality of the business environment tend to move together, the relatively small sample size means that the impact of individual variables cannot be statistically distinguished. Hence we use common factor analysis instead of multiple regressions.

One dominant factor was present that captured 69 percent of the covariance among the variables, representing a robust composite picture of the overall microeconomic environment. The first factor score is defined as the Current Competitiveness Index (CCI). Regressing the CCI against GDP per capita explains a very high 84.2 percent of the variance across countries. The explained variance is up slightly from the 83.8 percent from previous years' *Reports*, in spite of the addition of 17 developing countries to the sample. We again find a strong relationship between microeconomic circumstances and current national prosperity.

Figure 4 plots the CCI against 2000 GDP per capita for each country in the sample. The line through the center of the country data points is the regression line, while the bands above and below the regression line delineate the 95 percent confidence forecast region.^x The fit is tight, with only two countries (Norway and India) falling just outside the forecast region.

Countries lying above the regression line (overperformers) are those whose current GDP per capita *exceeds* that predicted by their microeconomic competitiveness, as measured by the CCI factor. This is a danger sign, because it means that a country's per capita income may be unsustainable.

Reasons for country overperformance seem to vary. For example, Norway, Iceland, Bolivia, and Canada have natural resource endowments that may be supporting unsustainable income levels. Ireland has had extraordinary recent income growth due to investments by multinationals, while the United States has extraordinary size, resources, and world influence. Greece and Argentina are experiencing deteriorating microeconomic conditions that will likely be reflected in future GDP per capita.

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

The reasons for underperformance also seem to vary. Macroeconomic or political challenges such as in Turkey, Thailand, or Brazil are one reason. Egypt and Jordan face challenges due to regional turmoil in the Middle East. More encouragingly, rapidly improving nations such as Estonia or Finland experience lags in GDP per capita improvement that should correct themselves.

To analyze each country's competitive circumstances further, we computed separate common factors for those variables related to company operations and strategy and those variables related to the microeconomic business environment.^{xi} One of the central tenets of our theoretical framework is that the sophistication of company operations and strategies depend on the quality of the microeconomic business environment and vice versa. Statistical analysis supports this relationship—the correlation between the two subfactors is 0.929.

To explore the relative state of company sophistication versus the quality of the microeconomic business environments in countries, the normalized factors are plotted against each other in Figure 5. Company sophistication is plotted on the vertical axis and the quality of the business environment on the horizontal axis. Countries lying above the 45-degree line are those whose companies are more advanced than the state of their business environment, while those below the line are countries whose business environment is more advanced than the average sophistication of local companies and subsidiaries.

Figure 4: The relationship between current competitiveness and GDP per capita



Figure 5: The relative development of companies and the microeconomic business environment



Countries whose company development is ahead of the business environment include Japan, Italy, Paraguay, and, to a lesser extent, Switzerland, Germany, and Sweden. Significant changes in public policy are necessary in these countries to underpin future prosperity. Japan remains the country with the most glaring weaknesses in the business environment. The consequences for Japan's economic growth have been severe.^{xiii} The business environments of Thailand, Sweden, and Hungary have improved most in relative terms compared to the 2000 *Report*, while those of Greece, Singapore, and Denmark have worsened.

Countries whose business environment is ahead of company practice include Australia, Slovakia, Portugal, Singapore, Hong Kong, Canada, and New Zealand. Many of the leading companies in these countries are still heavily involved in natural resource extraction (eg, Australia, Canada, and New Zealand), while others (Singapore and Hong Kong) depend heavily on OEM production and the subsidiaries of foreign multinationals. Efforts to improve entrepreneurial and managerial practice as well as business education are high priorities in these countries.

Microeconomic competitiveness and the state of country development

The appropriate company strategy and operations practices, as well as the influence of particular elements of the business environment, will differ for countries at different levels of income (and productivity). We expect the transition to be particularly challenging as economies shift from Factor-Driven to Investment-Driven to Innovation-Driven, because the stages involve different bases of competitive advantage and modes of integration with the global economy.

To examine these issues, we divide the countries in the sample into three groups based on per capita GDP: low income, medium income, and high income. While the reported variables are statistically significant across the entire sample and strongly distinguish countries *across* the three groups, the question is which variables have the strongest influence *within* groups. Unfortunately, however, our ability to distinguish these differences faces statistical hurdles. Limitations on sample size and in the variation in the dependent variable within groups reduce statistical power in the low-income and high-income subgroups. Within these subgroups, only the most robust variables will rise to the level of statistical significance.

We proceed with a number of approaches. The right hand side of Table 2 presents regressions within the subgroups. We explore both the statistical significance of each variable as well as the differences in slope even where variables do not achieve statistical significance. We also examine alternative functional forms of the relationships in the entire sample to see which has the best fit. An exponential relationship implies a greater effect at higher levels of a variable, while a semi-log relationship implies a greater effect at lower levels. This provides some indication of which variables are particularly important earlier in development and which ones take greater prominence at later stages.

What follows is our composite interpretation of all this evidence.

Low-income countries

The ability to move beyond competing solely on cheap labor/natural resources is the essential company challenge in the low-income countries, as revealed in the regressions. In other words, the challenge is to become increasingly efficient as a Factor-Driven economy. To do so, improving production process sophistication, introducing marketing and brand development, and beginning to delegate authority are important steps in enhancing company sophistication. Advancing other dimensions of corporate strategy and operations is premature at this stage.

Supporting priorities in terms of improving the business environment at the low-income stage with a positive relationship with GDP per capita are improving transportation and communications infrastructure, improving public education and training of management, liberalizing trade, reducing corruption, protecting intellectual property, and introducing a meaningful antitrust policy. Improving the quality of suppliers and introducing tighter regulatory standards are also important, as is beginning to improve corporate governance via effective corporate boards. All these steps create a foundation of efficiency, transparency, and competitive pressure to improve Factor-Driven competition.

Plotting the regressions of Survey respondents by subgroup for each variable helps reveal these patterns, and Figures 6 through 9 provide some representative examples. Improving buyer sophistication and scientific research institutions are not yet important in low-income countries, for example.

Figure 6: Prevalence of foreign technology licensing

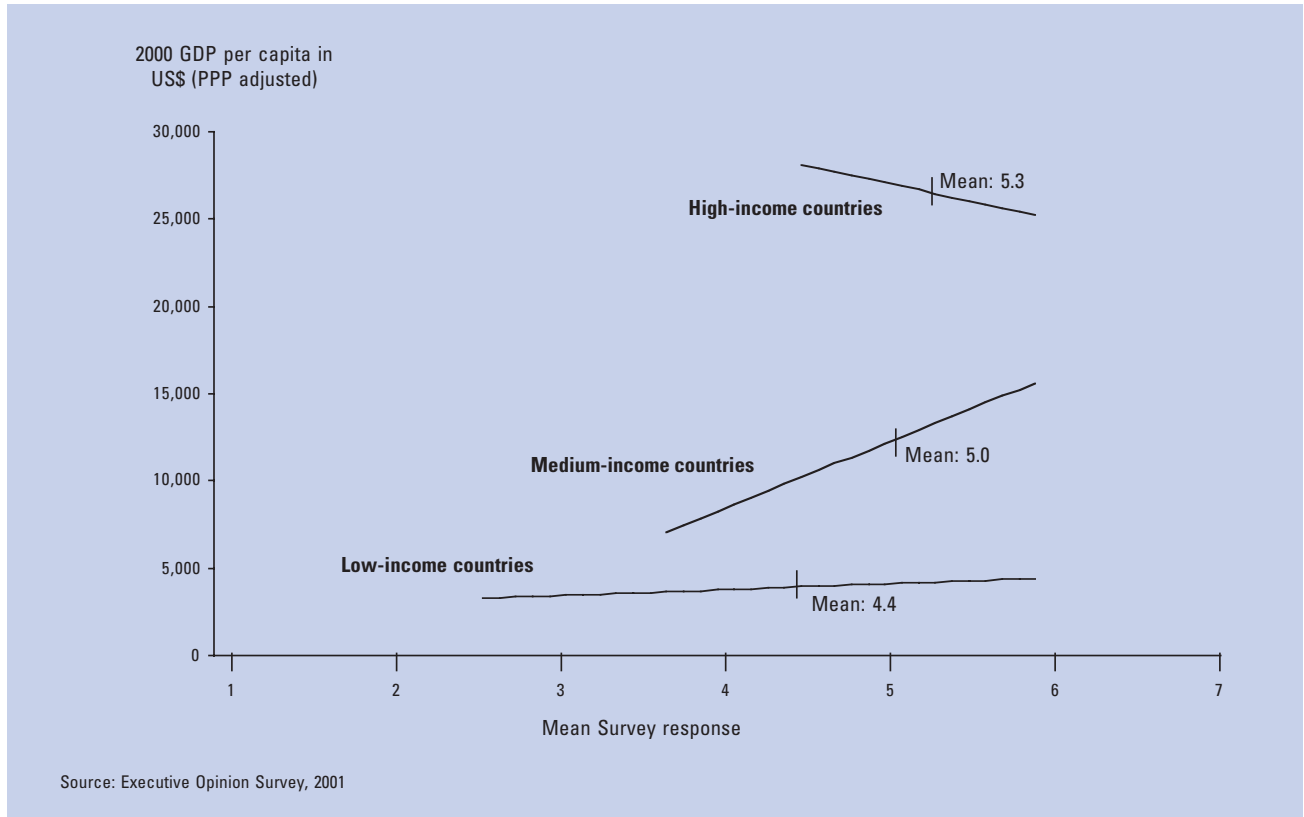


Figure 7: Buyer sophistication

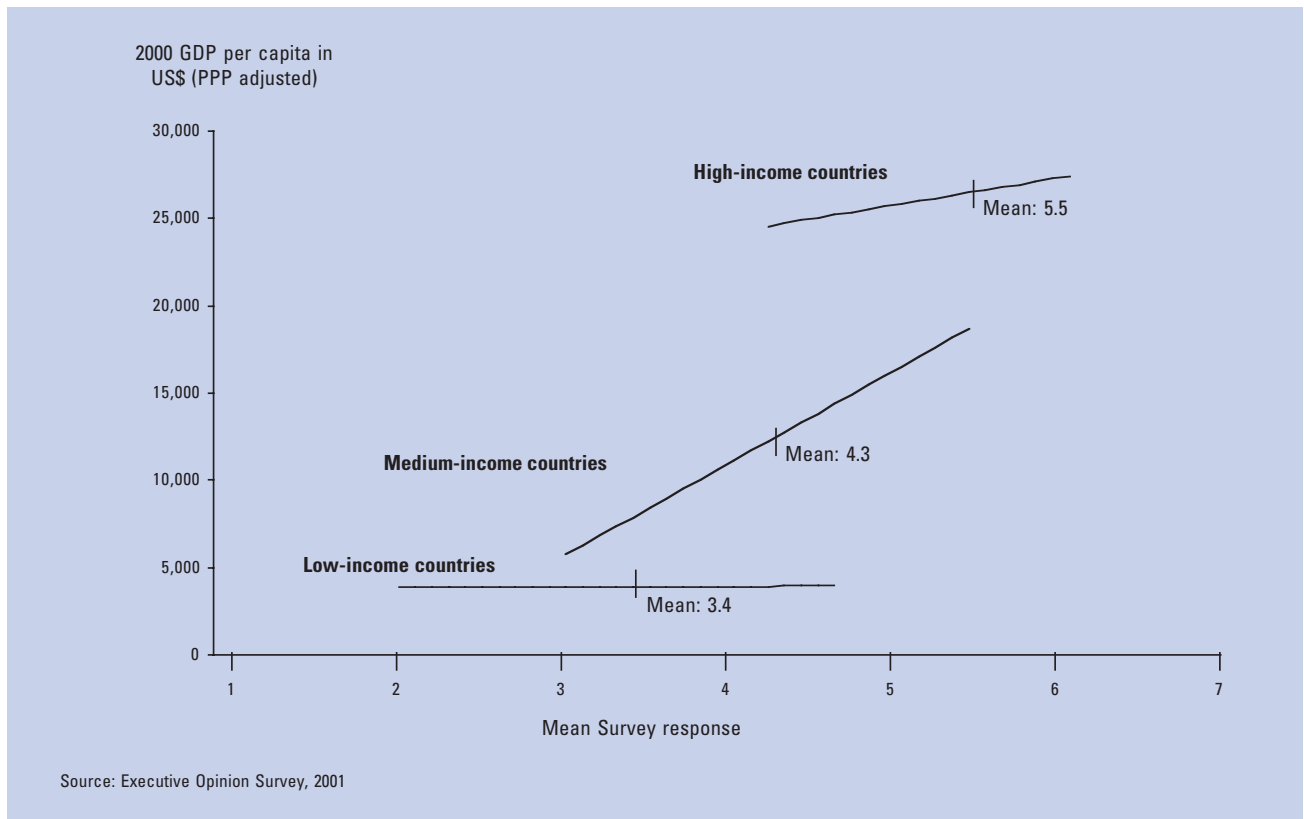


Figure 8: Quality of scientific research institutions

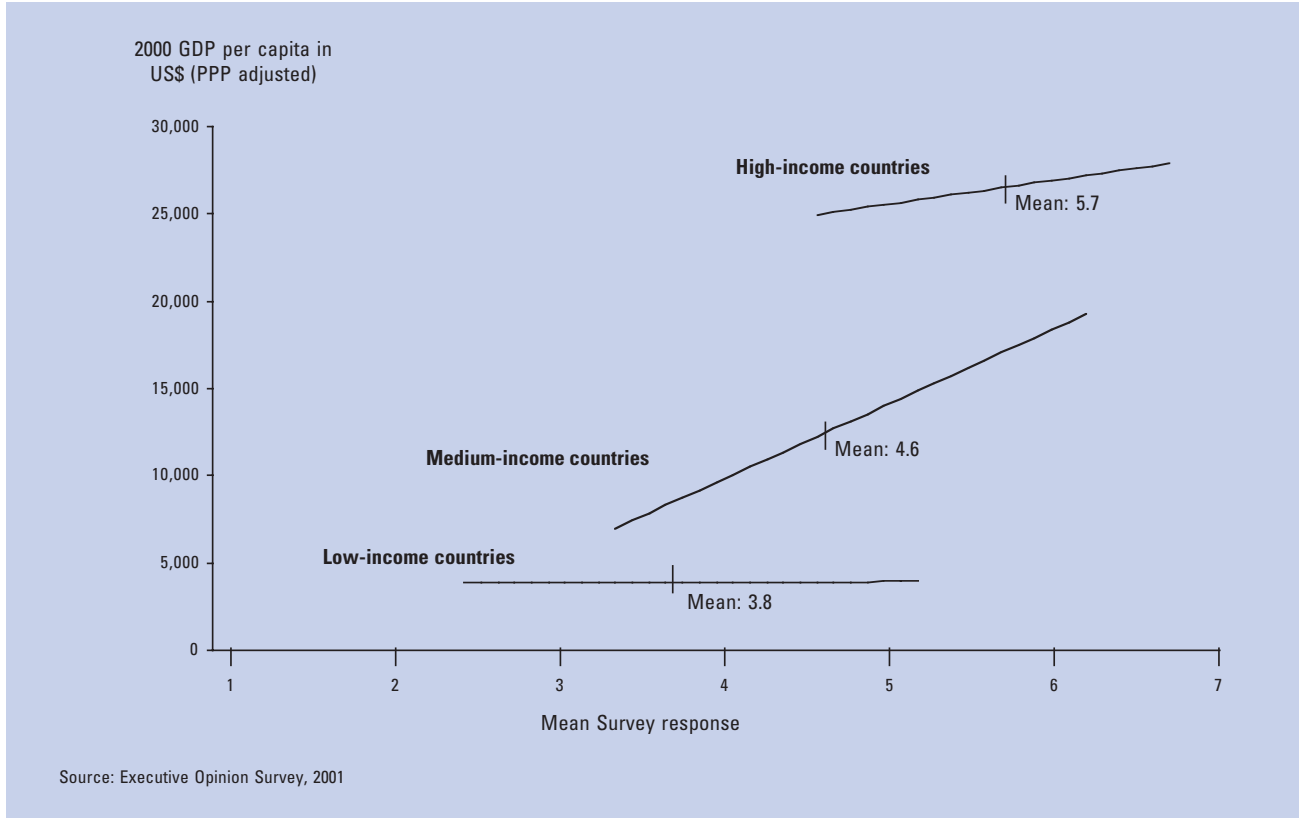
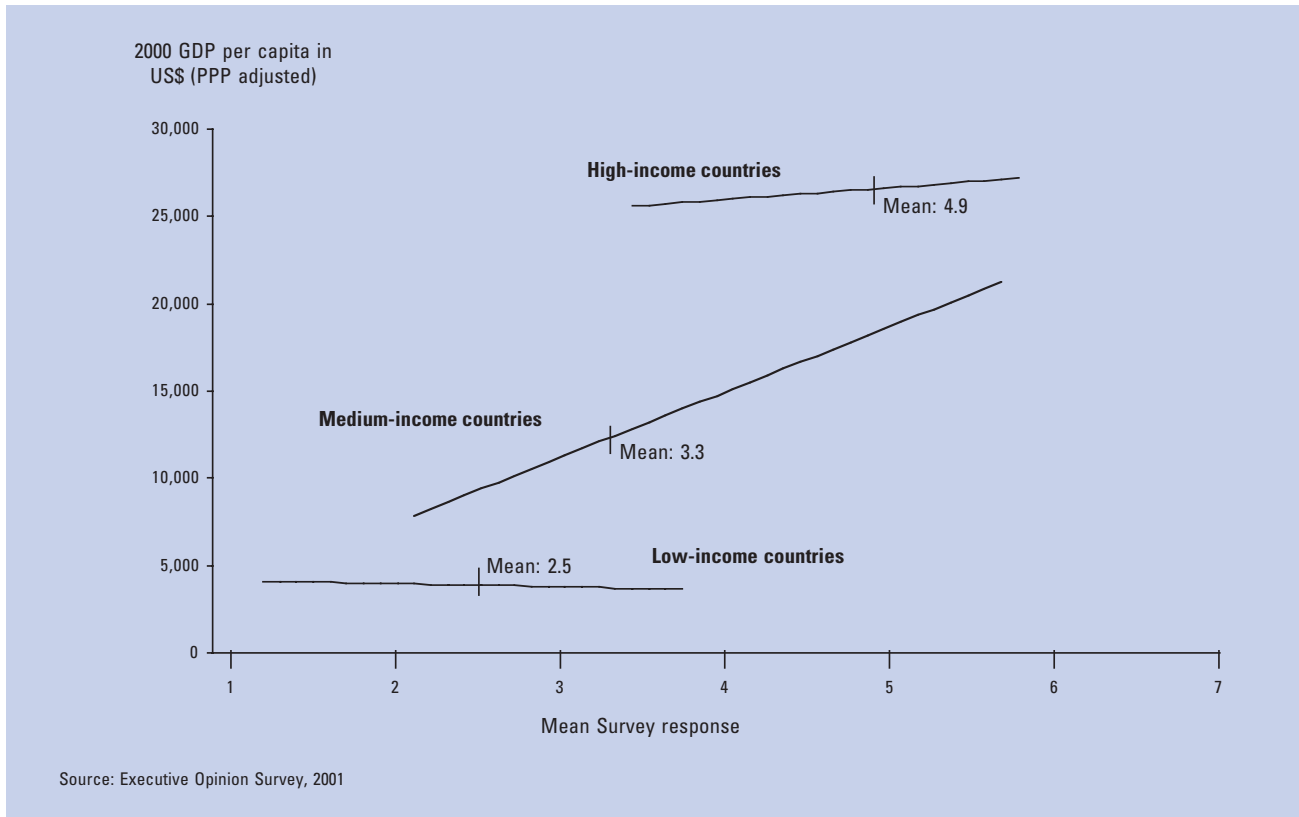


Figure 9: Venture capital availability



Medium-income countries

Moving into middle income, a series of new dimensions becomes essential. The challenge is to move beyond the Factor-Driven stage to the Investment-Driven stage. The regressions suggest the following patterns: Corporate priorities expand to include the greater orientation to customers versus the previous stage where products were either commodities or designed by foreign OEMs. Licensing foreign technology (Figure 6), developing the capacity to improve technology, and company spending on R&D become important. Gaining control of international distribution is essential to moving beyond the role of passive commodity or labor exporter. Introducing employee training is also important to enhance efficiency.

The Investment-Driven stage also creates new demands on the business environment. Reducing bureaucratic red tape and enhancing the legal system become important to enhance business efficiency. The financial markets become much more important to mobilize debt and equity capital. The Investment-Driven stage depends on a high rate of investment in products, processes, and acquisition of technology. Improving demand conditions are important to pressure improvements in producer quality (Figure 7). Full cluster development is needed to support higher levels of efficiency. As nations reach upper middle income, companies must utilize the best available foreign technology, produce products with quality levels at world standards, and organize at very high levels of efficiency.

High-income countries

To reach high-income status, further improvements 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 innovate at the world technology frontier, develop unique product designs, and sell globally. Reliance on foreign technology must fall in importance (Figure 6). In order to implement this transformation, a series of organizational changes becomes necessary. One is the complete professionalization of management, with a break from the family orientation common in the previous stage. Another organizational priority is the widespread adoption of incentive compensation to encourage risk taking. The ability to delegate authority remains important to whether a nation's firms achieve full Innovation-Driven capability.

Supporting enhancements in the business environment are also needed to achieve the Innovation-Driven stage. Some of the most important priorities are the emergence of truly world-class research institutions (Figure 8), strong research collaboration with universities, an improving supply of scientists and engineers, venture capital availability (Figure 9), truly sophisticated demand conditions, and intense local competition.

Microeconomic competitiveness and improvement in GDP per capita

The focus of the CCI is on measuring sustainable current competitiveness. However, many of the same microeconomic fundamentals also bear on the rate of productivity growth. Measures of the vitality of local competition, the environment for innovation, and demand side pressure, for example, boost current competitiveness as well as productivity growth. For example, the most influential single variable, not surprisingly, is the intensity of local competition, which was strongly associated with differences in GDP per capita growth across countries, especially in low- and high-income countries (not reported).

We briefly examined how *changes* in microeconomic conditions relate to changes in national income. We regressed the absolute change in GDP per capita 1997 to 2000 on *absolute changes* in microeconomic conditions between 1997 and 2000. A rising intensity of local competition has the strongest associations with increases in GDP per capita.

Finally, we explore the extent to which overperformance and underperformance versus microeconomic competitiveness relate to subsequent GDP per capita growth. A test of the causal influence of microeconomic conditions on GDP per capita is shown in Table 4. We calculated a measure (GAP), which is the difference between a country's *predicted* level and its *actual* level of 1997 GDP per capita based on its current competitiveness index for that year. In other words, GAP measures the degree to which a country was "overperforming" or "underperforming" its microeconomic fundamentals in 1997.

If microeconomic fundamentals cause GDP per capita, GAP should be related to GDP per capita growth in subsequent years. Countries with negative GAP, who were overperforming their fundamentals in 1997, would be expected to experience slower growth between 1997 and 2000, controlling for 1997 GDP per capita. The reverse should be true for countries underperforming their fundamentals in 1997. Hence we expect a positive sign. The strength of the effect may be modest, however, because of the relatively short time period and the susceptibility of GDP per capita growth to a myriad of transient and other disturbances.

Table 4: The relationship between predicted and actual income and change in subsequent GDP per capita

Source	SS	df	MS		
Model	0.037313189	2	0.018656595	Number of obs	= 47
Residual	0.236362426	44	0.005371873	F (2, 44)	= 3.47
Total	0.273675615	46	0.024028468	Prob > F	= 0.0398
				R ²	= 0.1363
				Adj R ²	= 0.0971
				Root MSE	= 0.07329

GDP pc growth, 1997–2000	Coefficient	Std. Error	t	P > t	[95% Conf. Interval]	
GAP, 1997	0.00000499	0.00000303	1.65	0.107	-0.0000081	0.0000348
GDP pc level, 1997	0.00000386	0.00000147	2.61	0.012	-0.0000725	0.0000304
Constant	0.0067456	0.0244175	0.28	0.784	-0.1603345	0.2846049

The results are consistent with the notion that microeconomic conditions *determine* the level of GDP per capita. Regressing 1997 to 2000 GDP per capita growth on GAP for the countries that have been included for all four years yielded positive coefficients overall and for all income categories. The coefficient was statistically significant at virtually the 90 percent level for the overall sample and is close to significant for low-income countries (not reported). Among low-income countries, GAP accounts for 21 percent of the variation in the subsequent change in GDP per capita, controlling for initial level. These results provide a tentative indication of causality from microeconomic conditions to changes in income.

Ranking microeconomic foundations

As noted earlier, competitiveness is not a zero-sum game. Many countries can improve productivity and prosperity. The Current Competitiveness Index tracks the performance of countries on this absolute level. However, the Index also supports comparisons among countries in their progress in building a productive economy, and hence has a relative component as well.

This year’s overall CCI rankings are shown in Table 1, along with the last three years’ rankings. Also included are the rankings across countries in company sophistication and the quality of the business environment. The inclusion of 17 new countries makes year-to-year comparisons difficult, especially for developing countries. Appendix B gives comparative rankings for the countries common to this and last year.

Finland again tops the United States as the leader in the CCI ranking, though the United States regained the number one company ranking. Advanced nations improving their current competitiveness rankings include the Netherlands, Sweden, Australia, Austria, France, and Iceland. Advanced countries slipping in the rankings include Germany, Denmark, Singapore, Belgium, Japan, and Hong Kong.

Developing nations improving their current competitiveness rankings on a comparable sample basis include Hungary, India, Thailand, Poland, China, Russia, and the Ukraine. Those falling in current competitiveness include Chile, Malaysia, Turkey, the Czech Republic, Greece, Jordan, Mauritius, and Peru.

Of the newly added countries, Estonia and Slovenia are the top-ranked performers. Estonia shows particular promise for future improvements in GDP per capita because it is underperforming its microeconomic potential. Bangladesh and several newly added Latin American countries register the greatest competitiveness challenges among our population of countries.

While each of the improving countries is different, there are some striking commonalities if one examines individual country patterns. Improving countries are ones where the effectiveness of antitrust policy is increasing, distortive government subsidies are declining, and weaknesses in physical infrastructure are being addressed. In the gaining countries, companies are becoming more customer oriented and more marketing savvy, improve the uniqueness of product designs, and upgrade production processes.

The countries that lost position exhibit a number of common characteristics: They are countries in which distortive government subsidies are becoming more prevalent, the quality of overall infrastructure is losing ground, the local supplier base is shrinking, and the extent of competition is falling. Companies in countries losing ground exhibit weakening regional sales, eroding control of their international distribution channels, and less distinctiveness in brands and product designs.

Please refer to the Country Profiles of this *Report* for detailed descriptions of the competitive advantages and disadvantages of each country.

Further insight into the potential of each country can be gained from the analysis of overperformance and underperformance discussed previously. Table 5 lists countries in order of the divergence between actual GDP per capita and the expected GDP, given their microeconomic competitiveness. Underperforming countries are those with potential to improve GDP per capita over time—we term this *upside potential*. Countries whose actual and predicted GDP per capita are similar are termed *neutral*. Countries where predicted GDP per capita is lower than current GDP per capita are termed *overachievers*. Note that countries whose current competitiveness ranking has slipped modestly could still have upside potential, and vice versa.

Finland leads the advanced countries with upside potential. Its stunning turnaround in microeconomic competitiveness is still far from realized in terms of reported prosperity. Conversely, Norway, Iceland, and Ireland all continue to enjoy a level of prosperity that exceeds their microeconomic fundamentals. To a lesser extent this is also true for the United States and Canada.

Turkey, Brazil, and South Africa are among the middle-income countries that should be able to support a higher GDP per capita given their microeconomic fundamentals. The converse is true for Greece, Argentina, Russia, and Slovenia, which are among a group of countries whose levels of income will be unsustainable without substantial microeconomic reform. India heads the list of low-income countries with microeconomic capability that could be unlocked by microeconomic and political reform.

Table 5: GDP per capita relative to current competitiveness

	Advanced Countries	Middle Countries	Developing Countries
	UPSIDE POTENTIAL		
Current competitiveness would support a higher per capita income	Finland Sweden United Kingdom	South Africa Brazil Turkey Chile Taiwan Hungary Israel Malaysia	India Egypt Jordan China Thailand Indonesia Philippines Vietnam Ukraine Zimbabwe
	NEUTRAL		
Income and competitiveness are balanced	Germany Netherlands France Switzerland Australia Denmark	Singapore New Zealand Poland Spain Slovakia	Colombia
	CURRENT OVERACHIEVERS		
Per capita income is high relative to current competitiveness	Norway Iceland Ireland United States Canada Belgium Italy Hong Kong SAR Austria Japan	Greece Argentina Portugal Korea Russia Mauritius Czech Republic Mexico Costa Rica	Bolivia Ecuador Bulgaria Venezuela Peru El Salvador

Conclusions

National prosperity depends on *competitiveness*, which reflects the productivity with which a nation uses resources. Competitiveness is rooted in a nation's microeconomic fundamentals and manifested in the nature of company operations and strategy and in the quality of the microeconomic business environment. Political stability and sound macroeconomic policies, accompanied by market opening and privatization, have long been considered the cornerstone for economic development. The results here suggest that they are necessary but not sufficient. We find strong evidence that microeconomic upgrading is a sequential process in which countries at different levels of development face distinctly different challenges.

While institutions such as the 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 will be unsustainable and will not translate into improvements in GDP per capita. Appropriate micro reforms, which boost productivity and productivity growth, can also greatly ease the challenge of meeting government's fiscal obligations and reducing macroeconomic distortions.

A greater focus on microeconomic reforms will pay another essential dividend. While 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, can lower 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 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 anti-reform interest groups. The political will and public support to make real economic change is elevated.

Our results again challenge the notion that microeconomic improvement is automatic if proper macroeconomic policies are instituted. While 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 current competitiveness *can be affected* markedly by purposeful action in both government and the private sector. Microeconomic conditions can move ahead of or fall behind current GDP per capita, and we find evidence that this has an influence on subsequent economic growth.

Our findings indicate that it is unwise to view micro reforms only in terms of 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 investments in human resources, building innovative capacity, and stimulating advanced demand via regulatory standards. Many nations need to move beyond first stage reforms and address these agendas. Also, the private sector 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 results also highlight the need to set a nation's economic priorities to be consistent with its level of development. We describe how the challenges are different for low-, medium-, and high-income countries. Especially challenging are the difficult transitions between development stages. Countries that have been very successful in one stage of development, such as Taiwan and Singapore in the Investment-Driven stage, need to recognize the multifaceted adjustments needed to manage the transition to the Innovation-Driven stage.

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. 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. Protests at international meetings should be a wake-up call that 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 policies, and strong market forces penalize any nation that fails to reform in this arena. The central challenge to the world economy is now microeconomic reform, but reform that moves beyond past approaches. 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, new business opportunities, and a rising standard of living for citizens.

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Notes

- i Elisabeth de Fontenay, Christian Ketels, Daniel Vasquez, and Weifeng Weng I would like to thank for their major role in the analyses reported here. Lyn Pohl provided able supervision of the final production of the paper.
- ii The proportion has grown modestly over the last several years as the model has been improved.
- iii Stages were first introduced in Michael E. Porter, *The Competitive Advantage of Nations*, Macmillan Press, 1990
- iv 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.
- v 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.
- vi Statistical significance at ** = 5 percent and * = 10 percent (all two-tailed tests) is noted in the table.
- vii This analysis covers the questions that have been common over the three years, which comprise the great majority of questions.
- viii Common factor analysis is a statistical technique for summarizing data by accounting for the common variance among all included variables. An alternative approach using a principal components analysis yielded similar qualitative results.
- ix No other factor accounted for more than 4.6 percent of the covariance.
- x 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.
- xi In each case, a statistically significant, dominant factor again explains the great majority of the variance (77.4 percent for company operations and strategy and 67.6 percent for the business environment).
- xii For a more detailed examination of Japan's competitive situation, see Porter et al (2000).

Appendix A: Survey Questions

I. COMPANY OPERATIONS & STRATEGY

Production Process Sophistication
Nature of Competitive Advantage
Extent of Staff Training
Extent of Marketing
Willingness to Delegate Authority New question
Capacity for Innovation
Company Spending on R&D
Value Chain Presence
Breadth of International Markets
Uniqueness of Product Designs
Degree of Customer Orientation
Control of International Distribution
Extent of Branding
Reliance on Professional Management
Extent of Incentive Compensation New question
Extent of Regional Sales
Prevalence of Foreign Technology Licensing

II. NATIONAL BUSINESS ENVIRONMENT

A. FACTOR (INPUT) CONDITIONS

1. Physical Infrastructure

Overall, Infrastructure Quality

a. Basic

Road Infrastructure Quality
Railroad Infrastructure Development
Port Infrastructure Quality
Air Transport Infrastructure Quality

b. Advanced

Telephone/Fax Infrastructure Quality
Availability and Cost of Cellular Phones
Speed and Cost of Internet Access

2. Administrative Infrastructure

Police Protection of Businesses
Judicial Independence
Administrative Burden for Start-Ups
Adequacy of Public Sector Legal Recourse
Extent of Bureaucratic Red Tape

3. Capital Availability

Ease of Access to Loans
Financial Market Sophistication
Local Equity Market Access
Venture Capital Availability

II. NATIONAL BUSINESS ENVIRONMENT (Cont'd.)

A. FACTOR (INPUT) CONDITIONS (Cont'd.)

4. Human Resources

Quality of Public Schools
Quality of Math and Science Education New question
Availability of Scientists and Engineers New question
Quality of Management Schools

5. Science & Technology

Patents per capita (2000)
Quality of Scientific Research Institutions
University/Industry Research Collaboration

B. DEMAND CONDITIONS

Buyer Sophistication
Consumer Adoption of Latest Products
Presence of Demanding Regulatory Standards
Stringency of Environmental Regulations
Government Procurement of Advanced
Technology Products New question
Laws Relating to Information Technology New question

C. RELATED AND SUPPORTING INDUSTRIES

Local Supplier Quantity
Local Supplier Quality
State of Cluster Development
Extent of Product and Process Collaboration New question
Local Availability of Components and Parts New question
Local Availability of Process Machinery New question
Local Availability of Specialized Research
and Training Services New question
Local Availability of Information Technology Services.... New question

D. CONTEXT FOR FIRM STRATEGY AND RIVALRY

Favoritism in Decisions of Government Officials
Extent of Irregular Payments
Extent of Distortive Government Subsidies
Decentralization of Corporate Activity
Cooperation in Labor-Employer Relations New question
Tariff Liberalization
Hidden Trade Barrier Liberalization
Intellectual Property Protection
Intensity of Local Competition
Extent of Locally Based Competitors
Effectiveness of Anti-Trust Policy
Efficacy of Corporate Boards

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

Country	CCI Ranking				Company Operations and Strategy Ranking				Quality of the National Business Environment Ranking				2000 GDP per Capita (ppp adjusted)
	2001	2000	1999	1998	2001	2000	1999	1998	2001	2000	1999	1998	
Finland	1	1	2	2	2	3	7	8	1	1	2	2	24,864
United States	2	2	1	1	1	2	1	2	2	2	1	1	33,886
Netherlands	3	4	3	3	3	7	8	5	3	3	3	4	25,598
Germany	4	3	6	4	4	1	5	1	4	6	5	8	24,931
Switzerland	5	5	5	9	5	5	2	3	5	10	9	10	28,518
Sweden	6	7	4	7	6	6	3	4	6	11	7	9	23,884
United Kingdom	7	8	10	5	7	11	13	9	8	9	8	5	23,197
Denmark	8	6	7	8	9	8	9	10	9	4	6	7	27,120
Australia	9	10	13	15	22	20	19	22	7	7	10	12	25,758
Singapore	10	9	12	10	15	15	14	12	10	5	12	6	23,000
Canada	11	11	8	6	14	16	12	15	11	8	4	3	27,783
Austria	12	13	11	16	11	12	10	11	13	12	13	17	26,314
France	13	15	9	11	10	9	6	6	12	15	11	13	24,032
Belgium	14	12	15	19	12	10	11	13	14	13	15	18	26,958
Japan	15	14	14	18	8	4	4	7	18	19	19	19	25,796
Iceland	16	17	22	24	16	14	21	28	15	16	21	23	29,167
Israel	17	18	20	21	18	13	18	21	17	20	20	20	19,577
Hong Kong SAR	18	16	21	12	21	23	24	17	16	14	18	11	24,448
Norway	19	20	18	14	24	21	23	14	19	18	16	15	29,500
New Zealand	20	19	16	17	19	22	16	19	20	17	14	16	20,010
Taiwan	21	21	19	20	20	18	17	16	21	21	22	21	17,223
Ireland	22	22	17	13	17	19	20	18	22	22	17	14	25,200
Spain	23	23	23	22	23	24	22	23	23	23	23	22	19,202
Italy	24	24	25	26	13	17	15	20	24	26	27	27	23,304
South Africa	25	25	26	25	25	26	28	33	26	25	25	25	9,189
Hungary	26	32	33	31	29	34	36	39	25	31	33	31	12,335
Korea	27	27	28	28	26	25	27	24	29	28	30	28	17,311
Chile	28	26	24	23	28	27	26	25	27	24	24	24	9,187
Portugal	29	28	29	33	33	35	37	48	28	27	26	30	16,882
Brazil	30	31	35	35	27	29	32	27	32	32	37	39	7,389
Turkey	31	29	31	29	38	28	33	26	30	29	32	29	6,870
Czech Republic	32	34	41	30	35	41	55	31	31	34	36	33	13,721
India	33	37	42	44	37	40	48	50	33	37	43	42	2,403
Malaysia	34	30	27	27	32	30	25	34	35	30	31	26	8,924
Thailand	35	40	39	37	36	47	43	37	36	40	39	36	6,469
Slovakia	36	36	48	36	49	31	51	40	34	36	47	37	11,035
Poland	37	41	37	41	46	36	38	38	37	41	38	40	8,971
Greece	38	33	36	38	43	32	45	32	39	33	34	38	16,326
Jordan	39	35	32	32	48	46	44	42	38	35	28	32	4,079
Egypt	40	39	43	40	31	44	49	47	40	39	42	35	3,602
China	41	44	49	42	34	38	31	35	41	45	50	44	3,953
Costa Rica	42	43	38	—	30	39	35	—	45	42	41	—	9,236
Mauritius	43	38	30	—	41	37	29	—	42	38	29	—	9,512
Mexico	44	42	34	39	40	42	30	29	44	43	35	41	8,914
Argentina	45	45	40	34	45	45	39	30	43	44	40	34	12,314
Philippines	46	46	44	45	39	43	34	41	46	46	46	45	3,956
Indonesia	47	47	53	51	42	51	47	52	47	47	52	51	3,014
Colombia	48	48	52	49	44	48	40	43	49	48	53	49	5,923
Russia	49	52	55	46	47	33	42	45	48	53	55	47	8,213
Ukraine	50	56	56	52	51	52	50	51	50	56	56	52	3,693
Vietnam	51	53	50	43	52	50	41	36	53	52	49	43	1,974
Peru	52	49	46	47	53	53	56	49	51	51	44	46	4,797
El Salvador	53	51	47	—	54	57	46	—	52	50	48	—	4,477
Zimbabwe	54	50	45	48	50	56	54	46	56	49	45	48	2,697
Venezuela	55	54	51	50	55	49	53	44	55	55	51	50	5,677
Bulgaria	56	55	54	—	56	54	52	—	54	54	54	—	5,469
Ecuador	57	57	57	—	57	55	57	—	57	58	57	—	3,068
Bolivia	58	58	58	—	58	58	58	—	58	57	58	—	2,408