CHAPTER 1

Introduction
Dancing with Giants

L. Alan Winters and Shahid Yusuf

China and India share at least two characteristics: their populations are huge and their economies have been growing very fast for at least 10 years. Already they account for nearly 5 percent and 2 percent of world gross domestic product (GDP), respectively, at current exchange rates. Arguably, China's expansion since 1978 already has been the largest growth "surprise" ever experienced by the world economy; and if we extrapolated their recent growth rates for half a century, we would find that China and India—the Giants—were among the world's very largest economies. Their vast labor forces and expanding skills bases imply massive productive potential, especially if they continue (China) or start (India) to invest heavily in and welcome technology inflows. Low-income countries ask whether there will be any room for them at the bottom of the industrialization ladder, whereas high- and middle-income countries fear the erosion of their current advantages in more sophisticated fields. All recognize that a booming Asia presages strong demands, not only for primary products but also for niche manufactures and services and for industrial inputs and equipment. But, equally, all are eager to know which markets will expand and by how much. Moreover, the growth of these giant economies will affect not only goods markets but also flows of savings, investment, and even people around the world, and will place heavy demands on the global commons, such as the oceans and the atmosphere.

This book cannot answer all these questions, but it contains six essays on important aspects of the growth of the Giants that will, at least, aid thinking about them. Its principal aim is to highlight some of the major implications of the Giants' growth for the world economy and hence for other countries,

drawing on new research and on the burgeoning literature concerning China and India: it is about dancing with the Giants without getting one's toes stepped on.[1] Three chapters focus on the Giants' interactions with other countries (via the evolution of their industrial capabilities, their international trade, and the international financial system), two chapters consider possible constraints and influences on their growth (inequality and governance), and one chapter combines the analysis of local constraints and global perspectives (on energy and emissions).

The question underlying the analysis is very simple. China and India account for about 37.5 percent of world population and 6.4 percent of the value of world output and income at current prices and exchange rates;[2] as their per capita production and consumption approach levels similar to those of today's developed economies—a standard to which, broadly speaking, both Giants aspire—major effects on global markets and global commons seem inevitable. We ask whether a continued rapid expansion of economic activity through 2020 is feasible, whether there are any hints about the form it will take, and how any such expansion will impinge on other countries. The last question is analyzed via the Giants' impact on global markets, systems, and commons rather than via their bilateral links with other countries. The effects on any individual country largely will be related to the nature of its engagements with these systems.[3]

Of course, the Giants will not grow in isolation—indeed, they probably never will contribute more than a minority share of world growth—so this raises a definitional question about what we mean by "the effects of the Giants' growth." In the two chapters in which we analyze the question formally, we postulate a plausible growth path to 2020 for everybody (which has implications for, say, world prices or carbon emissions), and then ask about the implications of "a bit more" growth for the Giants. One of these chapters uses a standard computable general equilibrium model to translate assumptions about future factor accumulation and technical progress into a picture of the world in 2020. It then increases the Giants' growth by about 2 percentage points per year after 2005 and calculates the resulting differences in the flows of goods and services between economies, the structure of production, and

1. One of the questions most commonly asked of World Bank country economists is, what does the rise of China and India mean for my country?

2. Unless stated otherwise, statistics in this chapter come from the World Bank's *World Development Indicators*.

3. We consider only tangible dimensions of impact, including services, but, of course, China and India also may influence norms, tastes, business models, and so forth.

economic welfare. The other chapter uses a different model, incorporating a detailed energy sector and endogenous technical progress, to explore energy/emissions scenarios up to 2050. It then similarly explores the consequences of adding about 2 percentage points per year to the Giants' growth.

In the long run and in aggregate, economies adjust fairly smoothly, so we expect the precise baseline chosen for these exercises to have rather little effect on the impact of the incremental growth. However, it is possible that there are critical economic and ecological thresholds, which mean that an extra 2 percentage points of annual growth from the Giants would have different effects, depending on whether they were introduced into a world already growing at, say, 2 percent or at 4 percent a year. For example, the supply of oil might act as a constraint, or faster growth might sufficiently increase incentives for innovation that this constraint becomes nonbinding. But, of course, no one knows whether and where such thresholds exist, so we proceed by assuming a plausible base and exploring a plausible increment, elaborating them with qualitative discussion where this seems appropriate.

The other chapters on the effects of the Giants' growth take a less quantitative approach. One describes current and foreseeable developments in industrial capability so as to identify sectors of likely future strength—and hence competitive advantage. It stresses the behavior of specific firms and sectors in promoting the very rapid changes in manufacturing and services capabilities in China and India, and hence supplements the more formal, model-based analysis of comparative advantage noted above. Another chapter quantifies the Giants' engagement in the international financial system and considers the factors—mainly their domestic policy reforms—that will influence it in the future. In the absence of predictions about such reforms, however, we eschew trying to make precise quantitative estimates of future financial stocks and flows.

The remaining two chapters are even farther from quantifying the future, but nonetheless address important factors underlying the Giants' growth. The first reviews the evidence on the Giants' poverty reduction, increasing inequality, and economic growth. It argues that increasing inequality could constrain growth—especially in China—and that governments should take steps to address it.[4] Precisely how they do so (for example, by trying to boost agricultural incomes or by encouraging migration out of rural areas) could affect

4. It is true that income inequality rose in the United Kingdom and the United States during their industrializations, without these trends being viewed as a constraint on growth. However, the scant evidence suggests that the increases were less than in China (for example, see Lindert [2000]). Furthermore, both technology and social norms were different then, and prevailing growth rates were lower, even for the most successful economies.

trade and hence the rest of the world. The last chapter similarly reviews past evidence—this time on governance and the investment climate—and concludes that, although problems of governance need not constrain growth in the Giants, certain fragilities exist. Both of these chapters are consistent with continuing rapid growth, but they identify circumstances in which it could be slowed.

From this discussion it will be clear that none of the chapters in this book makes unconditional predictions about the Giants or the world economy; rather, each chapter analyzes one aspect of growth and discusses, quantitatively or qualitatively, the type of factors that one should consider in projecting its continuation or its effects. Similarly, although the chapters all deal with the same events, they do not adopt a single analytical framework or data set. Analysis requires simplification, and the requisite simplifications vary from topic to topic. Likewise, different topics require different data and data sources, which often are somewhat at variance. Because we cannot produce a single statistical view of the Giants, we use data appropriate to each topic without seeking to impose an appearance of perfect mutual consistency. Except for the case of energy and emissions, our time horizon is the period between 2005 and 2020, long enough to identify longer-run trends and inform policy making over the next few years but, we hope, short enough not to be overwhelmed by the uncertainties of technology and politics.

We treat both China and India together as Giants because the essays are mainly concerned with the way in which the global economic environment facing *other countries* is evolving. From this perspective, the analytical apparatus required is similar for both China and India. We are not asserting, however, that the two Giants themselves are similar or that they have similar prospects. Indeed, as is noted below, even their scales are different over the 15 years that we consider. In some cases we will distinguish between the implications of Chinese and Indian growth for global outcomes or between the challenges they face in achieving growth, but for many other purposes we will refer to them collectively as the Giants.

The remainder of this introduction starts by observing that the Giants matter to the rest of the world because they are growing and because they are integrated or integrating with the global economy. It briefly discusses the forces shaping their growth and contrasts that growth with previous growth spurts in the world economy and with growth stimuli emanating from other countries; that is, it seeks to put the Giants in perspective. It next provides a brief overview of subsequent chapters, passing from industrial capability and inter-

national trade (that is, how the Giants' growth may be diffused through the world via goods and services markets); through their interactions with international financial markets, energy markets, and emissions; to the possible constraints to growth emanating from the environment, inequality, and the challenges of governance. Finally, we summarize the challenges that the growth of the Giants poses to governments of other countries, according to their different endowments and economic circumstances.

Much has been written about China's period of exceptional economic growth and India's recent takeoff, which space considerations deter us from discussing here. In a few cases, looking back is essential to looking forward, but except in such cases and where we need to measure growth rates from an historical point, we ignore these fascinating histories.[5] Thus, in this chapter we concentrate on where the Giants are now and where they are going.

Economic Growth

We are interested in the Giants because they are large and growing (and are expected to continue to do so), and because their growth impinges on other countries via their international transactions. This section considers the first of these reasons: How large and dynamic are the Giants, how does their growth compare with others' growth, and what determines the nature of their growth?

Putting the Giants in Perspective

We start by comparing the Giants with other large economies currently and in 2020. For comparing poverty or even economic welfare across countries, it is sensible to use purchasing power parity (PPP) exchange rates; but for assessing the effect of one economy on another, current actual exchange rates provide a better basis. Such international effects must operate via the international transfer of goods, services, or assets; given that the latter are tradable, their prices do not vary dramatically across countries, so PPP adjustment is not appropriate. The GDP data in table 1.1 suggest that China is perhaps one-

5. Among the many economic histories available, see Naughton (1995), Srinivasan (2003b), Panagariya (2004), Rodrik and Subramanian (2005), Frankel (2005), Friedman and Gilley (2005), Wu (2005), and Branstetter and Lardy (2006).

Table 1.1 Gross Domestic Product in Six Large Economies
percent

	Share of world GDP (2004 $ and exchange rates)		Average annual real growth rates		Average contribution to world growth	
Economy	2004	2020	1995–2004	2005–20	1995–2004	2005–20
China	4.7	7.9	9.1	6.6	12.8	15.8
India	1.7	2.4	6.1	5.5	3.2	4.1
United States	28.4	28.5	3.3	3.2	33.1	28.6
Japan	11.2	8.8	1.2	1.6	5.3	4.6
Germany	6.6	5.4	1.5	1.9[a]	3.0	3.3
Brazil	1.5	1.5	2.4	3.6	1.5	1.7
World	100.0	100.0	3.0	3.2	100.0	100.0

Source: World Bank 2005b, *World Development Indicators.*
Note: Average growth rates are calculated as the average of annual real growth rates (US$ constant 2000) for the period. Similarly, average contributions are calculated as the average of annual contributions. The calculation for the period 2005–20 is based on GDP in 2004 and the projected growth rates.
a. The World Bank projects an annual growth rate of 2.3 percent for the 25 countries of the European Union plus the European Free Trade Association, from which we derive the figure for Germany.

sixth as large as the United States in current dollars, and that India is one-sixteenth as large. In terms of impact, a given proportionate shock emanating from Germany or Japan would outweigh one from China, let alone one from India.

Turning to the growth of output and income, China and India have performed very strongly since 1995, especially compared with other large economies (see column 3 of table 1.1). China accounted for 13 percent of the world growth in output over 1995–2004; and India accounted for 3 percent, compared with the United States' 33 percent, whose slower growth rate is offset by its much higher starting share in 1995. Looking forward, the table projects GDP growth to 2020 based on the World Bank's central projections for the world economy as of early July 2006.[6] These projections are offered not as predictions but as plausible assumptions from which we can start to think about

6. It is very likely that these projections will be revised somewhat in *Global Economic Prospects 2007*. As argued above, however, the analysis of the effects of the Giants' growth is largely independent of the precise base to which it is applied. The projected decline in growth rates relative to recent experience reflects expert opinion as of early 2006, based on views about future accumulation, labor force growth, technical progress, and policy reform.

the relative magnitudes of the Giants' growth. The corresponding growth rates in factor inputs and productivity are given in table 3.4 (chapter 3).

The projections have China growing at an annual average of 6.6 percent over the period 2005–20 (an aggregate increase in output of 162 percent), and India growing at 5.5 percent a year (124 percent)—modest rates relative to the last decade but still formidable. The projections assume robust growth elsewhere (world average of 3.2 percent annually), so they imply a somewhat conservative view of the increase in the Giants' share of the world economy—from 4.7 percent to 7.9 percent for China, and from 1.7 percent to 2.4 percent for India. On these figures, the Giants account for larger shares of world growth in real terms over 2005–20 than over 1995–2004, but not dramatically so.[7] It is important to note, however, that these projections of real growth hold exchange rates constant at 2004 values. As the Giants become more affluent, the prices of their nontraded services and their equilibrium exchange rates will increase. Thus, by 2020 the Giants' shares at 2020 prices will exceed those in column 2 of table 1.1, probably substantially.[8] Nonetheless, over the time horizon we are dealing with, the Giants will not come to dominate the world economy. A given proportional change in North America or Western Europe, for example, still will be quantitatively larger.

It also is relevant to note that emerging economies' growth rates are typically more volatile than industrial countries' rates. As emerging economies become relatively larger in the world economy, this volatility will impinge more strongly on others, and unless it is negatively correlated with other growth shocks, overall volatility will increase slightly.

A different perspective on the Giants' growth comes from historical data. Looking at China's takeoff from 1979, one can compare its progress with previous large industrializations. (India's progress is too recent to be analyzed in this way.) Table 1.2 considers the United Kingdom and the United States over the 18th and 19th centuries, drawing on Maddison's (2003) statistics. Although, unfortunately, those statistics are in PPP terms and available only

7. If China's and India's growth rates were raised to 8.6 percent and 7.3 percent, respectively, as assumed in alternative simulations in chapter 3 and more in line with local predictions and plans, and if the world growth rate were reduced to 3.0 percent, China's and India's shares of GDP in 2020 would increase to 10.9 percent and 3.2 percent and their contributions to growth to 20.1 percent and 5.5 percent, respectively.

8. If we had applied these methods (that is, applied constant price growth rates to initial shares) to Japan over the period 1965–95, its share of world GDP would have appeared to rise from about 4.3 percent to 6.6 percent. In current prices, the increase was to 17.6 percent!

Table 1.2 Comparative Industrialization
GDP at PPP prices

Factor for comparison	China, WDI 1978–2004	China, Maddison 1978–2003	U.K. 1700–1820	U.K. 1820–70	U.S. 1820–70	U.S. 1870–1913
Industrializer's initial share (%)	2.9	4.9	2.9	5.2	1.8	8.8
Industrializer's annual growth (%)	13.3	7.5	1.0	2.1	4.2	3.9
World annual growth (%)	6.8	3.1	0.5	0.9	0.9	2.1
Growth differential	6.6	4.4	0.5	1.2	3.3	1.8
Number of years	26	25	120	50	50	43

Sources: World Bank 2005b, *World Development Indicators;* Maddison 2003.

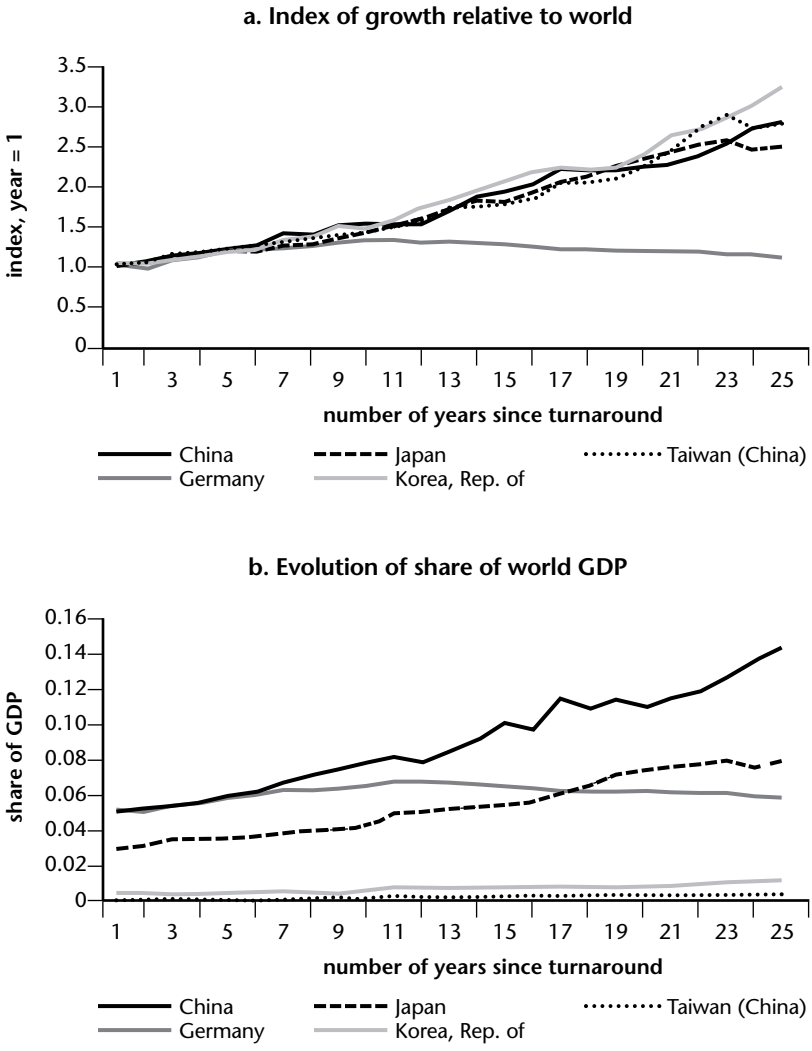
for specific dates, they do suggest that neither country administered such a large shock to the global economy as has China. According to column 1, starting with 2.9 percent of world income, for 26 years China has grown an average of 6.6 percentage points per annum faster than the world economy. According to column 2, the country had an initial share of 4.9 percent and a growth differential of 4.4 percentage points. Historical growth rates were much lower, even for booming countries, and the nearest parallel to China was the United States over the period 1820–70, during which time the differential was 3.3 percentage points a year for 50 years (with a lower starting share).[9] In absolute terms, the Industrial Revolution was a revolution because, for the first time, it was possible that average per capita incomes might double in a couple of generations. In the United States' heyday, incomes more than doubled in a single generation; and at the Giants' current growth rates and life expectancies, incomes would rise a hundredfold in a generation!

Figure 1.1 offers the same analysis for more recent experiences, again using Maddison's data. (His data for China have been challenged as too conservative over growth—see Holz [2006].) Taking 1950 (the earliest point from which annual data are available) as the start of the growth spurts in the Federal Republic of Germany, Japan, and Taiwan (China); 1962 for the Republic

9. Because we cannot choose peak and trough years precisely, we undoubtedly overstate the difference between China and the others, but it is unlikely that our qualitative conclusion is wrong: $(1 + 0.065)^{26}$ exceeds $(1 + 0.033)^{50}$.

of Korea; and 1979 for China, we plot (figure 1.1a) the growth of output relative to world output (again at constant, PPP prices) taking the starting year as 1, and (figure 1.1b) the evolution of the target economy's share of world output.

Figure 1.1 China and Previous Growth Spurts Compared



Source: Maddison 2003.

Japan, Korea, and Taiwan (China) all recorded domestic growth in excess of China's growth over their "first" 25 years, and Germany recorded rather less after the first 12 years, although in this case 1950 may be too late a starting point. After normalizing by world growth (that is, investigating the target economy's growth relative to the world's growth over its growth spurt [figure 1.1a]), all economies except Germany show fairly similar trends, at least for 20 years. In absolute terms, however, Korea and Taiwan (China) were tiny when their growth started, and even Japan, with an initial 3 percent share of world GDP, was smaller than China. Thus, in terms of an expanding share of world output, China's growth spurt has been much greater than any other spurt yet seen.

If we had data at actual prices rather than in PPP terms, China's initial share would have been much smaller and Japan's share would have been somewhat smaller, so the comparison would have been less extreme. Recall, however, that Maddison's (2003) data on China may be too conservative, and that Japan's growth spurt tailed off after 20 years. Although Japan's growth resumed in the 1980s, that country never achieved more than 9 percent of world GDP at PPP, whereas China already accounts for 14 percent.

These simple numbers suggest, indeed, that China's industrialization has been uniquely large, and this brings us only to the present. Projecting forward suggests an even larger shock to other economies. Moreover, it might be important that China and India are growing in a world that already may be pushing against the limits of resource availability. Although one might reasonably expect technical progress to continue to raise output per capita, one cannot deny that the global commons—frontier land, the oceans, the atmosphere—are under pressure.

If we do a similar exercise in terms of exports, the story is slightly different. Putting aside Korea's astronomical rate of export growth (50 times more than world exports over 43 years), China's export growth relative to the world's export growth was much the same as that of other countries for 25 years, edging into top place thereafter. In terms of shares of world exports, however, Germany had the greater increase (from 3.2 percent to 10.5 percent over 25 years, compared with China's increase from 0.8 percent to 7.3 percent and Japan's increase from 1.3 percent to 7.2 percent). China's share, of course, is expected to increase further in the future, whereas Germany's and Japan's shares fell away, and both of those were recovering rather than emerging economies. Hence, even in terms of exports, China is arguably the largest shock we have seen thus far, and its growth and that of India are projected to continue. In

short, even though China is not the dominant force in the world economy, the shock it is administering to the world is unprecedented. Clearly, interest in the Giants is well justified.

Accounting for Growth

Now we turn briefly to the underpinnings of the growth rates assumed above for the Giants. The sources of growth include the growth of the workforce, the accumulation of physical and human capital tempered by any diminution of natural capital, the rate of technical change, and the allocation of resources across activities. The contribution of these sources to actual growth in China and India is affected by the incentive structure implicit in their domestic environments (for example, the functioning of factor and product markets, the breadth of access to these markets, economic and social infrastructure, and a range of policies) and by the nature and extent of their integration with world markets. We do not analyze the Giants' domestic environments or factor accumulation in any detail, taking as given projections of their likely magnitudes from other sources. We do need to ask briefly what those projections are, however, so that we may understand the nature of their growth.

In both Giants, population growth has been slowing and is expected to continue to do so. China's population grew by only 0.6 percent a year during 2000–05, to reach 1.32 billion[10]; it is expected to peak in 2032 and decline thereafter.[11] India's population grew by 1.4 percent in 2000–05, reaching 1.10 billion, and its growth is expected to slow to 0.7 percent a year between 2030 and 2040 (by which time it will have overtaken China). These trends reflect sharply lower fertility, with people age 15–64 accounting for 71 percent in China in 2005, falling to 69 percent in 2020 and to 62 percent in 2040. The corresponding percentages for India are 63 percent in 2005, and 67 percent in 2020. China's decline in the work cohort is likely to be at least partly offset by increasing employment participation rates, but India's younger profile is one reason to believe it will start to close the income gap by the second quarter of the century.

China has increased its urban population share from 21 percent in 1981 to 43 percent in 2005 (Cooper 2006), with absolute declines in the rural popula-

10. A billion is 1,000 millions.

11. For comparability we use United Nations population projections rather than local ones.

tion. Moreover, much rural employment is nonagricultural. Nonetheless, agriculture still accounts for approximately 45 percent of employment and industry accounts for 22 percent, so despite the importance of sectoral reallocation in China's past growth, we still see it as a potent force for the future. This is especially so given that agriculture accounts for a far lower share of GDP (13 percent) than of employment. Urbanization was much slower in India—from 23 percent to 28 percent over 1981–2001—with the number of rural residents increasing by more than 200 million. Agriculture provided 59 percent of employment in 2000 and industry provided only 16 percent. Again there is plenty of scope (and need) for future reallocation in India.

Given its size and its importance in poverty alleviation (see below) agriculture will remain an important sector in both Giants, even though the main drivers of growth will be elsewhere. In China, yields already are quite high and agricultural land is under pressure from urban and road expansion, so future growth will depend significantly on new crops and increased marketization. In India, the need for growth is greater but so is the scope. Indian yields are generally low, even by developing-country standards, and agriculture is hamstrung by poor infrastructure and excessive regulation (FAO 2006). Recent growth has been respectable in the sector, and achieving our projected growth rates (let alone those foreseen in official Indian plans) will require at least as much in the future.

Both China and India have made significant advances in basic education in the last two decades. In 2000, adult literacy was 84 percent in China and 57 percent in India, and youth (ages 15–24) literacy rates were 98 percent and 73 percent, respectively. Moreover, both countries are accumulating human capital rapidly, with secondary school enrollment rates of 50 percent and 39 percent, respectively, in 1998 (UNDP 2002, pp. 183–84). By 2005, India was producing 2.5 million new university-level graduates per year, 10 percent of whom were in engineering (Cooper 2006); China produced 3.4 million graduates, including 151,000 with postgraduate degrees (*Chinese Statistical Abstract* 2005, pp. 175–76). By 2004, approximately one-fifth of the relevant age cohort in China was entering tertiary education (Cooper 2006), although, as noted above, the cohort itself is already beginning to decline.

The prodigious growth in the number of graduates in China and India presages a significant increase in the Giants' shares of world skills and, hence, changes in their comparative advantages. The McKinsey Global Institute (2005) has suggested, however, that only about 10 percent of Chinese and Indian graduates currently would meet the standards expected by major U.S. com-

panies; and, although undoubtedly this will change over time, at present one should not think of most of these graduates as very highly skilled workers.[12]

Turning to physical capital, the GDP-weighted average rates of gross capital accumulation were 42 percent and 24 percent for China and India, respectively, over 1990–2003. China's higher rate partly reflects its more capital-intensive structure and investment in infrastructure (including housing), and helps explain its faster growth (Srinivasan 2006). It was largely financed by China's prodigious domestic savings rate, and explains perhaps half of its growth rate. Total factor productivity (TFP), on the other hand, has increased at a respectable but not spectacular 2.5 percent annually in both China and India since 1995, although the recent revisions to the GDP data will increase the former's estimate. Much of the recorded TFP growth presumably reflects the reallocation of labor from agriculture and the state sector to market activities.

A natural question about any growth projection is, what are its margins of error? Overall, we believe that the estimates reported in table 1.1 are conservative and reasonably robust, but some commentators argue that there are serious vulnerabilities arising from the environment, income distribution, and governance, among other things. Hence, after analyzing the possible consequences of our central view, we return to consider these vulnerabilities. In the remainder of this introduction, we will contextualize and summarize the chapters in the rest of the book.

International Trade

China's and India's growth affect other countries through a variety of channels, but international trade is arguably the strongest and most direct. In chapter 2, the authors consider improvements in the Giants' industrial capabilities, and the authors of chapter 3 present a model of world trade into which we fit their growth.

Trade Expansion

China's trade expansion since 1978 has been legendary; and, since the early 1990s, India also has taken off. At 5.7 percent for exports and 4.8 percent for

12. In the long run, the apparent economies of agglomeration for very highly skilled workers suggest that China or India could become poles of attraction for science and engineering. Such a situation could transform countries' relative standings dramatically.

imports, China's share of world goods and services trade exceed its GDP share (see table 1.3). This is extraordinary for such a large economy, although in part it reflects China's integration into Asian production chains. Through this integration, perhaps as much as a third of the recorded value of exports (measured gross) comes from imported inputs rather than from local value added, which is what GDP measures.[13] With annual growth at 15.1 percent over 1995–2004, China provided almost 9 percent of the increase in world exports of goods and services (second only to the United States), and 8 percent of the increase in imports (also second to the United States).

Within these aggregates, China is a significant importer and exporter of manufactures, with market shares of 6.2 percent and 7.7 percent, respectively, in 2004. Manufactured imports comprise mainly parts and components for assembly activities and capital equipment, whereas exports substantially are finished goods. One notable feature of China's exporting has been technical upgrading. Devlin, Estevadeordal, and Rodríguez-Clare (2006) have shown how high-technology goods partly have displaced low-tech ones within the set of manufactured exports; Lall and Albaladejo (2004) forecast great competitive pressure from China at the lower end of the high-tech range (for example, autos, machinery, and electronics); and Freund and Ozden (2006) have found that China is displacing Central American exports mostly in sectors associated with relatively high-wage producing countries. Part of this upgrading reflects the import of more sophisticated components (see, for example, Branstetter and Lardy 2006), but part of it almost certainly arises from local improvements.

Even more striking is China's growth in imports of primary products. Soybean consumption has increased 15 percent a year recently, and soy and palm oil consumption by 20 percent and 25 percent, respectively (Streifel 2006). All largely are imported. China is a huge importer of fuels and minerals, accounting for nearly 40 percent of world market growth since 1995. Part of the increase in materials imports is balanced by corresponding declines in the countries from which China has displaced manufacturing, but most of the increase represents a net rise in demand: millions of Chinese consumers are starting to buy consumer durables and other goods as they grow richer, and low Chinese export prices are stimulating consumption elsewhere in the world.

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13. Moreover, as Bergsten et al. (2006) have shown, much of the recent increase in the U.S. trade deficit with China is offset by declines in deficits with its neighboring supplying countries. This finding is consistent with the gradual transfer of assembly from the region into China.

Table 1.3 Trade in Goods and Services for Six Large Economies

percent

	Exports of goods and services				Imports of goods and services			
Economy	Share (2004)	Share of growth (1995–2004)	Projected growth rate (2005–20)	Share of growth 2005–20	Share (2003)	Share of growth (1995–2003)	Projected growth rate (2005–20)	Share of growth 2005–20
China	5.7	8.9	7.8	15.4	4.8	7.8	6.6	11.0
India	1.2	1.8	7.5	2.7	1.1	1.8	6.3	2.2
United States	11.2[a]	10.7	3.4	9.9	16.5	24.1	3.5	15.4
Japan	5.4[a]	–3.7	4.2	6.3	4.7	–0.8	3.5	4.4
Germany	9.1	7.7	1.8	3.8	8.2	3.6	2.0	3.9
Brazil	1.0	0.5	1.7	0.4	0.7	0.3	4.3	0.8

Source: World Development Indicators.

Note: Average contribution to growth for the period 2005–20 was calculated using projected average export growth rates.

a. 2003.

The data on the total consumption of various primary products presented in table 1.4 reinforce the importance of China and India in world commodity markets. In metals and coal, China always is ranked first, with shares of 15 to 33 percent of world consumption, and the United States is ranked second or third; in other energies, the United States is first and China is second or third. The Giants also are important consumers of agricultural commodities, and here India figures prominently, leading the world in consumption of sugar and tea.

Increasing commodity demand from the Giants obviously supports prices, other things being equal, but prices also depend on supply. Most analysts hold that, in recent years, Chinese demand has increased most metals prices be-

Table 1.4 Shares in World Consumption of Primary Commodities
Percent by volume

Commodity	China	India	United States
Agriculture 2003			
Wheat	15.2	13.5	5.4
Rice	29.7	21.4	1.0
Maize	17.0	2.2	32.5
Soybeans	19.2	3.7	24.0
Soy oil	24.4	6.4	25.7
Palm oil	15.8	15.3	0.6
Sugar	6.6	15.2	12.5
Tea	14.4	17.5	3.8
Coffee	0.4	0.8	16.8
Cotton	31.2	12.8	6.9
Rubber	23.5	8.4	12.9
Metals 2005			
Aluminum	22.5	3.0	19.4
Copper	21.6	2.3	13.8
Lead	25.7	1.3	19.4
Nickel	15.2	0.9	9.5
Tin	33.3	2.2	12.1
Zinc	28.6	3.1	9.0
Iron ore	29.0	4.8	4.7
Steel production	31.5	3.5	8.5
Energy 2003			
Coal	32.9	7.1	20.6
Oil	7.4	3.4	25.3
Energy (total)	12.6	3.6	23.4
Electricity generation	11.4	3.8	24.3

Source: Streifel 2006.

cause supply growth has not kept up with demand.[14] The exception that (loosely speaking) proves the rule is aluminum, for which China is a net exporter and produces about 25 percent of the world total. Compared with price increases of 379 percent for copper from January 2002 to June 2006, aluminum prices have increased modestly—up only 80 percent (Streifel 2006).

India's trade in goods has not been remarkable to date, but it is starting to increase as barriers come down. The country accounted for about 2 percent in the growth of world exports and imports over the period 1995–2004. It will be significant for the evolution of prices, as the Giants' trade expands over the next few years, that the commodity compositions of India's and China's exports differ substantially. India's largest single export is gemstones (one-eighth of visible exports in 2004), but manufacturing is the largest export category and is now starting to grow strongly. The most dynamic export sector in India is information technology (IT)-enabled services for global companies, including call centers and software application, design, and maintenance. Such activities require qualified English-speaking labor, and India has an abundant, low-cost supply. The principal users of these services are U.S.-based global companies, but offshore software development contracts from Japan and Korea are expected to grow (Fujita and Hamaguchi 2006). Despite their dynamism, India's overall exports of commercial services ($40 billion in 2004) are less than those of China ($62 billion), although $17 billion of India's were in communications and software (arguably the high end of the sector), compared with China's $3.6 billion in software. However, both countries still have relatively small world shares (1.8 percent and 2.8 percent of world services exports, respectively).

Services account for only 41 percent of GDP in China (even after the recent revaluation), compared with approximately 52 percent in lower-middle-income countries, and this leaves plenty of room for growth if Chinese service providers start to master global service technology in the same way they have mastered manufacturing. In India, the service share of 51 percent is somewhat above the norm for low-income countries, and there is a dynamic export sector—business and IT services. The IT sector accounts for only 6 percent of service turnover, however, and employs perhaps 3 million people. Moreover, it tends to be focused at the low to middle end of the business (Commander et

14. Increases in some soft commodity prices also have been high (for example, rubber), but other factors appear to underlie this as well as China's growth (Streifel 2006).

al. 2004). Thus, services trade alone does not look likely to transform Indian economic performance.

Industrial Geography: The Evolution of Comparative Advantage

The key question going forward is how China's and India's international trade is likely to develop. Before getting to specific numbers, it is worthwhile to consider some qualitative trends in industrial and service capabilities: both India and China have demonstrated the ability to upgrade their performance in specific sectors, and this is the subject matter of chapter 2. As just noted, although services exports will be important for India, we do not see them presaging a completely new development model; and China's appetite for primary imports seems bound to continue growing. Hence, the future pattern of manufacturing production and exports is likely to be central to development in both countries.

The principal drivers in the Giants are large domestic middle-class markets (currently about $1 trillion per year in China and $250 billion annually in India), and large supplies of labor supplemented, at least in China, by improving industrial capability stimulated by domestic and foreign investment. The first driver creates a base for industries with large economies of scale, and the second will tend to keep wages down and help maintain labor-intensive industries. These features combine to favor certain mid-tech and high-tech sectors, such as autos, electronics, and domestic appliances—and, in the future, pharmaceuticals and engineering. Chapter 2 documents the rapid recent advances in technology and organization, and the strong future prospects of these sectors.

In China, the continuation of low-skilled, labor-intensive manufacturing seems feasible, but not in the traditional manufacturing centers along the eastern seaboard where production costs are rising. Some adjustment undoubtedly will prompt less-skilled sectors to relocate abroad, including to India, but it also is likely that some will move to inland centers where the large agricultural reserve of labor could be trained and mobilized for industrial work. The increases in outputs and incomes following this movement inland would be part of the payoff for recent huge investments in infrastructure.

Higher education also is booming in China, with a large share of its graduates in science and engineering and, of course, many skilled Chinese citizens who live abroad and could return. A concentration of the best Chinese brains could make China a major force in some sophisticated sectors, but the demand for skills in public service, general management, and education could

constrain the emergence of such technological or innovative leadership for some time in many sectors. One consequence of this is that China will continue to import sophisticated goods, including capital goods, from abroad.

China currently sits at the center of production networks spanning Southeast and East Asia. The policy of offering duty-free access to imports of components for exports while protecting the local producers of both intermediate and final goods for the domestic market undoubtedly encouraged Chinese openness. This policy is beginning to unwind as protection levels fall and the domestic market grows, making it more attractive to bring components manufacture closer to assembly and to the market. Thus, the biggest uncertainty probably faces the suppliers of intermediates to Chinese industry, mainly in East and Southeast Asia.

India is smaller and poorer than China (with a gross national income per capita of approximately $3,000 PPP to China's $5,000 PPP) and, as argued above, India has not yet proved to be a major force in international manufacturing. So far, India has had export success in textiles and clothing, and, given its abundance of unskilled labor, it seems almost bound to continue to sustain a competitive edge in these industries. It is also a growing player in pharmaceuticals, building on its base of seasoned corporations, its ample supplies of graduates, and its potentially large home market. For the same reasons, India also is acquiring a reputation in some specialized engineering and services sectors. Other major industries show potential for expansion—steel, white goods, electronics—but probably mainly for the home market over our time horizon. Thus, although one may anticipate robust growth in Indian manufacturing over the next decade, there does not appear to be a strong likelihood of "disruptive" exporting occurring.

Despite this catalog of potential successes, China and India cannot have comparative advantage in everything. What, therefore, does all of this mean for other countries? To answer this question we need an approach that is grounded more firmly in the adding-up constraints of the Giants' and world economies.

General Equilibrium

In chapter 3, the authors consider the Giants' growth and capabilities and ask how they affect world trade. A number of approaches to answering this question are possible. Some scholars focus mainly on the bilateral trade links—for example, DfID (2005) and Jenkins and Edwards (2006). These links represent

the most direct links between any two countries, but strong spillovers are likely between countries if they compete in the same third markets, even if there is no direct bilateral trade between them. Moreover, as Chinese demand grows, supply constraints will determine countries' exports to China more than their current shares of Chinese imports do.

Most studies consider global markets and compare the trade patterns of China and the studies' target countries. They argue that countries with export patterns similar to China's are likely to suffer losses as China grows, whereas those whose exports match China's imports are likely to receive a boost (see, for example, Lall and Weiss 2004; Goldstein et al. 2006; and Stevens and Kennan 2006). This also is informative for it recognizes that the principal mechanism connecting two countries' goods markets is the world market, and that, over the medium term, the exact locations where countries sell are secondary to the overall supply and demand balance. This approach, however, ignores China's main characteristic—its size. A flow accounting for, say, 1 percent of China's exports would outweigh Thailand's exports in that product even if it accounted for 5 percent of the latter's total exports. Also, because it is based solely on international trade data, this approach misses the resource constraints on China's future growth and their implications for relative prices, both of which will induce adjustments in initial patterns.

Our analysis of the trade consequences of the Giants' growth addresses these problems by using a computable general equilibrium (CGE) model. CGE models impose an internal consistency on their conclusions that requires, among other things, that trade imbalances do not grow unchecked and that demand equals supply for each good and factor of production. When considering such huge shocks as the more than doubling of the Giants' economies, this discipline is extremely important, although it comes at a cost, of course. The model has a simple constant returns-to-scale technology; productivity, labor force, and capital stock growth are all exogenous, and behavioral relationships are quite crude. Moreover, the modeling approach makes less use of detailed trade data than do the exercises discussed above, although a great deal of effort has gone into characterizing the trade links, the trade policy, the production structure, and the factor markets in 2001 (the model's base year) and into estimating the behavioral parameters in the various markets.

Chapter 3 starts by "rolling the world economy" forward from its base of 2001 to 2005, incorporating the enlargement of the European Union, the final liberalizations mandated by the Uruguay Round, India's recent liberalization, and Chinese accession to the World Trade Organization. It then postu-

lates a continuation to 2020 of India's current tariff and trade reforms, and applies exogenously given estimates of the growth of productivity and factor supplies in all countries and regions. These estimates come from the World Bank "central projections" and thus imply the growth rates shown in table 1.1. In aggregate, they lead to yearly import growth rates of 6.6 percent and 6.3 percent for China and India, respectively, and to export growth rates of 7.8 percent and 7.5 percent, respectively (see table 1.3). These rates, in turn, imply that China will provide 15 percent and 11 percent of export and import growth, respectively, for 2005 to 2020, compared with the United States' 10 percent and 15 percent and with India's 2.7 percent and 2.2 percent. The excess of export over import growth rates does *not* indicate expanding trade surpluses for China and India because relative prices change. In fact, for technical reasons we assume that current account balances are frozen at 2001 levels as a percentage of GDP: +1.3 percent for China and +0.3 percent for India. As before, we reiterate that these growth rates are not predictions but are plausible magnitudes to identify orders of magnitude and provide a base for some thought experiments.

From this base, we next ask, what if India and China grew faster by 1.9 percentage points and 2.1 percentage points a year, respectively, as a result of faster productivity improvements (in all industries)?[15] This simulation gives a direct indication of the effects of the Giants' advance, and we analyze it both alone and with an added assumption that the productivity increase results in improvements in the range and quality of China's and India's export products. These improvements increase the productivity (or value) of Chinese and Indian goods for their users (or consumers), which in turn generates a real income gain for them. There are three broad effects on other countries: their exports face fiercer competition because the Giants' costs fall; their imports from the Giants become cheaper; and they benefit from aggregate demand increases, both in the Giants and from the (universal) increase in real income resulting from efficiency improvement. The balance of these forces varies from country to country, but because most countries import significant amounts from the Giants and all get a share of the increase in demand, most countries gain overall. In the simulation with growth alone, the exceptions are some Southeast Asian countries, the rest of South Asia, and Europe, which are projected to be net losers (see table 3.7, chapter 3). When we add

15. Average TFP growth increases from 1.9 percent annually in the base to 3.8 percent for India, and from 2.5 percent to 4.6 percent for China.

in the quality improvements, the Philippines' losses increase (because of their dependence on electronics in which they compete so directly with China), but every other country gains, although not by enough for Singapore and the rest of South Asia to become net gainers overall. For them, the effects of increased competition predominate.

Even for net gainers, however, not all is rosy in this particular garden. The Giants achieve major gains in their market shares in manufacturing, so most other countries experience declines in manufacturing output relative to base, especially in clothing and electronics, which are most sensitive to competition. Thus, even if the Giants' success is generally good news for other countries as a whole, there are adjustment pressures within those countries.

These results suggest that an important concern for other countries will be the extent to which the Giants, especially China, move up market into their "product space"—in terms of both products and quality within them—and this view is reinforced by simulations that restrict technical progress to the sectors identified in chapter 2 as gaining competitiveness. In these cases, world trade increases strongly because China and India receive a boost in their current exporting sectors; other countries adjust their output patterns to accommodate these shocks, often halving output in machinery and electronics and nearly doubling it in clothing, leather, and wood (again, relative to the base). As Freund and Ozden (2006) concluded for Central America, manufacturers' fears about Chinese and Indian competition often are well founded. However, only a general equilibrium analysis such as ours can show that the offsetting benefits from cheaper imports and stronger world growth are generally larger.

Modeling exercises are parables, not predictions. One should not take the precise numbers literally, and within each of our aggregates (say, electronics) there will be a wide range of effects across different products. The results do show, however, that the consequences of the Giants' rise could be large in particular sectors, but that suitable adjustments to the new circumstances could enable most countries to win.

International Financial Integration

China and India are actual or potential giants in international trade, but their positions in international finance are currently more mixed. As the authors of chapter 4 show (figure 4.3), China is the seventh-largest holder of foreign direct investment (FDI) liabilities (with 4.1 percent of the world total), and

China and India, respectively, are the first- and fifth-largest holders of reserve assets. Beyond these dimensions, however, they are minor players in the international financial system.

One major question about China's and India's financial flows is whether they might absorb FDI that otherwise would go to other countries. We have argued above that the Giants' growth will change patterns of comparative advantage and competitiveness, and hence change investment opportunities—and thus FDI. Some consequences may be negative for some partners (for example, a parts factory moving from Malaysia to China), but some could be positive (investing in commodity extraction or a processing plant to meet expanding Chinese or Indian demand). This type of effect is implicit in the trade discussion above.

But this is not the way in which the issue usually is articulated: the popular concern is that investment opportunities in other countries go unfilled for lack of resources. Clearly, if world savings were fixed, new opportunities in the Giants would displace less good ones elsewhere; but, in the face of high returns, savings may increase and the Giants may have access to capital that would otherwise not go to others. Moreover, one needs to consider whether it is plausible that the Giants' absorption of capital is large enough to squeeze other countries. The evidence on China so far suggests that such displacement has not occurred, and even though that country currently absorbs approximately 18 percent of world FDI inflows, as much as a third of that amount might be "round-tripping" (that is, it might be Chinese capital that is routed through Hong Kong [China] so as to reap the tax benefits of foreign investment), and perhaps another third comes from the diaspora and would not be invested elsewhere (Cooper 2006). As India becomes more attractive to FDI, we could expect significant inflows to bring its share of FDI liabilities (0.4 percent in 2004) toward its GDP share (1.7 percent), but the magnitudes are not huge over the next decade and, again, much seems likely to come from the diaspora.

China and India are also suppliers of FDI—small amounts at present, but potentially growing larger. The former has assets of approximately $45 billion and annual outflows of $5.5 billion (Broadman 2007), mostly in Asia (especially Hong Kong [China]) and Latin America. Africa also is starting to figure in the equation as China tries to consolidate its access to fuels and raw materials. FDI in developing countries sometimes is conjoined with official aid flows (Kaplinsky, McCormick, and Morris 2006). For India, the stock and flow are about $5 billion and $1 billion, respectively.

The notable feature of the Giants' current international portfolios is their asymmetry: assets are mainly in low-yielding reserve assets (67 percent and 82 percent of the totals, respectively, for China and India), whereas their liabilities are in higher-yielding areas of FDI and portfolio investment.[16] This differentiation reflects at least partly the restrictions on and limitations of their domestic financial systems, so that as financial liberalization proceeds, we would expect their portfolios to become similar and both to become larger investors in nonreserve assets abroad. On the basis of other countries' experiences and on the pressures to move to a more consumption-based model of growth, we also expect that China's present large current account surplus will fall (although there is no professional consensus on this). Hence, overall, the Giants' reserve accumulation seems most likely to fall in absolute terms. The effects of these changes on other countries will depend on their net financial transactions. Recipients of the new FDI will benefit, whereas those countries that depend on international borrowing will suffer because the declining demand for reserves is likely to raise interest rates somewhat.

Finally, we argue that two additional fears sometimes raised about the Giants' financial integration are exaggerated. First, although the Giants' financial integration introduces risks that would be absent if they remained autarchic (via, for example, their banking risks or contagion to suppliers if demand were suddenly to fall because protectionism cut their exports), these risks do not seem to be of different orders of magnitude from those in the normal operation of international capital markets. The second fear is that Chinese and eventually Indian FDI, lending, and official development assistance could undermine multilateral efforts to achieve higher common standards in aid (for example, against tying aid) or in investment (for example, business responsibility conditions). Even if the Giants do not adopt current developed-country norms, this does not seem likely at present, given the smallness of the flows; however, as the Giants increase their outflows, it may become an issue of debate.

Growth and the Environment

Environmental issues play two roles in this narrative. First, growing concern about local environmental quality—especially water and air quality—or even absolute limits on carrying capacity could constrain growth. Second, the Giants are large enough to affect the global commons. Their emissions generate

16. When risk is factored in, the imbalance in returns is reduced.

cross-border effects in terms of acid rain, for example, but most significant in the long run are greenhouse gas emissions. Furthermore, demand from the Giants may put increased pressure on world energy markets, although perhaps not to the extent popularly imagined. The author of chapter 5 addresses energy and emissions, but we begin here by briefly considering water.

Water is the most pressing environmental constraint in both of the Giants. In 2004, China's naturally available water flow was 2,206 m^3/person and India's was 1,754 m^3/person, compared with an average of 7,762 m^3/person for developing countries and a world average of 8,549 m^3/person (Shalizi 2006). Approximately 400 of 660 major Chinese cities currently face water shortages, a third of them severe ("China: Water Shortage" 2006); and water shortage in India has become a serious and recurring concern in many regions, including some major metropolitan areas. Briscoe (2005) has documented the poor state of water infrastructure and the unsustainable exploitation of groundwater sources, stimulated rather than contained by government actions, including the provision of free power.

In China, well over half the major lakes are severely polluted; only 38 percent of river water is drinkable; only 20 percent of the population has access to unpolluted drinking water; and almost a quarter of the people regularly drink water that is heavily polluted ("China: Water Shortage" 2006). Waste disposal is a serious source of water pollution, and the countryside suffers from the leaching of nitrates into groundwater. The problems are less pronounced in India (in part because urbanization and industrial development are lower), but, nevertheless, serious degradation in the quality of groundwater and river water has resulted from indiscriminate use of pesticides and chemical fertilizers and from salinity arising from overexploitation of groundwater. The deterioration is compounded by lack of proper effluent treatment for domestic waste water and industrial wastes (Government of India 2002; Briscoe 2005).

Continued rapid growth will exacerbate the water problems in each of the Giants, demanding resources, efficient utilization, and careful political management of the allocative process. This sector is arguably the most pressing of the environmental challenges.

Energy and emissions, on the other hand, present perhaps the largest policy challenge for the next century, and in chapter 5 the author considers the Giants' roles in this challenge over the period to 2050.[17] Despite considerable

17. The longer horizon used here than elsewhere in this book is necessary because policy options can be assessed sensibly only relative to long-run outcomes and because adjustment paths are so long.

progress in recent decades, China still appears to be energy inefficient. Its energy use per unit of GDP at market prices and actual exchange rates is 3.5 times that of the United States. India's is 2.7 times larger, and this factor has been increasing of late. Measured relative to GDP in PPP instead, China and India appear more efficient than the United States. However, given that most energy use is in tradable/marketed sectors and given the evidence of continuing inefficiency in industry (World Energy Council 1999), it still seems that the scope for and returns to economizing on the Giants' energy use are potentially large. China and India currently contribute 17 percent and 5 percent of global carbon emissions, respectively, and could account jointly for half of those emissions by 2050. If they alone pursued reasonable efficiency strategies, total world emissions could fall by approximately 20 percent, and their joint share could decrease to below 40 percent. Locally, air pollution is estimated to have caused more than 400,000 excess deaths in China in 2003 and more than 100,000 in India in 2000, and these figures will increase if action is not taken.

China and India both have huge investment programs under way or planned, and we argue that they currently have a one-time opportunity to raise energy efficiency for the sake of both local and global objectives by adopting higher standards now. Doing so undoubtedly will add to their costs, but because the efficiencies will be engineered from the beginning and from a low base, costs may not increase very significantly. Much depends on very specific details—for instance, whether locations that produce or burn dirty coal would have the water available to undertake pre-use washing. Moreover, apart from some transitional frictions, our results suggest that a less carbon-intensive energy policy would not curtail the Giants' growth seriously or place huge demands on global capital markets. The alternative of waiting until technology makes clean energy cheaper than at present may not be cost effective for the Giants (or for other major emitters of carbon) because delay has quasi-permanent effects on carbon dioxide accumulations.

Turning to global energy markets, the roles of China and India are less critical than often imagined. It is true that these countries have generated nearly half of the increase in oil use this century, but their shares of world oil consumption still were modest—7.4 percent and 3.4 percent, respectively, in 2003. Moreover, both through the recent past and in our forward-looking projections, the sensitivity of oil prices to the Giants' demand is fairly low. The spike in oil prices during the first half of 2006 owes more to constraints in, and concerns about, supply than to excessive demand increases.

Environmental stresses, both local and global, clearly require serious attention as the Giants grow—although not necessarily in the same way in China and India. However, our analysis suggests that, although addressing them will impose costs, it need not curtail growth rates seriously. Similarly, although high energy prices could reduce world growth slightly, the feedback from the Giants' growth onto energy prices and back to their growth will not be large enough to constrain them.

Inequalities

Another possible constraint on future growth could be rising income (and other related) inequalities and declining effectiveness in eradicating poverty. Both China and, to a lesser extent, India have coupled great success in reducing absolute poverty with increases in inequality. As the authors of chapter 6 argue, much of the latter is "good" inequality, reflecting a return to more direct incentives for effort, skills, investment, and entrepreneurship following periods in which the Giants' governments strove to suppress them. But at some point, increasing inequality is counterproductive. Inequality of opportunity wastes talent and ultimately reduces growth because it cuts the level of investment in education and business (World Bank 2005c). It also can lead to political stresses that hinder the pursuit of efficiency-enhancing reforms and even may cause unrest and dissent. Thus, the policy challenge for the future is to try to achieve a balance between good and bad inequalities, to avoid the worst exclusions while maintaining incentives to accumulate and to take risks. The questions of interest for the rest of the world are whether this is achieved, and how.

Growth rarely is balanced, either sectorally or geographically, and neither of the Giants is an exception. In China, primary sector growth (mostly agriculture) appears to be the most pro-poor, but it has lagged behind other sectors over the last two decades. Similarly but not identically, rural areas have lagged behind urban areas. Policy to improve the rural economy via improvements in health, education, and infrastructure services seems likely to help those who are worst off, both by encouraging rural activity (agricultural or otherwise) and by facilitating migration to the cities. To the extent that the former route would increase agricultural output, it would reduce net food imports, although China's already high yields and declining areas of cultivation will limit the extent of that reduction unless the shift is made strongly to non-

traditional cash crops. Migration, on the other hand, could stimulate increases in output in tradable secondary and tertiary sectors. Which route will dominate has implications for trade and the rest of the world. We certainly expect more migration, but the precise balance is impossible to forecast at present.

In India, land inequality is higher than in China, and so primary growth is less poverty alleviating than is growth in the tertiary sector. Nonetheless, the weight of rural poverty is so great that rural policies are necessary in the same areas as noted for China. The requirement is not for generic redistribution policies, however; rather, it is for targeted interventions that address identified restrictions on opportunities.

One concern is that targeting rural areas or the primary sector would reduce urban growth without boosting rural growth because the latter is already close to its maximum. The evidence in both China and India suggests that in the aggregate there has been no trade-off between growth in these pro-poor sectors or regions and overall growth; and, at the level of individual policies, we believe that careful analysis and design also can avoid the trade-off. Both of the Giants are seeking to address their growing inequalities, but success is far from easy. Constant evaluation is necessary to ensure that policies are effective and appropriate. One useful component will be to ensure that governance—capacity, accountability, and responsiveness—improves at local levels.

Growing inequality within the Giants attracts a good deal of attention both locally and globally—perhaps more than it deserves relative to other factors that determine growth and welfare. The challenges are real, and the ways in which they are resolved may influence trade patterns and hence other countries, but we do not expect addressing them to disrupt medium-term growth significantly.

Investment Climate and Governance

Current development theory gives governance a central role in accumulation and resource allocation, and hence in growth. Governance processes differ dramatically between China and India, but in neither country have either processes or outcomes corresponded to conventional views of optimality. Therefore, in chapter 7 the author asks whether governance problems could derail growth and whether the Giants refute the hypothesis that governance matters for growth. In both cases the answer is a qualified "no."

Three factors help explain the Giants' growth takeoffs in the face of only average governance indicators. First, in the 1980s and 1990s, policy prohibi-

tions on certain economic activities were relaxed and the Giants' size as potential markets and labor forces was sufficient to encourage activity. Second, although only average globally, governance indicators as measured by security of property rights are significantly better in China and India than in other poor countries; consequently, when capital inflows were no longer discouraged or prohibited, investors looking for low-wage locations found China and India relatively attractive. Third, improvements in governance in the late 1970s (albeit only from poor to average levels) could have fostered growth from the late 1970s (China) or mid-1980s (India). Although no direct measures of governance are available for the 1970s, political events and policy decisions in both countries suggest the emergence of institutional and political constraints on opportunistic behavior.

The constraints on opportunism were achieved in quite different political settings in the two Giants. China navigated the challenges without open political contests through a series of internal Communist Party conventions and policy decisions. Particularly in the 1980s, policy decisions allowed cadres to reap rewards from investment (for example, by encouraging township and village enterprises [TVEs], giving localities the lion's share of tax revenues, and granting them authority over land allocation decisions that were key to implementing the Household Responsibility System). At the same time, though, internal party institutions were developed that, consciously or unconsciously, aligned individual cadre incentives with those of the broader party. Significant investments in institutionalized cadre promotion and evaluation reassured cadres that the returns to the investments they oversaw (such as those in TVEs) would not be expropriated and that they would be rewarded for growth-promoting land management decisions. In the 1990s, increasing institutional checks and balances (also largely within the party and largely at the center) increased the security of foreign investors, and FDI replaced TVEs as a major driver of manufacturing growth.

Growth in India fell in the 1970s, not only with the abrupt and broad introduction of intrusive microeconomic regulations (ranging from licensing to the nationalization of banks) but also with the increasing centralization of power within the ruling party and within the formal institutions of government. Growth resumed when the erosion of major governance institutions that provided political checks and balances was reversed with the lifting of the Emergency of the 1970s, with elections that removed the Congress Party from office for the first time since independence, and with the restoration of such key institutional checks as the legislative review authority of the judici-

ary. These events also put a halt to, and very partially reversed, the introduction of counterproductive industrial policies.

Turning to the future, the governance challenges continue to differ. In India, the reform process moves at a stately pace, with vigorous debate but ultimately sufficient consensus and legitimacy to make reforms fairly robust. As political competition comes to rely less on (still important) clientelist promises and sectarian appeals, the political incentives to reform will increase.[18] Even then, however, increasing concerns about equity and distribution will condition policy and will demand resources for rural infrastructure, education, and so on. The challenge of improving the investment climate—whether infrastructural or regulatory—will remain significant. The core governance problems in the investment climate—the threat of expropriatory activity and the arbitrary treatment of firms—will continue to dwindle, both in absolute terms and relative to the regulatory hurdles confronting entrepreneurial activity.

The future governance challenge in China is to maintain the intraparty institutions that link individual cadre interests to those of countrywide equitable growth. This appears to have become more difficult in the 1990s than it was in the 1980s, and it may become yet more difficult in the future. The Communist Party of China has formalized its practices and enhanced political checks and balances at the top of the party, it has allowed local elections, and it has increased the oversight activities of different intraparty legislative institutions. All of these changes have increased the security of larger investors (for example, foreign direct investors) who can appeal to the central government. However, local cadres still have enormous authority in their jurisdictions. This only matters because, as the party and citizens more broadly have begun to care more about issues of equity, social service provision, and such public goods as environmental quality, cadre incentives seem to be more strongly related to economic growth than ever before.

The 1990s' fiscal reforms that largely reversed the generous 1980s' fiscal policies of allowing China's local governments to retain large tax shares have increased local governments' incentives to maximize the revenue potential of local assets. Promotion criteria for cadres, though increasingly reflective of the central government's desire to see better social service provision and better husbandry of the environment, still place a priority on economic growth. And the fast growth of the economy has driven up the value of the outside

18. Democracy has an intrinsic as well as an instrumental value, but that is not an issue we take up here.

options of cadres faster than the value of internal party rewards. All of these circumstances give cadres strong incentives to pursue economic growth at the expense of other social goals. For example, local officials have stronger incentives to reallocate assets under their control (such as farmland) to more highly valued uses at the expense of current beneficiaries. The rapid increase in inequality is a potential source of stress and, especially when associated with corruption or arbitrary official behavior, could reduce high levels of popular support for the government. This, in turn, makes it more expensive for the party leadership to maintain cadre loyalty with promises of future rewards.

While incomes expand rapidly, these stresses look manageable; but if growth were to falter or if there were an exogenous decline in government popularity, the political equilibrium could be disturbed. To be sure, China has weathered several economic shocks well, but Huang (2003) has argued that political crises have harmed the private sector in the past, and private investment is more important to growth now than previously. The objective prognosis is that China could continue to grow strongly, and on that basis continue to experience adequate and improving governance. Although we do not believe that governance failures will undermine growth, the weaknesses outlined in chapter 7 undoubtedly increase China's vulnerability to negative shocks and so may induce some caution on the part of private investors.

Dance Steps: Responses to the Rise of China and India

The rise of China and India as major trading nations in manufacturing and services will affect world markets, systems, and commons substantially, and hence change the environment in which other countries make their economic decisions. The question that remains is, how should other countries respond to these new opportunities and challenges—how should they dance with the Giants? Part of the answer is generic. Any country will be better placed to take advantage of new markets and to weather competitive pressure if it creates a healthy investment climate and invests soundly in infrastructure and human resources. And, given the impossibility of predicting precisely in which subsectors threats and opportunities will arise, there will be a premium on flexibility—creating circumstances in which entrepreneurs are able to experiment, expand on success, and withdraw cleanly from failure.

Within this broad rubric, however, the answer varies with the income and the resources of the country concerned because these are what determine its

interaction with the world economy.[19] For the lowest-income countries without natural resource wealth and with a limited endowment of human capital, the challenge is to develop manufacturing capacity in low-wage, labor-intensive industry that can compete with these industries in China today; this would position them to cut into China's trade shares a decade from now as wages in China climb above the level needed to keep these industries competitive. China's rising wages should be seen as an opportunity in these sectors for countries such as India, Indonesia, Vietnam, and possibly a number of the poorest countries in Africa (such as Ethiopia), just as the rise in wages in Korea, Taiwan (China), and Hong Kong (China) two decades ago was an opportunity for China. To compete, however, these low-income countries will have to enhance governance, improve their infrastructure, and remove the many bureaucratic obstacles that hamper efficiency and prevent achievement of the timing and quality standards required by purchasers in high-income countries.

Countries (whether low- or middle-income) with large natural resource exports are in a different position. Their real exchange rates will be driven upward by natural resource exports, which, in turn, will hinder their industrial sectors from competing with the manufactured exports of other low-income countries. One sees elements of this already in certain African countries. Incomes have risen with exports of raw materials and their prices, but at the expense of higher commodity price volatility; stagnant exports of low-tech, labor-intensive goods; and declines in the prices of those low-tech goods (Reisen, Goldstein, and Pinaud 2006).

Clearly, increases in income are desirable and efforts should be made to share their benefits widely within society. Steps also should be taken to insulate the public sector and aggregate demand from the worst volatility of commodity prices. To the extent that manufacturing jobs are sought, import-substituting industrialization is not the route to sustainable exports of manufactures. Rather, policies to encourage business in general are required—policies such as reducing transport and trading costs, easing access to finance, strengthening energy and IT infrastructure, and raising the quality of human resources. These countries generally will not be able to develop large manu-

19. Country- and region-specific analyses of impacts and policy options may be found in other World Bank studies of the effects of the growth of China and India: Broadman (2007) on Africa and World Bank (forthcoming) on Latin America.

facturing sectors, but some activity certainly will be feasible on the basis of local markets and niche exports.

The biggest challenges posed by China and, to a lesser degree, India are probably to the middle-income countries in Asia and Latin America. These are the countries into whose product space China in particular looks likely to expand; they are the members of production networks that may be threatened by China's move into component manufacturing; and they are the recipients of FDI designed to create export platforms for the multinational corporations. Wages in these countries are typically much higher than in China and India (and are likely to remain so for at least the coming decade), although their education levels often are not much higher than where levels in China will be a decade from now.

For East Asian countries, exports already are being squeezed by competing Chinese exports in the global market, mostly in low- and medium-tech and resource-based products at present but prospectively also in higher-tech products. China currently emphasizes the final stage of production while importing raw materials and parts from its neighbors. Hence, although East Asian countries may face tougher competition in the final destinations, they may be able to gain by refocusing their efforts on supplying firms based in China. The current data suggest that those countries are maintaining their positions in skill-intensive components and that the trend for skill intensity is on the rise. Thus, preparedness would require a focus on human capital, facilities for high-tech production, and a welcoming attitude toward FDI, even from China.

Similar comparisons between China and Latin America suggest that, so far, the direct "threat" from China is muted. This situation may not persist, however, unless Latin Americans invest heavily in the skills and technological capability of firms. They might draw lessons from Korea or Taiwan (China), which are less likely to be hurt by Chinese and Indian competition because they are far enough ahead in technology and human resources—and are making sustained efforts to stay ahead. These lessons would emphasize technological capability, diversifying the product mix, and upgrading the quality of products and expertise in design. Successful emulation of these two models might suggest, among other things, more reliance on domestic businesses (especially large and dynamic ones) and homegrown technology rather than almost total reliance on FDI, at least in the export of manufactures.

The challenge for high-income countries (other than a handful of oil exporters) will be to adjust to the rise of China and India without excessive, politically motivated interventions in the economy. Over the next decade and a

half, Japan, North America, and Western Europe, for the most part, have little to fear from Chinese and Indian competition in the high-technology and high-skill sectors in manufacturing and services, especially where those sectors rely on highly educated and experienced workforces, accumulated tacit knowledge, and innovation supported by heavy investment in research and development (Lardy 2004). Indeed, they have much to gain from specialization in these areas.

The high-income countries have not been competitive in the manufacture of garments, shoes, and consumer electronics for a long time, and so they have been strong gainers from the price reductions that the Giants have engendered and will continue to engender. But one would not know this from the political discussions in the United States and parts of Europe that import large quantities of goods from China.[20] The U.S. current account deficit, roughly one-quarter of which is with China, largely is due to the lack of domestic savings and not to China's barriers to imports (which, in fact, have come down dramatically in recent years) or to an undervalued Chinese exchange rate (which is a real but fairly recent problem).

We anticipate a decline in the growth rate of China's exports—a decline that will not be made up fully by India. This will ease some of the political economy problems just alluded to. It also is likely to be accompanied by a switch to lower reserve accumulation, which could raise global interest rates somewhat. This will adversely affect some of the world's richest countries, which are among the biggest borrowers, and some of the poorest; and both groups would do well to start adjusting their fiscal and external positions in anticipation.

Finally, China and India contribute to, but are not the primary causes of, increasing energy prices and carbon emissions. All countries should continue to pursue their own energy-efficiency strategies both for domestic reasons (such as balance of payments and local pollution) and for global ones.

20. Trade with India, in contrast, is not yet large enough to play a major role in these debates.