

The Giants' Advance: China and India in the World Economy

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China and India account for about 37.5 percent of world population and 6.4 percent of the value of world output at current prices and exchange rates. As their per capita production and consumption approach levels similar to those of today's developed economies - a standard to which both these Giants aspire - major effects on global markets seem inevitable. A recent World Bank publication¹ asks whether the Giants will continue their current rapid growth and how any such expansion will impinge on other countries. This article contributes to the last question by analyzing the Giants' impact on global goods markets. In particular, it asks whether the Giants will leave any room for low-income countries at the bottom of the industrialization ladder, and whether high- and middle-income countries will see their current advantages in more sophisticated fields erode.

Putting Giants in perspective

In terms of gross domestic product (GDP) China is perhaps one-fifth as large as the United States in current dollars (5.0% of world output compared with 28.6% in 2005) and India is one-sixteenth as large (1.8% of world output in 2005). Thus in terms of impact, a given proportionate shock emanating from Germany or Japan would outweigh one from China, let alone one from India.

In terms of growth, however, China accounted for 13 percent of world growth in output over 1995-2004 and India for 3 percent, compared with the United States' 33 percent, its slower growth rate being offset by its much higher starting share in 1995. Looking forward, we assume that the contributions to world growth shares of the three countries will be 16%, 4% and 29%, respectively, over 2005-2020. These will increase China's share of world output to 7.9% in 2020 (at 2001 prices) and India's to 2.4%.

The significance of this contribution to global economic expansion can be better appreciated by comparing China's takeoff from 1979, with previous large industrializations (India's progress is too recent to be analyzed in this way). Table 1 considers the United Kingdom and the United States over the 18th and 19th centuries. Although, the valuation basis differs from the statistics in the previous paragraph, they do suggest that neither the UK nor the USA administered such a large shock to the global economy as China has already. According to these data, China had an initial share of 4.9 percent and grew 4.4 percentage points per year faster than the world as a whole. 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). 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 average lifetime (ie. 35 years). At the Giants' current growth rates and life expectancies, incomes would rise more than a hundredfold in a lifetime (75 years)!

Table 1 Comparative Industrialization

GDP at PPP prices

Factor for comparison	China 1978-2003	United Kingdom 1700-1820	United States 1820-1870
Industrializer's initial share (%)	4.9	2.9	1.8
Industrializer's annual growth (%)	7.5	1.0	4.2
World annual growth (%)	3.1	0.5	0.9
Growth differential	4.4	0.5	3.3
Number of years	25	120	50

Sources: Maddison 2003.

Economic growth

What lies behind these rapid growth rates, both in the past and the future? Neither is driven by strong population growth in aggregate, but China currently and India in its future benefit from a demographic dividend provided by a youthful and expanding workforce and declining dependency ratios. Urbanization is important in China and will fuel Indian growth as workers move out of the countryside to more productive jobs. Both China and India have made significant advances in basic education in

the past 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 enrolment rates of 50 percent and 39 percent, respectively, in 1998. By 2005, India was producing 2.5 million new university-level graduates per year, 10 percent of whom were in engineering. China produced 3.4 million graduates, including 151,000 with postgraduate degrees.

These data presage a significant increase in the Giants' shares of world skills and, hence, changes in their comparative advantages. The McKinsey Global Institute suggested, however, that only about 10 percent of Chinese and 25 percent of Indian graduates currently would meet the standards expected by major US companies; hence, although undoubtedly this will change over time, at present one should not think of the average Chinese or Indian graduate as very highly skilled.

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 was largely financed by her prodigious domestic savings rate, and explains somewhat under half of her growth rate. Overall productivity has increased at a highly respectable rate in China and to a lesser degree in India since 1993. The 4% per annum increase in China's factor productivity presumably reflects the reallocation of labour from agriculture and the state sector to market activities, and the entry of highly productive foreign firms, but both economies still have large backward sectors.

China's and India's growth affect other countries through a variety of channels, but international trade is the strongest and most direct. Hence, the remainder of this note considers their trade performance to date (formidable in the case of China), the improvements in the Giants' industrial capabilities, and some numerical projections of the impact of their growth on world trade and their trading partners.

International trade expansion

China's trade expansion since 1978 has been legendary, and since the early 1990s India also has taken off. At 6.3 percent for exports and 5.5 percent for imports, China's shares of world goods and services trade exceed its GDP share. 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. With annual growth at 15.1 percent per annum 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 global 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.

Part of the increase in China's materials imports is balanced by corresponding declines in the countries from which China has displaced manufacturing. Indeed China has taken to observing that the fruits of her high carbon emissions are substantially reaped by consumers in OECD countries who import Chinese manufactures. Most of the increase, however, 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.

The data on the total consumption of various primary products 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 total energy terms, the United States is first (23%) and China second (13%). The Giants also are important consumers of agricultural commodities, and here India figures prominently, leading the world in consumption of sugar and tea, and second to China in rice. Even more striking is China's growth in imports of primary products. Soybean consumption has increased at 15 percent a year recently, and soy and palm oil consumption by 20 percent and 25 percent, respectively. Oil is currently particularly sensitive, but here

the roles of China and India are less critical than often imagined. It is true that they account for half of the increase in oil use this century, but their shares of world oil consumption are still modest—9.0 percent and 3.1 percent, respectively, in 2005.

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 because supply growth has not kept up with demand. 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 increased by only 80 percent. Similarly for oil: both through the recent past and in our forward-looking projections, the sensitivity of world oil prices to the Giants' demand is fairly low although in both countries transport and residential demand for energy will be soaring. The recent spike in oil prices owes more to constraints in, and concerns about, supply than to excessive demand increases.

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. 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, however, is information technology (IT)-enabled services for global companies, including call centres and software application, design, and maintenance. Such activities require qualified English-speaking labour, of which India has an abundant, low-cost supply. Despite their dynamism, however, India's overall exports of commercial services (\$40 billion in 2004) are less than those of China (\$62 billion), and neither country has a large world share (1.8 percent and 2.8 percent of world services exports, respectively).

The IT sector accounts for only 6 percent of services turnover in India, and employs perhaps 3 million people. Moreover, it tends to be focused at the low to middle end of the business. Thus, while the buoyancy of this sector is heartening for India's growth prospects, services trade alone does not look likely to transform Indian economic performance.

Industrial geography: the evolution of comparative advantage

The key question for the future 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. 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 labour 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 labour-intensive industries. These features combine to favour certain mid-tech and high-tech sectors, such as autos, electronics, and domestic appliances—and, in the future, pharmaceuticals and engineering. These sectors have seen rapid recent advances in technology and organization, and have strong future prospects.

In China, the continuation of low-skilled, labour-intensive manufacturing seems feasible, but not in the traditional manufacturing centres 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 centres where the large agricultural reserve of labour 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 coupled with the rapid increase in spending on R&D, currently almost 1.3% of GDP, could make China a major force in some sophisticated sectors. However, 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 centre 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 productivity increases and the domestic market grows, making it more attractive to relocate the manufacture of components from Southeast Asia to China. 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 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 labour, 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 the next two decades. 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 catalogue 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 recognizes that other countries must both buy and sell to the Giants.

General equilibrium

Our analysis of the trade consequences of the Giants' growth addresses uses a simulation model that imposes a firm internal consistency that requires, for example, that imports and exports roughly balance, 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.

Our exercise starts by "rolling the world economy" forward from its base in 2001, for which we have a consistent database of millions of pieces of information, to 2005. This entails allowing for 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. We then postulate a continuation to 2020 of India's current tariff and trade reforms, and apply exogenously given estimates of the growth of productivity and factor supplies in all countries and regions. From this we project a base view of the world economy in 2020. It projects, for example, a 66% increase in world output, including a more than doubling in the Chinese and India economies, a 72% increase in world trade, significantly rising oil prices relative to 2001 and rising food prices.

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? 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 an increase in the range and quality of China's and India's export products. 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 in other countries as they sell to the Giants and increase their efficiency with the improved Chinese and Indian inputs. 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 aggregate demand, most countries gain overall from the incremental growth of the Giants. The exceptions are certain countries in Southeast Asia, the rest of South Asia, and Europe, where the effects of increased competition predominate. These countries still record large increases in real income over 2005-2020, however, because of the underlying trends; it is just that their increases are reduced a little by the Giants' growth, the Philippines and Singapore, being the two hardest hit.

Even for the net gainers, however, painful adjustment is necessary. 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 the most sensitive to competition. Thus, even if the Giants' success is generally good news for other countries as a whole, within those countries there will be gainers and losers.

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. This view is reinforced by further simulations that restrict technical progress to the sectors identified above as gaining competitiveness - metals, electronics, machinery, motor vehicles and commercial services. Even though world output increases by less than in the previous simulation (because the productivity gain is restricted in coverage), the growth in world trade is three times larger because China and India receive a boost in their current exporting sectors and they have to sell their extra output abroad. Other countries must correspondingly 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). This suggests that individual manufacturer's fears about Chinese and Indian competition may be justified. However, only a full analysis such as ours can show that the offsetting benefits from cheaper imports and stronger world growth are generally larger.

Modeling exercises like these are parables, not predictions. The results do show, however, that the consequences of the Giants' rise could be large in particular sectors, that suitable adjustments to the new circumstances would enable most countries to win, and that no country's overall growth trajectory is seriously disturbed by the Giants' growth.

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 substantially. The question that remains is, how should these others 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 sub-sectors 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.

Beyond this general advice policy responses should depend on country circumstances. Very briefly, resource poor low-income countries need to prepare to move into markets vacated by the Giants as their costs rise. Resource rich countries will receive an income boost from rising primary prices; they need to focus on managing the related volatility, sharing the gains equitably and investing in diversification. The middle-income countries probably face the biggest shocks: they need to create conditions for innovation to cope with China's technologically dynamic companies such as Huawei and Lenovo and for integration into global production chains - especially through investment in human capital. Finally developed countries need to keep calm. At least for another couple of decades their comparative advantage in skills and innovation is not seriously threatened, and they are huge gainers from the supply of cheaper manufactures. ■

1. *Dancing with Giants: China, India and the Global Economy*, The World Bank and Institute for Policy Studies, Singapore.