UNCTAD/TDR/2005

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT
GENEVA

TRADE AND DEVELOPMENT REPORT, 2005

Chapter II

INCOME GROWTH AND SHIFTING TRADE PATTERNS IN ASIA

EMBARGO
The contents of this Report must
not be quoted or summarized
in the print, broadcast or
electronic media before
2 September 2005 17:00 hours GMT

UNITED NATIONS
New York and Geneva, 2005

Chapter II

INCOME GROWTH AND SHIFTING TRADE PATTERNS IN ASIA

A. Introduction

Sustained rapid growth and rising living standards in a number of Asian countries have been accompanied by a dramatic increase of the region's shares in world exports and raw material consumption. The recent emergence of developing Asia as a driver of world economic growth has been widely welcomed, not least because the associated poverty reduction in China and India signifies important progress towards achieving the Millennium Development Goal of halving global poverty by 2015. Moreover, combined with their rapid growth, the greater integration of these countries into the world trading system has created new export opportunities for many developed and other developing countries.

But policy-makers in some developed and developing countries have also expressed concern about potential adverse effects on their economies stemming from the rising import demand and export supplies of these rapidly growing Asian countries. For example, Asia's sustained superior export performance relative to other developing regions has sparked fears that this region might become a price setter for labour-intensive export activities in the world market, and that competitive pressure from Asian economies might, over time, wipe out export opportunities for other developing-country exporters. Combined with the recent, much slower pace of economic growth in most developed countries, it has also fuelled the debate in developed countries about the employment and growth consequences of rising imports of labour-intensive manufactures from, and increased relocation and outsourcing of economic activities to, Asian developing countries. Further, particularly over the past three years, policy-makers in some developed and developing countries have been concerned about the potential adverse impact on their economies' growth prospects of the rise in commodity prices, especially those of metals and fuels. This price rise is partly attributed to the strong increase in demand from the rapidly growing Asian developing countries.

The global impact of China's buoyant economic performance has been the focus of many of these concerns in recent years. For example, there have been widespread fears that China's accession to the World Trade Organization (WTO) in 2001 and, in particular, termination of the WTO Agreement on Textiles and Clothing (ATC) at the

beginning of 2005, might be followed by a massive increase in China's exports of labour-intensive apparel. Some fear that this might be accompanied by a significant decline in the price of internationally traded clothing, which would erode the export opportunities of other developing-country exporters, as well as displacing producers in importing developed countries. Moreover, media reports on observed or expected changes in the fortunes of the Chinese economy can have an enormous influence on short-term price movements of internationally traded raw materials such as petroleum, copper and nickel.

India's economic development has sparked less fear, even though the country has also registered buoyant economic growth over the past few years. Moreover, India's growth potential is sometimes considered to be even greater than that of China (Panagariya, 2004). However, India's exports of labour-intensive manufactures have not featured as prominently as China's in world trade flows, nor has its raw material consumption grown at anywhere near the same pace as China's. Rather, developed countries' fears of India's economic growth focus mainly on offshoring in the services sector, particularly from the United States. Some developing-country policy-makers are occasionally concerned about the impact on their countries of a potential surge in labour-intensive apparel exports from India following termination of the ATC and full implementation of WTO rules for this sector; this could reinforce the perceived adverse effects from the growing Chinese exports of these commodities.

In some sense, China's recent rapid income growth and shifts in its pattern of trade resemble those experienced by Japan and the Republic of Korea some decades ago. For example, between 1965 and 1985 manufactured exports from the Republic of Korea grew at an average annual rate of almost 35 per cent, which was more than double the pace of growth in world manufactured exports. Similarly, between 1987 and 2003 manufactured exports from China grew at an average annual rate of almost 18 per cent, which was also more than double the pace of growth in world manufactured exports.

However, there are also important differences between the recent growth of China and India, on the one hand, and the earlier episodes of rapid growth, industrialization and greater trade integration by Japan and the Republic of Korea, on the other. Two of these have to do with *the countries themselves*. First, both China and India are very large economies, each with a population about 10 times larger than that of Japan and about 25 times larger than that of the Republic of Korea. The share of China in total world population has averaged about 21 per cent since the beginning of the country's economic catch-up and growing trade integration in the late 1970s, and the share of India has been around 17 per cent since the intensification of its trade integration in the late 1980s. By contrast, the respective shares for Japan and the Republic of Korea were about 3 per cent and 1 per cent, respectively, during their corresponding phases of rapid economic catch-up and export expansion. Moreover, China accounts for about 13 per cent – and India for another 6 per cent – of global income, measured in terms of purchasing power parity (PPP).

China and India will have a much larger impact on the composition of world trade than Japan and the Republic of Korea had during their economic ascent.

Second, rapid income growth and greater trade integration by China and India started from lower levels of per capita income. For example, in the late 1980s (i.e. when the two countries strongly accelerated their trade integration), their respective per capita incomes were at about the same level as that of the Republic of Korea at the beginning of its export surge in the early 1960s, but only at about half that of Japan's in the mid-1950s, when this country began its post-War export take-off. This means that the patterns of demand in China and India may change at least as much as that in the Republic of Korea and much more than that in Japan during their respective catch-up and rapid integration periods after the Second World War.

Given the large size of the Chinese and Indian economies, and their specific patterns of

demand, changes in the two countries' level and structure of supply and demand will tend to have a much larger impact on the composition of world trade than those of Japan and the Republic of Korea during their economic ascent. China's growth has already demonstrated some of this impact on global trade flows. The structure of India's merchandise trade is likely to follow a sequence of changes similar to that of China, but with a lag of one or two decades, if the role of industrialization in India's further economic ascent is similar to that in the other fast growing Asian economies.

Three additional differences concern the *international environment* in which economic catch-up and greater integration by China and India are taking place. One is the much slower pace of economic growth and industrialization in developed countries. This has reduced income-related export opportunities for developing-country exporters of, for example, labour-intensive manufactures, and contributed to rather pessimistic forecasts of global primary commodity consumption. As a consequence, investment in commodity production and processing facilities has fallen, particularly in mining and energy production. Another difference is that greater trade integration by China and India is occurring concurrently with similar efforts by other developing countries; a number of countries have been simultaneously increasing their export-oriented activities in the same products. This risks creating growing competition among the developing countries for export markets. A third difference in the international environment is reduced space for proactive trade and industrial policies to manage greater trade integration. This has made it more difficult to use the kind of targeted support to nascent industries that policy-makers in the Republic of Korea provided during its economic catch-up so as to create broad-based domestic forward and backward linkages in which greater trade integration could be embedded. Partly as a result of this, policy-makers in developing countries have actively supported participation in international production networks, increasingly through the use of tax instruments.

Bearing these similarities and differences in mind, this chapter examines changes in the trade patterns that have been associated with successful economic development in China and India. This is done from a historical perspective and in a comparative framework, referring to the economic catch-up and industrialization periods of Japan after the Second World War and of the Republic of Korea. The impact of domestic resource and balance-of-payments constraints on rapid economic growth and industrialization is emphasized. The chapter also assesses the impact of the changing trade patterns in China and India on international trading relationships. More specifically, the chapter focuses on two key aspects:

- Shifts during rapid income growth and industrialization in the pattern of food consumption and the intensity of metal and energy use, which, when combined with shifts on the supply side, affect the level and composition of a country's external trade;

- The impact of these shifts on the pattern of international trade flows when they occur in very large economies with relatively low levels of per capita income.

The chapter shows that import demand by China and India for a number of primary commodities (particularly metals and energy products, as well as some soft commodities such as natural rubber and soybeans) can be expected, in the near future, to keep international prices for a limited number of products at levels above those experienced over the past decade or so. However, it is uncertain whether this can lead to a reversal of the long-standing price decline in primary commodities more generally. Rising prices will stimulate the production of some of the affected commodities, including domestic production in the importing countries, and reduce the consumption of some others. The chapter also shows that the ability of the fast-growing Asian economies to further increase their export earnings in line with their rising import bills, in the medium term, will depend on their progress with regard to structural change and domestic capital formation, as well as their capacity to upgrade production to more skill-intensive manufactures in the case of China, and to expand manufacturing in the case of India.

B. Evolving demand and trade patterns in Asia: a comparative perspective

It is well known that the process of economic development is accompanied by changes in the sectoral composition of production, employment, private consumption, and external trade. On the demand side, the changes are derived from the pattern of income elasticity of private consumer demand and the intensity of metal and energy use associated with urbanization and industrialization. On the supply side, they result from factor accumulation and productivity growth. Shifts in the patterns of production, employment and consumption are more uniform across countries than shifts in the level and composition of external trade. This is because a host of country-specific factors (such as size, geographic location, resource endowments, history of industrial growth, and trade and exchange rate policies) influence shifts in a country's level and composition of external trade.

There is clear evidence of a close relationship between (i) increasing population and per capita income, on the one hand, and the level and composition of food consumption, on the other; and (ii) per capita income and the level of industrial production, on the one hand, and the intensity of metal and energy use, on the other (Syrquin, 1988; Syrquin and Chenery, 1989). The trade impact of shifts in the level and composition of food consumption is often relatively small, depending on the supply response in agriculture to shifting relative prices. By contrast, given that metals and most energy products are non-renewable resources, rising demand for these raw materials can often lead to a substantial rise in imports. This section examines these relationships in the rapidly growing Asian economies, emphasizing the experiences of China and India over the past decade.

1. Changing patterns of food consumption

A rise in per capita income from low levels is associated with an increase in per capita food consumption and a shift in the composition of household expenditure away from primary products, particularly food, towards manufactures, such as textiles and clothing, wood and paper products, machinery (e.g. electrical household equipment), and chemicals (e.g. pharmaceuticals). Household demand for services also increases, particularly for transport (especially personal transportation), electricity and housing (including furniture and consumer appliances).[1] The share of food in total household expenditure, while increasing in absolute terms, declines relative to that of other products, because the income elasticity of demand for food is below unity. Moreover, as per capita income continues to grow, the increase in per capita calorie intake peters out, and households change the composition of food consumption: the share of staple cereals falls, while in most countries the shares of meat, fish, dairy products, and fruits and vegetables tends to rise.

Income changes are not the only cause of shifts in food consumption patterns. Lifestyle and preference changes, particularly those associated

with urbanization and the increasing number of two-income nuclear families, also play a role. They tend to lead to a greater emphasis on convenience, including a growing share of food consumed away from home, a larger intake of readymade meals, and efforts to reduce the preparation time for traditional dishes (Popkin, 1993). Urbanization has a particularly strong impact on the level and composition of a country's food consumption if the incomes of urban consumers are significantly higher than those of rural consumers. Where this is the case, rural consumers may continue to strive for a higher per capita calorie intake on the basis of traditional diets, whereas urban consumers will have already reached nutrition levels similar to those in developed countries and will start shifting away from traditional diets.

The change in the composition of China's food consumption is likely to induce a further rise in the demand for livestock products, oil crops, vegetable oils, and fruit and vegetables.

The evolution of the level and composition of food demand has differed between China and India. By the end of the 1990s, China's average level of daily per capita calorie intake fell only 10 per cent short of the level of developed countries. Due to India's relatively lower level and growth rate of per capita income, growth in per capita demand for cereals in that country has been much slower than in China over the past two decades, and per capita rice and wheat consumption in India is still well below Chinese levels. Indeed, India's average level of daily per capita calorie intake has remained about 20 per cent below the Chinese level. The expectation, therefore, is that the increase in China's level of per capita food consumption in the future will be slower than in the past, while in India there is considerable scope for a further strong increase in per capita food consumption (FAO, 2002: 11–12).

There is also potential for a strong rise in India's consumption of livestock products and feed.

Table 2.1 shows a sharp decline in the share of cereals in China's dietary pattern and an almost equally sharp increase in the share of vegetables (which have replaced cereals as the most demanded food group), as well as some increase in the shares of oil crops and vegetable oils, meat, dairy products, fish and seafood, and fruits. This shift has been most pronounced in the urban areas, where consumers have higher incomes and access to a wider range of food products. Aggregate meat consumption has grown by more than 50 per cent over the past decade. Per capita meat consumption has also grown considerably, mainly due to a higher demand for pork and poultry, the consumption of which has risen by about one third over the past decade. The growing demand for meat is likely to continue: projections indicate that China alone will account for over 40 per cent of the additional demand for meat worldwide between 1997 and 2020 (Rosegrant et al., 2001: 65). The overall rise in meat consumption has also contributed to higher overall demand for soybeans, due to its increasing use as animal feed. Per capita consumption of vegetable oils, notably soybean oil and palm oil, has grown rapidly as the rise in urban incomes has stimulated their use in place of lower grade vegetable oils.

Changes in India's dietary pattern over the past decade have been markedly different from those in China (table 2.1). India's cultural traditions favouring vegetarianism have held back the country's demand for meat and animal feeds, and thus the dietary shift away from cereals to meat consumption (Rosegrant et al., 2001: 5–30). But the share of cereals in India's total food consumption has fallen only slightly, and the shares of vegetables, dairy products and fruit have not increased as much as in China. This indicates that India's dietary pattern has not yet shifted to the same extent as China's over the past decade and as Japan's and the Republic of Korea's in the 1970s and 1980s.[2]

Rapid population growth and rising per capita incomes have, nonetheless, resulted in a sharp rise

Table 2.1

DIETARY COMPOSITION IN CHINA AND INDIA, 1994 AND 2002

(Per cent)

	China		India	
Product	*1994*	*2002*	*1994*	*2002*
Alcoholic beverages	3.6	3.8	0.3	0.4
Cereals	36.0	23.0	38.9	36.0
Eggs	2.1	2.4	0.3	0.4
Fish and seafood	3.3	3.5	1.1	1.1
Fruits	5.0	6.5	8.5	8.6
Meat	6.7	7.3	1.2	1.2
Milk	1.3	1.8	14.0	14.4
Oil crops	1.4	0.9	2.0	1.5
Pulses	0.3	0.2	3.1	2.8
Starchy roots	10.7	11.1	5.3	5.5
Sugar and sweeteners	1.2	1.0	5.9	5.6
Sugar crops	0.0	0.0	2.8	2.9
Vegetable oils	1.3	1.3	1.7	2.1
Vegetables	25.5	35.1	13.5	15.9
Other	1.5	1.9	1.3	1.6
Total	100.0	100.0	100.0	100.0

Source: UNCTAD secretariat calculations, based on FAOSTAT.

in India's absolute level of food consumption. For example, over the past decade, the aggregate consumption of cereals grew by about 15 per cent and vegetables by about 50 per cent, while that of soybeans about doubled and poultry almost tripled over the same period.[3] This indicates that India is still experiencing the first stage of the nutrition transition (i.e. the expansion of per capita calorie intake); once the level of per capita calorie intake in India comes close to the current level in China,[4] India might also experience a shift in its dietary pattern similar to that of other Asian countries. It has been estimated that by 2020 the consumption of dairy products, in particular, will increase dramatically to compensate for the relatively low meat consumption, but meat consumption will also increase. This, in turn, could drive a dramatic increase in the demand for cereals for livestock feed, unless soybeans take a larger share in such feed, as happened in China during the 1990s. By 2020, India could thus reach a level of livestock product consumption (measured in terms of meat equivalents) similar to that of China in the early 1990s (Bhalla, Hazell and Kerr, 1999). India's shift in dietary pattern would also imply a strong increase in the consumption of fruit, vegetables, fish and seafood, similar to that of other Asian countries.

To sum up, China's pattern of average food consumption has gone through most of the first stage of the nutrition transition, as the aggregate level of per capita calorie intake has come close to that of developed countries. Hence, a future rise in the level of food consumption is likely to be much slower than in the past. By contrast, the change in the composition of food consumption (i.e. the second stage of the nutrition transition) is likely to continue for some time, leading to a further rise in the demand for livestock products, oil crops, vegetable oils, and fruit and vegetables. The pace at which rural incomes catch up with urban incomes will have a marked influence on how fast China's aggregate per capita calorie intake fully converges with developed-country levels and how fast its composition of food consumption continues to change. India, by contrast, appears still to be in the first stage of the nutrition transition, with substantial potential for a rapid rise in per capita calorie intake, particularly in the consumption of livestock products and livestock feed.

2. *Intensity of metal and energy use*

Over the past few decades, metal use in China, and to a lesser extent in India, has strongly increased. This trend has become particularly visible in China since the mid-1990s. Between 1994 and 2003, China's average annual growth of GDP of 8.2 per cent was accompanied by an even higher average annual rate of growth in the use of aluminium (13.6 per cent), copper (14.9 per cent), nickel (13.0 per cent) and steel (9.2 per cent). By contrast, India's average annual growth of GDP of 5.8 per cent over the same period was exceeded only by the growth of copper use (12.4 per cent), while there was slower growth in the use of alu-

minium (3.2 per cent), nickel (3.7 per cent), and steel (4.4 per cent).[5] Whereas the absolute level of metal use has risen rapidly in both China and India, measured in per capita terms it has remained relatively low, in particular when compared with the Republic of Korea or developed countries such as Japan and the United States (table 2.2).

Both these features of metal use by China and India reflect earlier findings in the literature based on the "intensity-of-use" hypothesis (e.g. Malembaum, 1973). In this context, "intensity of use" is defined as the ratio of metal use to national income; that is, the change in metal use depends on the change in the intensity of use and on the change in income. According to the "intensity-of-use" hypothesis, the intensity of metal use is low in poor countries, which rely largely on unmechanized subsistence agriculture. As economic development takes place, manufacturing, construction of housing and physical infrastructure, and household demand for consumer durables grow, while the share of agriculture in GDP declines. This causes the intensity of use to rise. At some point, however, the growth of manufacturing and construction activities, as well as household demand for consumer durables, starts to slow down. Thus, the "intensity-of-use" hypothesis anticipates an inverted U-shaped relationship, with the intensity of use first rising and then falling with growing per capita income. The hypothesis also anticipates change in the intensity of metal use due to forces other than those related to per capita income. Most importantly, new production technologies or long-term price increases may lead to the introduction of synthetic substitutes and to a reduction in the use of materials per unit of output, and, thus, tend to result in a downward shift in the intensity-of-use curve. Moreover, the mode of industrialization strongly influences the evolution of the intensity of metal use. This is because, for example, industrialization that relies on heavy industry requires greater metal use than industrialization that relies on light industry; moreover, a more outward-oriented industrialization strategy requires the extended metal-intensive construction of port facilities.

A comparative analysis of the intensity of use of aluminium, copper and nickel can give some indication of a country's current location on its intensity-of-use curve. As shown in figure 2.1,

Table 2.2

PER CAPITA METAL CONSUMPTION, SELECTED COUNTRIES, 2003

(Kilograms per capita)

	Aluminium	*Copper*	*Nickel*	*Steel*
China	4.0	2.4	0.1	197.9
India	0.7	0.3	0.0	33.4
Japan	15.8	9.4	1.4	603.2
Rep. of Korea	20.6	18.9	2.4	984.6
United States	19.3	7.8	0.4	349.3

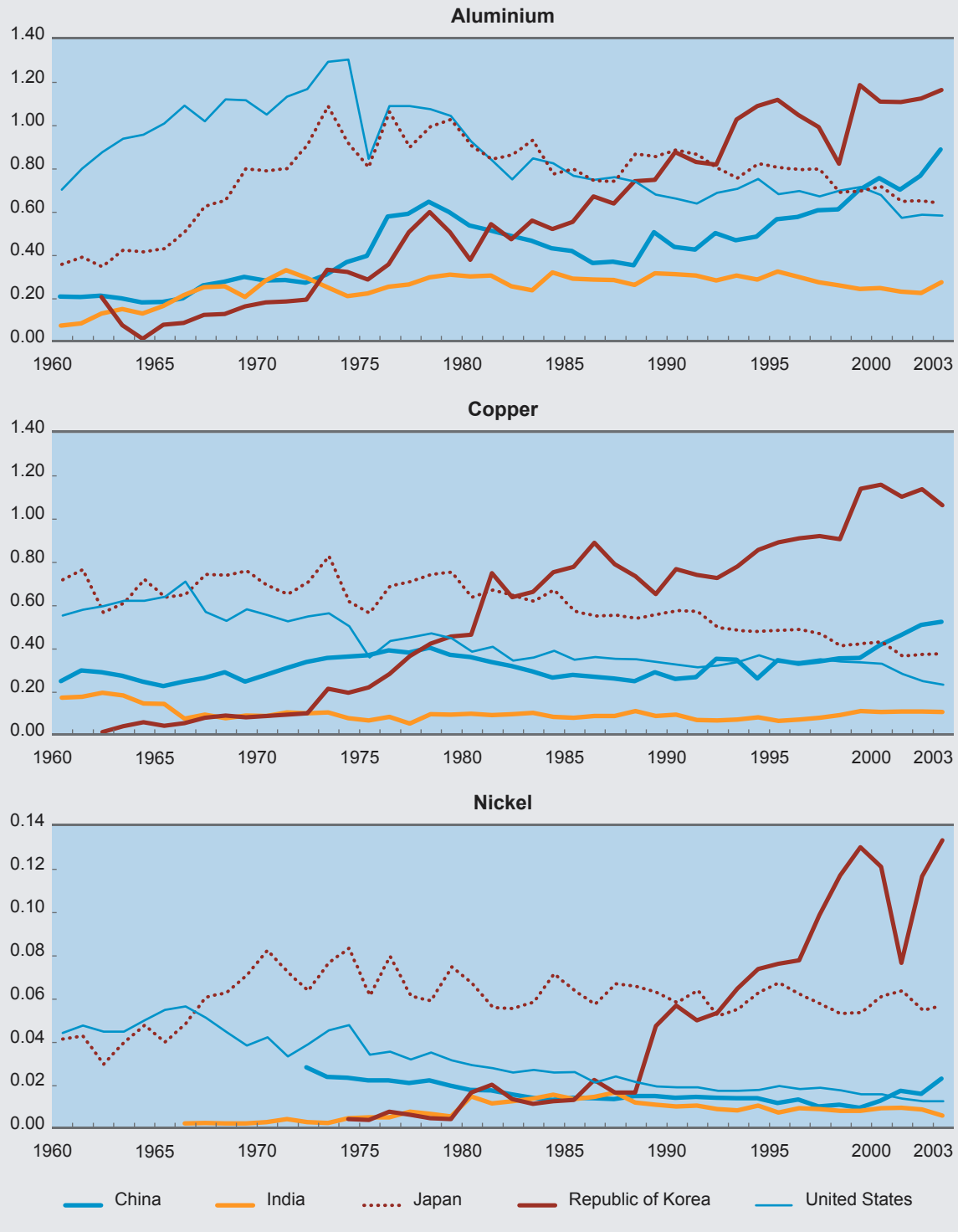
Source: UNCTAD secretariat calculations, based on World Bank, *Global Economic Prospects - Commodity Market Briefs*, 2004; International Iron and Steel Institute, *Steel Statistical Yearbook 2004*; International Copper Study Group, *Copper Bulletin*, 11(4), 2004; and United Nations Department of Economic and Social Affairs (UN/DESA), Population Division, *World Population Prospects*, Rev. 2002.

China currently is in the stage of rapid industrialization on its intensity-of-use curve (i.e. the income elasticity of metal use exceeds unity). However, the rise in its intensity of metal use has not been continuous. Its intensity of aluminium and copper use rose until the late 1970s, after which it began a temporary decline. This decline is probably closely related to the transition away from central planning, with its emphasis on metal-intensive heavy industry. However, more recently, China's intensity of aluminium, copper and nickel use has picked up again, and has tended to grow steeply over the past two or three years, undoubtedly due largely to rapid industrialization. Part of this recent increase coincides with very high rates of investment, particularly investment in infrastructure. According to Morgan Stanley (2004: 29), for example, the share in GDP of China's investment in infrastructure rose from an already high level of about 15 per cent in 1997 to over 20 per cent in 2002. This indicates that similar rates of economic growth can be associated with different levels of intensity of metal use, depending on the rate and composition of investment. Thus the recent rapid rise in China's intensity of metal use may well slow down once investment in infrastructure declines from its current high levels.

Figure 2.1

INTENSITY OF METAL USE, SELECTED METALS AND COUNTRIES, 1960–2003

(Tons per GDP in $ million, PPP-adjusted)



Source: UNCTAD secretariat calculations, based on *World Bureau of Metal Statistics Yearbook,* various issues; International Copper Study Group, *Copper Bulletin*, 11(4), 2004; Tilton, 1990; World Bank, *Global Economic Prospects - Commodity Market Briefs*, 2004, and *World Development Indicators* online; and Penn World Tables.

Contrary to developments in China, India's intensity of aluminium, copper and nickel use has remained relatively stable over the past four decades. This difference is likely to reflect the two countries' different pace of industrialization and the relatively small share of investment in infrastructure in India's GDP. Assuming current growth and industrialization trends will be maintained, Morgan Stanley (2004: 15) estimates that India is 5 to 20 years behind China in per capita use of commodities such as aluminium, copper and steel.[6]

The recent rise in China's intensity of metal use may slow down once infrastructure investment declines from its current high levels.

Figure 2.2 is a schematic representation of the relationship between the intensity of metal use on the one hand, and per capita income and time on the other. The continuous line in figure 2.2 reflects a locus of points on the different intensity-of-use curves for China, India, Japan, the Republic of Korea and the United States. The position of these countries on the continuous line should be taken as illustrative only, and not as a precise reflection of their actual locations. Moreover, given the tendency of long-term intensity-of-use curves to shift downwards, it is probable that the curves of late industrializers, such as China, will peak at a level below those of early industrializers, such as the United States.

Much of the reasoning behind the intensity of metal use also applies to the energy sector. Hannesson (2002), for example, shows that the intensity of use of energy first rises and then falls after countries reach a certain level of affluence. This means that energy use tends to grow more slowly than income in mature, industrialized economies, while the opposite holds for countries where the share of industry in output continues to grow.

India is 5 to 20 years behind China in per capita use of commodities such as aluminium, copper and steel.

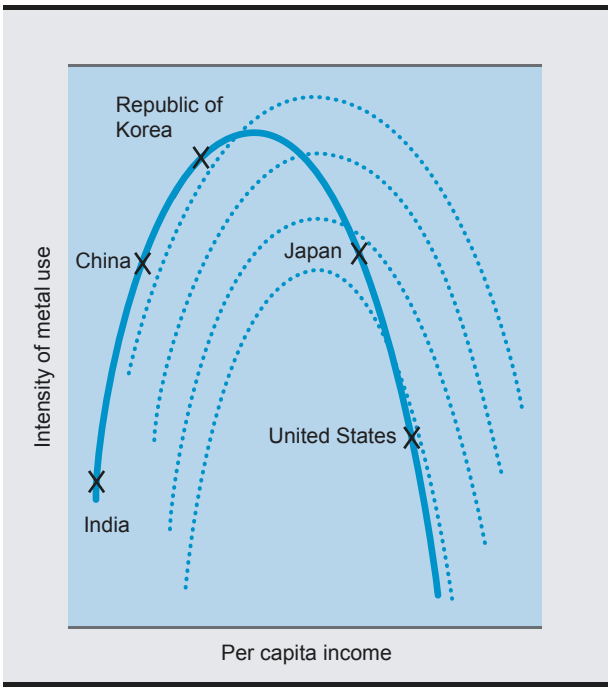
In line with this general pattern, figure 2.3 indicates relatively little change in India's intensity of energy use over the past four decades. This is probably largely due to the country's relatively slow pace of industrialization, as well as its low level of investment in infrastructure, which has held back growth in demand for transportation fuels.

By contrast, the evolution of China's intensity of energy use does not correspond to the general pattern: it was highly volatile, but remained at a high level until the late 1970s when it started to decline, a trend that was reversed only in 2000 (fig. 2.3). The income elasticity of energy use in China between 1980 and 2003 was 0.5 – only slightly higher than in the United States (at 0.46) and much lower than in India and the Republic of Korea (at 0.97 and 1.22 respectively). The decline in China's intensity of energy use registered between the late 1970s and 2000 was mainly due to two factors: technical change within individual sectors (i.e. the change in the energy required to produce a particular product) and structural change between sectors (i.e. shifts in the share of total output between sectors which may be more or less energy-intensive). In China, gains in energy efficiency were brought about by the move from central planning towards market-mediated prices, enterprise ownership reform, and the introduction of energy-saving technologies; these are generally credited for most of the decline in China's intensity of energy use (Zhang, 2003; Fisher-Vanden et al., 2004).[7]

While China's energy use has risen at a slower pace than its GDP, its absolute level of energy use has steadily increased since the 1960s, except for the period between 1997 and 2000, when it decreased in spite of rapid output growth. This was mainly due to a decline in the direct use of coal caused by a variety of factors, including the closure of many State-owned factories that were large and inefficient energy users, the elimination of small and inefficient power generators, and the switch to high quality coal (Sinton and Fridley, 2000). Energy use between 2000 and 2003 grew at an average annual

Figure 2.2

STYLIZED REPRESENTATION OF THE RELATIONSHIP BETWEEN INTENSITY OF METAL USE AND PER CAPITA INCOME



Source: UNCTAD secretariat.

rate of 16.2 per cent, significantly more than between 1990 and 1997, when it was 5.2 per cent. As a result, for the first time since the late 1970s, China's income elasticity of energy use started to exceed unity in 2001. This strong growth appears to have been spurred largely by the substantial number of steel mills and aluminium smelters that came into operation in the late 1990s, as well as by the growth in demand for energy-intensive consumer goods, such as automobiles and home appliances (Crompton and Wu, 2005).

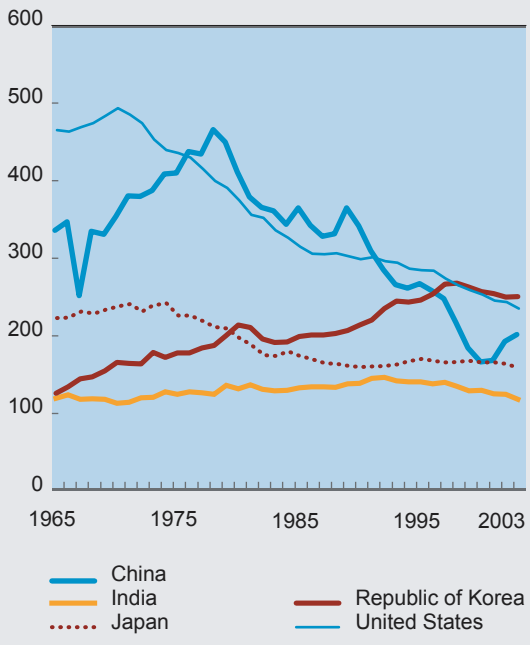
One notable feature in both China and India is the relatively high proportion of coal in total energy use: 69.0 per cent and 54.5 per cent, respectively, in 2004. Oil ranked second, accounting for 22.3 per cent of energy use in China and 31.7 in India. Although in China absolute levels of coal use have been increasing (except in the period 1998–2000), in total energy use the share of coal has been declining (BP, 2005). While coal will probably continue to be a major source of energy for China, other sources of energy, such as oil (for transportation and industry), natural gas and hydroelectric power (growing in conjunction with increasing use of household appliances) are also likely to be increasingly used.

The future development of China's energy use will depend on a balance of opposing trends. On the one hand, continued rapid industrialization, higher living standards, and improved transport infrastructure will tend to increase China's intensity of energy use. On the other hand, despite the country's low average income elasticity of energy use over the past three decades or so, the level of energy use per unit of output remains relatively

Figure 2.3

INTENSITY OF ENERGY USE, SELECTED COUNTRIES, 1965–2003

(Tons of oil equivalent per GDP in $ million, PPP-adjusted)



Source: UNCTAD secretariat calculations, based on British Petroleum, 2004; Penn World Tables; and World Bank, *World Development Indicators* online.

high for a country at its current level of economic development (fig. 2.3). This indicates considerable further potential for the adoption of energy-saving technologies (e.g. more energy-efficient vehicles). The imposition of a vehicle fuel tax and further liberalization of energy prices could also help cut the increase in energy demand. However, such measures would need to be weighed against their adverse impact on the real incomes of energy users, such as farmers who rely on diesel oil for transportation and machinery, and for whom the energy-intensive production of fertilizer input is an important cost factor. Taking account of these opposing factors, it is widely expected that the income elasticity of China's energy use will be substantially below unity in the next few years. For example, Crompton and Wu (2005) estimate an annual growth rate of 3.8 per cent between 2004 and 2010, while the International Energy Agency (2004) estimates an average annual growth rate of 2.6 per cent annually from 2002 to 2030.

> The extent of China's future energy use will depend on a balance of opposing trends ... but it is likely to grow less than its income.

C. Domestic resource constraints and the balance-of-payments constraint

Changes in the supply and demand patterns of rapidly growing and industrializing countries are typically characterized by the accumulation of capital (both physical and human), sectoral differences in productivity growth, a shift in household demand from food to manufactured products and services, an initial rise and then decline in per capita use of energy and industrial raw materials as per capita income rises, and a growth in demand for machinery and intermediate production inputs (Chenery, Robinson and Syrquin, 1986). But the way in which changes in these patterns interact with shifts in the level and composition of a rapidly growing country's external trade depends on the country's size, changes in its domestic resource constraints and demand patterns relative to those of other countries, the balance-of-payments constraint, and trade and exchange rate policies.

Rapid economic growth and industrialization face two main constraints. A country's domestic natural-resource endowment determines the degree to which its self-sufficiency in food consumption and raw-material use is compatible with rapid industrial development and economic growth. To the extent that the growing demand for food, energy, industrial raw materials, intermediate products and capital goods cannot be met from domestic production, the pace of income growth and industrialization will slow down unless imports grow. But the balance-of-payments constraint limits import growth. Imports of food and inputs for industrial production (including raw materials, intermediate goods and capital goods) cannot exceed what is earned from exports and net inflows of financial capital. Hence a key determinant of the dynamics of economic growth and industrialization in an open economy is the ca-

pacity to secure the increased export revenues required to overcome domestic resource constraints and the balance-of-payments constraint, translate these increased export earnings into investment in new lines of production, and implement a coherent strategy of industrial upgrading. Where this occurs, rapid growth and industrialization increases a country's export capacity, and the higher export earnings can be used to finance the greater volume of imports required for still further growth.

1. Relative resource constraints and country size

The evolution of domestic resource constraints during economic development is strongly influenced by the size of a country, measured by population, geographic area, or aggregate income. Other things being equal, a larger population makes the domestic resource constraint more significant because of the associated higher demand for food. On the other hand, a large population means greater availability of labour, and thus improves a country's supply capacity, including for food production. The size of a country's geographic area has an impact on domestic resources because arable land, energy sources and industrial raw materials are more likely to be present in larger quantities and in greater variety in a large territory than in a small one.[8] But a large geographic area also imposes greater demands on domestic resources, because it requires greater quantities of raw material to develop the country's physical infrastructure. Hence, countries with very large territories, such as China and India, need substantial investment to physically link the domestic rural and urban markets.

Natural-resource endowments determine the degree to which self-sufficiency in food and raw materials is compatible with rapid industrial development and growth ... but the balance-of-payments constraint limits import growth.

A country's relative resource endowment influences the impact of the interplay between country size and domestic resource constraints on the country's trade composition as its per capita income rises.[9] A simplified approach to examining relative factor endowments is to concentrate on labour, land and skills of the labour force, and to omit capital (physical and financial), which, though of vital importance as an input to production, has become highly mobile between countries.[10]

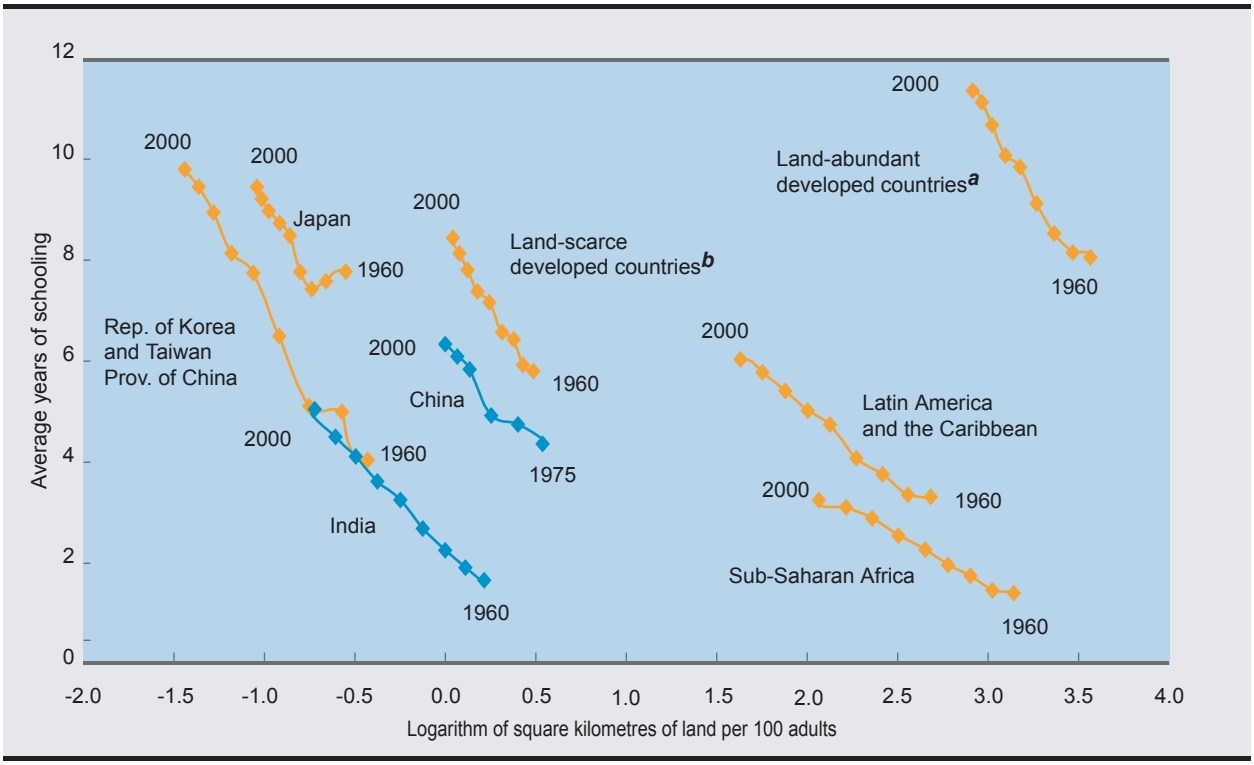
Figure 2.4 shows the evolution of the land–labour and skill–labour resource ratios for several groups of economies over the past four decades: the vertical axis measures the skill–labour ratio (h), proxied by average adult years of schooling; and the horizontal axis measures the land–labour ratio (n), proxied by square kilometres of land per 100 adults. The groups include two main developing regions (sub-Saharan Africa and Latin America (including the Caribbean)) and two groups of developed countries, divided on the basis of their land–labour ratios – land-scarce developed countries include those of Western Europe, while land-abundant developed economies include Australia, Canada, New Zealand, Scandinavia and the United States. The figure also includes China, India and Japan, as well as the Republic of Korea and Taiwan Province of China taken as a group to represent the first-tier newly industrializing economies (NIEs). Three of the country groups are land-abundant (sub-Saharan Africa, Latin America, and the land-abundant developed countries), while the other groups and individual economies are land-scarce. In terms of skill–labour ratios, the groups divide into three categories: (i) at low levels of education (sub-Saharan Africa and India), (ii) at intermediate levels of education (China and Latin America), and (iii) comprising the two highly educated developed-economy groups, as well as Japan and the Republic of Korea and Taiwan Province of China.[11]

One striking feature of figure 2.4 is how much the composition of resources varies among the regions. The other striking feature is how little the pattern of variation changed between 1960 and 2000. There are some differences in the degree of movement upwards and leftwards, but for

Figure 2.4

RESOURCE COMBINATIONS OF COUNTRIES/REGIONS, 1960–2000 (AT 5-YEAR INTERVALS)

(Unweighted averages)



Source: UNCTAD secretariat calculations, based on Barro and Lee, 2001; and World Bank, *World Development Indicators*.

Note: The figure includes all countries and economies with a population larger than one million for which comprehensive data are available, except countries in the Middle East and North Africa, countries in South Asia other than India, and economies in East Asia other than China, the Republic of Korea and Taiwan Province of China which are omitted so as not to clutter the chart.

a Australia, Canada, New Zealand, Scandinavia and the United States.

b Western Europe.

the most part the positions of economies and groups relative to one another were the same in 2000 as they had been in 1960. Moreover, it seems likely that this pattern of the past few decades will persist over the next few decades; even large increases in school enrolment rates will feed through only slowly to raise the average educational level of the labour force, and population growth rates will not differ by enough to alter the ranking of regions by land–labour ratios. The figure also shows that, depending on the relative growth rates of their population and skills, China and India are likely to move towards relative endowment positions similar to those of Japan and the group comprising the Republic of Korea and Taiwan Province of China.

The figure further illustrates how relative endowment positions may influence shifts in the composition of imports and exports as income rises. In resource-rich regions (such as sub-Saharan Africa, Latin America, and the land-abundant developed countries in the diagram), the shift of resources away from primary production is likely to lag behind that in the other regions at low income levels. Moreover, these regions will tend to maintain a relatively large share of primary commodities in their exports even at relatively high income levels. For those economies that have a comparative advantage in manufactures (such as the Asian economies in the diagram), the composition of their manufactured exports in labour- and skill-intensive products will be influenced by their

relative skill–labour ratios. This implies that India's merchandise exports will consist largely of labour-intensive manufactures, while those of Japan and the Republic of Korea will comprise largely skill-intensive manufactures, with China being in an intermediate position. Moreover, for all these Asian economies the share of primary commodities in their imports will tend to increase as per capita income rises.

In addition to relative skill–labour ratios, the absolute number of skilled workers may influence the range of manufactures that a country exports. China and India are in a unique position in this respect: because of their very large populations, they combine a large relative supply of low-skilled labour with an ample absolute supply of high-skilled labour. For example, in 2000–2001, 12.1 million students in China and 10.6 million in India were enrolled in tertiary education, compared to about 4 million in Japan and 3 million each in Indonesia and the Republic of Korea. The number of university graduates in China was 1.95 million, compared with about 1.01 million in Japan and about 0.5 million each in Indonesia, the Republic of Korea and Thailand. Moreover, in 2001, China had the second largest number of researchers in the world, its R&D personnel totalling almost one million, slightly more than in Japan and about six times more than in the Republic of Korea.[12] This means that China and India may attain significant export diversification at an earlier stage of development than did the NIEs, and they may simultaneously export a wider range of both labour- and skill-intensive manufactures.

China and India combine a large relative supply of low-skilled labour with an ample absolute supply of high-skilled labour, and may therefore succeed in diversifying their manufactured exports at an earlier stage of development than did the NIEs.

2. *Shifts in trade composition: experiences of Asian industrialization*

The above examination of shifts in comparative advantage in the course of economic development suggests that rapid income growth in relatively natural-resource-poor countries, such as China and India (as well as Japan and the Republic of Korea), occurs along with a change in their export composition from agricultural goods to manufactures. It also suggests that, depending on the country's relative endowment of skilled labour, the composition of manufactured exports changes from an initial predominance of labour-intensive goods to an increasing share of more skill-intensive products. This section examines the differences and similarities of the shifts in the trade composition of China, India, Japan and the Republic of Korea over the past four decades. The two preceding sections focused on structural changes in the economies of China and India, associated with factor and productivity growth on the supply side and income growth on the demand side; this section looks at the impact of these structural changes, as well as trade and exchange rate policies, on their trade composition.

China's trade reforms, embedded in its overall reform strategy, have been gradual. Results from each reform have influenced the design of the next stage of reform – an approach that in China has sometimes been described as "crossing the river by feeling the stones". Major features of China's trade reform included the decentralization of foreign trading rights by progressively increasing both the number of companies authorized to carry out trade transactions and the range of goods these companies are allowed to trade, greater transmission of international prices of traded goods to the domestic market, and the gradual removal of exchange rate distortions. As a result, China's foreign trade regime has increasingly come to rely on traditional trade policies in the form of tariffs and non-tariff measures. This shift in the kinds of trade policy instruments used has been accompanied by progressive trade liberalization: the exchange rate was unified in 1994, the number of products subject to quotas and licences was considerably reduced during the 1990s (Lardy, 2002), and tariffs were significantly lowered throughout the reform process, with average tariffs falling from over 50 per cent in the early 1980s to about 16 per

cent on the eve of China's accession to the WTO (IMF, 2004b).

Its WTO accession in December 2001 constitutes part of China's ongoing reform process (*TDR 2002*, chap. V), facilitating its emergence as a major trading nation. It has also contributed to reducing trade tensions that have often accompanied the emergence of major new traders over the past few decades. Nevertheless, there were concerns by China's policy-makers, particularly regarding the initial post-accession period, about the competitiveness of the agricultural sector, which had enjoyed a relatively high degree of border protection, and about the heavy-industry sector (dominated by State-owned enterprises for which the transformation and restructuring process being undertaken was far from complete). As discussed in more detail below, China's WTO-accession commitments in agriculture included the phasing-in of tariff rate quotas for a number of bulk commodities and a reduction of tariffs for other commodities. Both these measures reached their committed levels in 2004. Other commitments included limiting the share of import quotas allocated to State-trading enterprises, eliminating export subsidies, and the use of science-based sanitary and phytosanitary (SPS) standards for imports. China also made far-reaching liberalization commitments in the services sector (Mattoo, 2004). It is clear that the impact of trade liberalization on the capacity of domestic firms to withstand pressure from foreign competitors very much depends on how the exchange rate is managed. China's tight exchange rate management, mainly designed to avoid a nominal appreciation of its currency vis-à-vis the dollar, has facilitated adjustment during the initial post-accession period.

The selective use of duty exemptions and rebates on value added tax payments, which have supported its processing trade – primarily assembly operations – and foreign direct investment (FDI), has perhaps been the single most important trade policy instrument in China's export promotion policy. Tariff exemptions have been concentrated in imports of intermediate products used for assembly or transformation in the production of goods for export. Typically, neither the imported intermediate products nor the finished goods have been entering China's domestic market. Concessional duties have also been granted to equipment imported by foreign firms as part of their contribution to initial investment in affiliates in China. These measures have contributed to a sizeable expansion of its processing trade, the bulk of which involves foreign-funded enterprises (FFE) based in China, owned mainly by investors from East Asia (*TDR 2002*; Lemoine and Ünal-Kesenci, 2004).

India began trade reforms about a decade after China. Regardless of when exactly the reforms began,[13] there is little doubt that they were undertaken in what was by and large a market economy. Thus, unlike in China, there was no complex transition from a centrally planned to a market economy. The reforms required for greater trade integration were, nonetheless, substantial. As in China, they involved redressing the overvaluation of the exchange rate (a process started in 1986 and completed with the switch to managed floating in 1993), phasing out pervasive import licensing, and reducing tariff protection. While import licensing for capital and intermediate goods was abolished in 1993, quantitative restrictions on imports of manufactured consumer goods and agricultural products were finally abolished only in 2001. Average tariff levels were reduced significantly, but at a level of about 22 per cent in 2004 (IMF, 2004c: 16) they remain higher than in most other developing countries. While the reform process has gone far, important aspects of the reforms, particularly the removal in 2001–2002 of items with high export potential (such as garments, shoes, toys, and auto components) from the list of items reserved for small-scale production, have only recently been implemented, and it may take some years before their outcomes are reflected in economic performance (Ahluwalia, 2002: 72).

China and India have moved into leading positions in world trade.

In the wake of their adoption of reform programmes, China and India have moved into leading positions in world trade. In 2004, China was the world's third largest exporter of merchandise goods and the ninth largest exporter of

commercial services, with a share of 9.0 per cent and 2.8 per cent, respectively, of total world exports. In the same year, India ranked 20th in world merchandise exports with a share of 1.1 per cent, and was the world's 22nd largest exporter of commercial services with a share of 1.5 per cent. However, in most years since 1995, India's services exports have grown much more rapidly than its merchandise exports.[14] The reforms in China and India have not only supported trade growth, they have also contributed to a change in the composition of their trade. This is the focus of the remainder of this section.

(a) Self-sufficiency in agriculture and energy

The fact that their comparative advantage in agricultural products is poised to decline in China and India has sometimes raised concerns about their capacity to maintain food self-sufficiency. For example, in the 1960s and 1970s there were frequent warnings of impending famines in India and in South Asia as a whole. This has contributed to fears that strongly growing food imports by China and India could seriously upset world food markets. However, as a result mainly of the Green Revolution, which started in the mid-1960s, the aggregate supply of cereals (especially maize, rice and wheat) more than doubled in South Asia from the 1960s to the 1990s.

More recently, there have been concerns that the completion of India's phasing out of quantitative restrictions by April 2001 and China's accession to the WTO might also have significant adverse effects on the two countries' agricultural sectors and on their food self-sufficiency. This is because the effects from trade policy reform in agriculture come in addition to the adjustment pressure resulting from the nutrition transition and the related shifts in private consumer demand for food, discussed above. But regarding China, many observers have noted that the country's WTO-accession commitments implied a reduction of overall agricultural import tariffs (in terms of simple averages) from about 21 per cent in 2001 to 17 per cent in 2004, after having already declined from 42.2 per cent in 1992 to 23.6 per cent in 1998. Thus, they argue, the implications of agricultural trade liberalization stemming from China's accession to the WTO may, on average, be best considered continuations of past trends, and therefore unlikely to cause drastic changes in the country's net agriculture and food trade balances (see, for example, Huang and Rozelle, 2003).[15]

Examining the actual evolution of food self-sufficiency in China and India, table 2.3 traces the ratio of domestic production to domestic consumption, for selected food products in China and India from 1994 to 2002 (the last year for which comprehensive data are available). It shows that both China and India have been fairly successful in maintaining a high degree of food self-sufficiency. The main exception to this pattern is the marked decline of self-sufficiency in soybeans for both countries, and in soybean oil for India. Regarding India, the decline in soybean self-sufficiency reflects the finding of a number of studies (e.g. Gulati and Mullen, 2003) that oilseeds and edible oils are the only major commodities likely to be adversely affected by trade policy reform in agriculture. But given the relatively wide gap between bound and actually applied tariffs, the Indian Government was able to flexibly adjust import duties on edible oils; it was thus able to reduce the difference between domestic and international prices that had grown partly in response to the sharp decline in international prices of vegetable oilseeds and oils between 1998 and 2002. It is likely that most of the decline in China's self-sufficiency in soybeans also results from a combination of the fall in international prices and domestic policy reform (i.e. the reduction of the out-of-quota tariff from 114 per cent to 3 per cent and the phasing-out of import quotas that the Chinese Government undertook in 2000 in anticipation of its WTO-accession commitments).

China has remained overwhelmingly self-sufficient in all major food items, but even small changes in self-sufficiency ratios can have a considerable impact on the country's agricultural trade balance.

Although China has remained overwhelmingly self-sufficient in all major food items, even

Table 2.3

FOOD SELF-SUFFICIENCY RATIOS IN CHINA AND INDIA, SELECTED PRODUCTS, 1994–2002

(Per cent)

	China			India		
Product	*1994–1996*	*1999–2001*	*2002*	*1994–1996*	*1999–2001*	*2002*
Wheat	90.0	96.1	99.1	97.0	107.7	104.3
Rice	98.5	101.1	99.5	103.1	110.7	81.2
Maize	100.2	97.9	105.9	100.5	99.6	100.8
Bovine meat	99.5	98.2	98.2	105.6	108.9	111.5
Mutton and goat meat	98.7	98.5	98.0	101.4	101.4	100.7
Poultry meat	97.1	95.2	97.5	100.0	100.0	100.1
Pig meat	101.3	99.5	99.7	100.2	100.1	100.2
Soybeans	82.7	59.8	50.1	102.2	103.7	62.5
Palm oil	14.9	11.0	7.0	0.0	0.0	0.0
Soybean oil	61.7	84.3	103.1	84.4	54.4	48.9
Milk	87.0	88.9	90.3	100.1	100.3	100.4
Pelagic fish	30.2	38.7	38.9	97.9	95.7	92.9
Demersal fish	89.4	85.6	83.8	100.2	100.8	100.6
Marine fish, other	107.6	143.8	162.4	151.0	172.6	170.8
Crustaceans	101.4	103.4	104.9	134.2	142.1	144.5
Bananas	92.6	91.3	94.1	100.0	100.0	100.1
Apples	100.9	102.3	106.1	100.9	100.1	100.0

Source: UNCTAD secretariat calculations, based on FAOSTAT.
Note: Self-sufficiency ratio = production divided by total availability.
Total availability = production + net imports + net stock changes.

small changes in self-sufficiency ratios can have a considerable impact on the country's agricultural trade balance, given the size of its economy. Table 2.4 shows the evolution of China's imports and exports for selected agricultural product categories between 1980 and 2003 (the last year for which comprehensive data are available). It reveals that China's food trade balance has been in surplus over the past few years and that, with an average annual growth rate of 5.4 per cent, its food exports performed relatively well between 1990 and 2003. Even though China's food imports have risen faster than its food exports over the past few years, so far there has not been a sustained, dramatic growth in food imports, as some analysts in the early 1990s had been expecting (e.g. Brown, 1995).

The table also shows that China's food imports increased significantly between 2002 and 2003, and that the rise in imports of seeds for soft fixed oils (which include soybeans) accounted for most of this increase. According to China's Customs Statistics reported by Gale (2005), China's soybean imports further increased in 2004 to reach about $7 billion, up from about $5 billion in 2003 and $2.2 billion in 2002. This corresponds to about 30 per cent of the rise in China's import bill for agricultural products between 2002 and 2004. As discussed in more detail below, this sharp increase in the value of China's soybean imports is partly due to the rise in world market prices for this item and in shipping costs. However, the rise in international primary commodity prices is partly the result of China's own growing demand for pri-

Table 2.4

CHINA'S AGRICULTURAL TRADE BY MAJOR PRODUCT CATEGORY, 1980–2003

(Millions of dollars)

	Grains, oilseeds and fixed vegetable oils							Agricultural raw materials			
	Total	of which:		Horti-cultural products	Livestock products	Other food products, beverages and tobacco	Total food	Total	of which:		Total agri-culture
		Wheat	Seeds for soft fixed oils						Cotton	Rubber and hides and skins	
Exports											
1980	691	0	170	842	638	1 197	3 368	789	47	206	4 157
1987	1 332	1	640	1 290	1 659	1 471	5 752	1 685	777	140	7 437
1990	1 387	1	580	1 760	2 646	2 058	7 851	1 383	318	173	9 234
1995	1 242	2	494	3 399	4 758	2 854	12 254	1 343	49	95	13 597
2000	2 324	0	394	3 359	5 363	2 482	13 528	1 589	307	65	15 117
2001	1 788	47	412	3 777	5 887	2 744	14 196	1 256	82	78	15 452
2002	2 414	70	425	4 318	6 291	3 105	16 127	1 458	172	95	17 585
2003	3 528	265	532	5 249	7 071	3 352	19 201	1 604	135	103	20 805
Imports											
1980	613	226	41	11	56	333	1 013	1 798	313	458	2 812
1987	2 063	1 362	62	55	138	879	3 135	2 576	13	460	5 711
1990	3 321	2 157	18	83	251	927	4 583	3 022	718	386	7 604
1995	6 176	2 026	104	185	784	1 917	9 062	6 385	1 487	1 168	15 446
2000	4 360	147	2 942	516	2 100	1 829	8 805	9 853	137	1 958	18 658
2001	4 530	121	3 194	675	2 180	1 802	9 186	10 133	117	2 246	19 320
2002	4 684	103	2 637	689	2 521	1 770	9 664	11 313	200	2 432	20 977
2003	8 854	77	5 514	871	3 098	1 866	14 689	14 866	1 218	3 339	29 555
Net exports											
1980	78	- 226	129	832	582	864	2 355	-1 010	- 266	- 252	1 345
1987	- 731	-1 362	578	1 235	1 521	592	2 617	- 891	764	- 320	1 726
1990	-1 934	-2 156	562	1 676	2 395	1 131	3 268	-1 639	- 400	- 213	1 629
1995	-4 934	-2 025	390	3 215	3 975	937	3 192	-5 041	-1 438	-1 073	-1 849
2000	-2 036	- 147	-2 548	2 843	3 264	653	4 723	-8 264	170	-1 893	-3 541
2001	-2 742	- 75	-2 782	3 102	3 707	942	5 009	-8 878	- 35	-2 168	-3 868
2002	-2 271	- 33	-2 212	3 629	3 770	1 335	6 463	-9 855	- 27	-2 337	-3 391
2003	-5 326	188	-4 982	4 378	3 973	1 487	4 512	-13 262	-1 084	-3 236	-8 750

Memo item: *Average annual growth, 1990–2003 (per cent)*

Agricultural exports	4.9
Food exports	5.4
Agricultural imports	10.7
Food imports	9.4
Food imports, excluding seeds for soft fixed oils	5.1

Source: UNCTAD secretariat calculations, based on United Nations Commodity Trade Statistics database (UN COMTRADE); and estimates by the United Nations Statistical Office.

Note: Data reported for 1980 rely to a large extent on estimates. Cereals, oilseeds and vegetable oils include Standard International Trade Classification (SITC) 04, 22 and 42. Horticultural products include SITC 05. Livestock products include SITC 01, 02 and 03.

mary commodity imports. This implies that the country's strong import demand has had a multiplicative effect on the dollar value of commodities imported, and thus might prove self-limiting.

It is also worth highlighting that between 2000 and 2003 wheat imports were much lower than in the early 1990s (table 2.4). According to more recent data (Gale, 2005), this development was sharply reversed in 2004 when wheat imports bounced back to reach about $1.6 billion. According to Gale (2005), government policies have been highly responsible for these swings: from 1997 to 2003 China disposed of its ageing grain in government reserves while replenishing them in 2004, and government entities, the main importers of wheat, increased imports of this commodity in an effort to curb the rising prices of domestic grain.

Regarding agricultural raw materials, table 2.4 shows that cotton accounted for much of the surge in import values between 2002 and 2003. This was closely related to the increasing use of imported cotton, not only because of China's rapidly growing clothing exports, but also partly because of a poor domestic cotton harvest in 2003. The net trade balance of hides and skins (used as inputs for other natural-resource-intensive and labour-intensive manufactures, such as footwear and leather goods) and of rubber (used for the rapidly expanding production of vehicle tyres) has also considerably deteriorated over the past few years.

To sum up, even though China remains largely self-sufficient in all major food items, the direction of change in the country's agricultural trade is towards greater import dependence. Rosegrant et al. (2001: 74), for example, estimate that China will become the world's largest importer of agricultural commodities in value terms by 2020, its imports increasing from $5 billion in 1997 to $22 billion in 2020. While this would imply that China's net agricultural imports as a percentage of total agricultural production would increase only from 2 per cent to 6 per cent, such an outcome depends largely on rapid productivity growth in agriculture, which is an underlying assumption of the estimation results. Indeed, while China's agricultural output has grown rapidly for several decades, particularly since the rural reforms that began in 1979 (Fan and Zhang, 2002), its further growth would probably be necessary in order to meet future increases in demand without strongly impairing food self-sufficiency. This is likely to require greater investment in agricultural research (Huang, Li and Rozelle, 2004).

China's agricultural trade balance in the future will largely depend on government policy.

Thus China's agricultural trade balance in the future will largely depend on government policy. In a sense, the new approach to agricultural policy that was adopted in 2004 represents a reappraisal of the role of agriculture in economic development. This reappraisal is reflected in China's introduction of its first national direct subsidies to farmers, the initiation of an eventual phasing out of a long-standing tax on farmers, subsidizing seed and machinery purchases, and increasing funding for agricultural infrastructure and research (Gale, Lomar and Tuan, 2005). Moreover, if China upgrades its export composition away from relatively natural-resource-intensive and labour-intensive sectors such as clothing, footwear and leather goods, the recent increase in agricultural imports, due to imported raw materials for such exports, will be dramatically reversed.

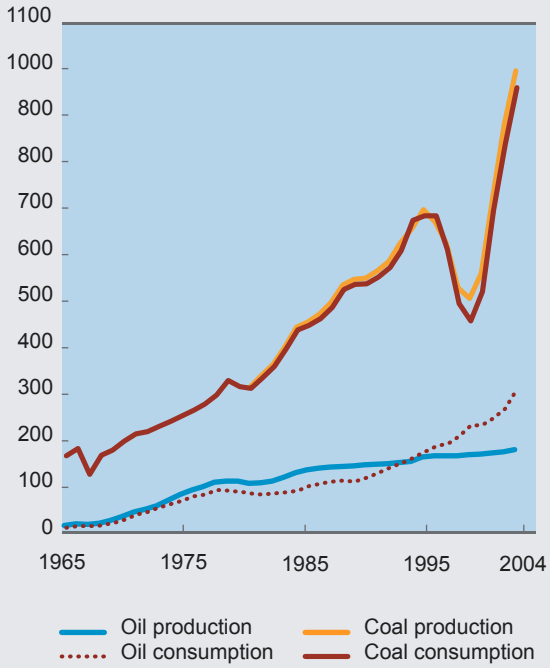
China's energy demand is likely to continue to outpace the future growth of domestic supply, so that fuels will add substantially to China's total import bill.

Turning to an assessment of China's self-sufficiency in energy, it is useful to recall that in 2004 the country was the sixth largest producer of oil and the leading producer of coal worldwide (BP, 2005). Indeed, following oil discoveries in the 1960s, China's domestic oil production has steadily increased over the past four decades, and the share of fuels in total imports remained small until about 1990. Since then, however, the expansion of domestic production has no longer kept pace with the rise in demand. As a result, China

Figure 2.5

CHINA: CONSUMPTION AND PRODUCTION OF OIL AND COAL, 1965–2004

(Million tons of oil equivalent)



Source: British Petroleum, *Statistical Review of World Energy 2005.*

Note: Coal production data are available only from 1981 onwards.

became a net oil importer in 1993, and the gap between the country's domestic consumption and production has risen substantially over the past decade (fig. 2.5). By contrast, the production of coal, which, as already mentioned, continues to account for a large share of China's total energy use, has closely kept up with changes in the use of coal. However, given that China's energy demand is likely to continue outpacing the future growth of supply, fuels are likely to add substantially to China's total import bill.

India's energy use has depended heavily on imports, given the limited domestic energy resources. Thus fuels have comprised one quarter to one third of the country's total merchandise imports.

(b) Import composition

Sustained rapid growth and industrialization are generally accompanied by a rise in imports (both in absolute value and as a share of total imports) of primary commodities and, generally at the early stages in industrialization, of capital equipment and intermediate inputs. Shifts in import composition for Japan, the Republic of Korea, China and India over the past few decades are reflected in table 2.5. The table uses six broad categories of products, based on a distinction between primary commodities and manufactures; the latter are further categorized according to whether they are labour- or resource-intensive, and whether their production involves low-, medium- or high-skill and technology intensity; a separate category is the electronics sector.[16]

The table shows that, contrary to the experience of the Republic of Korea during its process of rapid economic catch-up, the share of machinery in the total imports of China and India has declined over the past few years. While this may reflect substantial pent-up demand for state-of-the-art technology, which, particularly in the case of China, could result in rapidly rising high-technology imports once the appropriate conditions are in place both domestically and internationally, country-specific factors have also played a significant role.

In the case of India, the decline in the proportion of machinery in total imports is closely associated with the relatively limited share of industry in the country's economic structure. In the case of China, it coincides with a sharp growth in the share of electronics parts and components. This reflects the greater role that participation in international production networks has played in its recent industrialization and development strategies, as it has in many other developing countries. In principle, becoming part of an international production network can give substantial impetus to a developing country's development and industrialization strategy, mainly because such participation broadens the range of sectors on which developing countries can base their quest for industrialization. Given that product-specific characteristics allow a partitioning of the production process of a number of industrial sectors into various slices, industrializing countries can focus on

Table 2.5

PRODUCT STRUCTURE OF IMPORTS OF SELECTED ASIAN COUNTRIES, 1965–2003

(Percentage of total merchandise imports)

	Japan					Republic of Korea					China[a]			India[a]			
Product group	*1965*	*1975*	*1985*	*1995*	*2003*	*1965*	*1975*	*1985*	*1995*	*2003*	*1987*	*1995*	*2003*	*1975*	*1985*	*1995*	*2003*
Primary commodities	*80.5*	*83.0*	*74.7*	*45.8*	*42.1*	*48.4*	*49.4*	*42.8*	*31.9*	*35.8*	*18.0*	*20.4*	*20.1*	*44.3*	*45.4*	*42.3*	*45.4*
All food products	22.7	18.0	14.1	16.4	12.5	15.1	14.2	5.8	5.5	5.6	7.4	7.0	3.6	31.9	8.4	4.6	5.8
Meat and meat preparations	0.6	1.2	1.5	2.9	2.3	0.0	0.2	0.1	0.6	0.9	0.0	0.1	0.2	0.0	0.0	0.0	0.0
Fish and seafood	0.9	2.0	3.7	5.3	3.4	0.0	0.1	0.3	0.6	1.1	0.1	0.5	0.5	0.0	0.0	0.0	0.0
Cereals and cereal preparations	9.4	5.7	3.1	1.6	1.4	12.1	9.5	2.9	1.5	1.1	1.9	2.8	0.1	29.1	0.6	0.1	0.0
Fruits and vegetables	1.8	1.1	1.5	1.9	1.6	0.1	0.2	0.2	0.4	0.5	0.1	0.1	0.2	1.4	1.3	1.6	1.5
Vegetable oilseeds and oils	4.7	2.7	1.8	1.0	0.8	0.9	1.0	1.2	0.7	0.5	1.0	2.1	2.1	0.6	3.9	2.3	3.8
Agricultural raw materials	20.4	9.5	7.2	6.3	3.0	22.2	11.4	7.9	5.5	2.5	6.3	5.0	3.7	2.5	3.4	4.3	3.3
Cotton	5.4	1.5	0.8	0.2	0.1	9.1	3.4	1.7	0.6	0.2	0.0	1.1	0.3	0.8	0.1	0.5	0.5
Rubber	1.6	0.3	0.4	0.4	0.3	1.9	0.8	0.7	0.6	0.3	0.9	0.6	0.6	0.2	0.5	0.6	0.4
Cork and wood	6.1	5.3	3.4	3.7	1.7	4.6	3.7	1.8	1.3	0.5	1.4	0.4	0.9	0.0	0.2	0.7	1.0
Minerals, ores and metals	17.4	11.0	9.0	6.7	5.0	4.2	4.7	5.3	6.4	5.6	3.0	4.5	5.6	5.4	7.0	7.5	4.3
Metalliferous ores and metal scrap	12.5	7.8	5.0	2.9	2.4	1.1	2.4	2.9	2.5	2.6	1.2	2.3	2.9	0.4	1.9	2.5	1.8
Non-ferrous metals	3.0	2.2	3.1	3.2	2.2	2.0	0.9	1.5	3.5	2.8	1.7	2.0	2.5	2.7	2.8	3.7	1.9
Fuels	20.0	44.5	44.4	16.4	21.6	7.0	19.1	23.8	14.5	22.1	1.3	3.9	7.2	4.4	26.6	25.9	32.0
Labour- and resource-intensive manufactures	*1.8*	*4.0*	*5.7*	*14.0*	*12.2*	*6.8*	*5.3*	*5.0*	*7.7*	*6.8*	*12.9*	*14.4*	*6.9*	*4.0*	*8.2*	*9.7*	*13.5*
Textiles	0.7	1.4	1.6	1.9	1.4	6.0	3.5	2.2	3.1	1.9	8.6	8.5	3.5	0.3	0.8	1.1	1.6
Clothing	0.1	0.9	1.6	5.7	5.2	0.1	0.1	0.1	0.8	1.5	0.0	0.8	0.3	0.0	0.0	0.0	0.1
Cork, wood and paper products	0.2	0.5	0.9	2.7	2.7	0.4	0.4	0.6	1.6	1.3	3.1	2.5	1.4	1.7	1.2	1.5	1.0
Non-metallic mineral manufactures	0.7	0.8	1.0	1.8	1.2	0.3	0.4	1.0	1.2	1.3	0.8	0.8	0.9	2.0	6.1	6.8	10.5
Low-skill and technology-intensive manufactures	*2.5*	*0.8*	*1.9*	*3.2*	*2.5*	*8.9*	*9.7*	*16.2*	*7.7*	*5.7*	*13.8*	*7.5*	*6.7*	*9.8*	*8.9*	*5.6*	*5.2*
Iron and steel	1.7	0.3	1.2	1.8	0.9	5.4	4.7	3.8	5.0	4.2	11.1	5.0	5.3	8.4	7.1	4.2	2.0
Ships and boats	0.4	0.2	0.2	0.1	0.0	1.6	3.4	11.1	1.2	0.3	0.5	0.8	0.2	0.1	0.3	0.3	1.9
Medium-skill and technology-intensive manufactures	*5.2*	*3.8*	*4.4*	*10.2*	*11.5*	*10.3*	*14.3*	*13.5*	*20.7*	*15.4*	*27.7*	*26.2*	*20.1*	*15.8*	*17.0*	*16.6*	*10.4*
Non-electrical machinery	4.2	2.7	2.7	4.0	5.0	7.9	11.1	10.8	16.7	9.2	19.2	20.8	12.6	11.6	14.0	12.9	7.4
Electrical machinery, excluding electronics	0.5	0.5	0.8	1.9	2.7	1.7	1.7	1.6	2.1	4.0	1.8	2.8	3.9	2.9	1.1	1.6	1.6
High-skill and technology-intensive manufactures	*6.9*	*5.3*	*9.1*	*11.1*	*12.7*	*24.1*	*14.6*	*13.0*	*16.5*	*14.2*	*17.1*	*17.2*	*18.8*	*23.0*	*17.0*	*20.4*	*14.2*
Electronics	*1.9*	*1.9*	*2.8*	*12.3*	*16.0*	*1.0*	*6.1*	*8.7*	*13.9*	*20.1*	*8.3*	*12.7*	*26.2*	*1.9*	*3.2*	*4.3*	*9.4*
Communications equipment (less parts thereof) and household equipment	0.1	0.2	0.1	1.4	1.9	0.3	0.8	0.7	0.5	1.0	2.1	0.8	0.4	0.1	0.1	0.1	0.3
Computers and office machines (less parts thereof)	1.2	0.7	0.8	3.3	4.3	0.1	0.3	1.1	1.8	1.9	1.3	0.9	2.8	0.2	0.5	0.7	1.6
Parts and components[b]	0.6	1.0	1.9	7.6	9.8	0.7	5.1	6.9	11.6	17.2	4.9	11.0	23.0	1.5	2.6	3.5	7.4

Source: UNCTAD secretariat calculations, based on UN COMTRADE.

a Data for earlier years not available.

b Includes SITC 759, 764, 772 and 776.

mastering just one facet of production, or on no more than a limited subset of all the activities involved in making a final product. Thus it would seem no longer necessary for producers to master entire production chains and organize them within single firms, which was the strategy that characterized much of the earlier Asian industrialization episodes. On the other hand, it seems that in China this kind of production-sharing activity has developed mainly in the electronics sector. Moreover, it is likely that, with geographically dispersed production sites, the spillovers from engaging in subcontracting or hosting affiliates of transnational corporations (TNCs) are reduced because the package of technology and skills required at any one site is narrower, and because cross-border backward and forward linkages are strengthened at the expense of domestic ones.

In India, the decline in the share of machinery in total imports is closely associated with the limited share of industry in its economy ...

Indeed, the weakness of domestic backward linkages (i.e. the scarcity of domestic supply of suitable intermediate production inputs) has impaired the development impact of assembly-based export activities in a number of developing countries over the past few years (*TDR 2002*). Moreover, this weakness tends to reduce a country's relative cost advantage in assembly-based export activities to those involving low unit-labour costs. Regarding China, it appears that, although the wage bill of Japanese electronics companies operating in China is much lower than at home, the fact that intermediate production inputs of the required quality are often not available from local suppliers significantly reduces the financial advantage of producing in China rather than in Japan (Marsh, 2004). However, China's recent strong investment in domestic manufacturing capacity may significantly reduce its reliance on imported parts and components in the electronics industry and strengthen the country's pattern of domestic linkages in industry more generally, as locally produced alternatives become available.

... while in China, this decline reflects the greater role that participation in international production networks has played in its recent industrialization and development strategies.

The different phases of rising and falling shares of textiles and clothing in the four countries' import composition reflect the important role of labour-intensive exports during the industrialization process.[17] While in Japan, the importance of textile imports has remained stable over the past four decades, the share of clothing imports has significantly increased, in particular over the past 10 years. Table 2.5 also shows that in the Republic of Korea there has been a continuous decline in the share of textile imports, but a steady rise in the share of clothing imports, as in Japan earlier. In China, the current decline in the importance of textile imports is similar to that experienced in the Republic of Korea since the 1970s. While textiles have become more important in India's import basket, this rise has occurred from a very low level; overall, the share of textiles and clothing items in India's import composition has not changed significantly over the past few years.

The sharp fall in the share of primary commodities in the import composition of Japan and the Republic of Korea between 1985 and 1995 may seem to be contrary to expectations of the change in the comparative advantage of rapidly growing countries with relatively poor natural-resource endowments. However, for Japan in particular, it is likely that this finding partly reflects continuous structural change, as the share of industry in total output fell from 40 per cent to 34 per cent and that of services rose from 59 per cent to 68 per cent between 1985 and 1995 (*UNCTAD Handbook of Statistics*, various issues, table 7.3). Moreover, most of this decline was due to falling oil prices during the second half of the 1980s. In the period between 1965 and 1985, much of the decline in the share of primary commodities in the

total imports of Japan and the Republic of Korea occurred in the agricultural sector. This might partly reflect the rise in domestic production as a result of the Green Revolution. But several observers have also noted a general tendency among countries towards agricultural protection during the course of their industrialization (e.g. Timmer, 2002).

Table 2.5 further indicates the growing importance of vegetable oilseeds and oils in the import composition of both China and India, as mentioned earlier. But given that much of the imported oilseeds (and soybeans) are used as animal feed, they have contributed to limiting meat imports. This is in contrast to Japan and the Republic of Korea, where meat imports have risen while imports of vegetable oilseeds have remained low. Moreover, the table highlights the large share in total imports of fuels and a number of raw materials (such as cotton, rubber, wood, iron ore and non-ferrous metals) during economic growth and industrialization. For example, fuels continue to account for about one fifth of the total imports of Japan and the Republic of Korea and their share in China's imports have increased fivefold over the past 15 years. The share of minerals, ores and metals has fallen sharply in Japan's imports, while it appears to have reached a peak in the imports of the Republic of Korea and continues to rise in China's imports. This pattern is most probably determined by the intensity-of-metal-use cycle associated with industrialization and de-industrialization, discussed above. Finally, the decline in the share of cotton in the imports of Japan and the Republic of Korea over the past four decades is related to shifts in the importance of textiles and clothing in the two countries' exports, as discussed below.

Table 2.6 illustrates the potential magnitude of change in imports of selected products by China and India over the next two decades. For Japan and the Republic of Korea, it shows the magnitude of the rise in import volumes and values of selected primary commodities during the first and second decades of their post-war economic catch-up and greater trade integration, as well as during the subsequent 20-year period. It compares these data with the rise in imports by China and India over the period 1990–2000,[18] as well as with product-specific projections for imports by China and India up to 2010 and, in a few instances, 2020.

Regarding China, the rise in imports of the selected primary commodities during the period 1990–2000 is similar to that of Japan during its first two decades of post-war economic catch-up and greater trade integration. However, it is below that of the Republic of Korea during the comparable periods. The two main exceptions to this general pattern are the very rapid rise in China's imports of petroleum and soybeans. But given that China is itself an oil and coal producer, with a high share of coal in its energy use, the recent rise in petroleum imports started from very low levels. Except for cotton, the rise in imports of the selected primary commodities in table 2.6 has been substantially smaller in India than in China. The major reason for this is likely to be India's slower pace of industrialization compared to China's.

In China growth in imports of energy and raw materials will remain strong for several years.

Looking at import trends for Japan and the Republic of Korea reveals that the growth of Japan's imports (especially by volume) continuously slowed down between 1955 and 1995, while those of the Republic of Korea increased between the first and the second decade of economic catch-up, and subsequently declined. This suggests that imports of commodities and raw materials rise particularly fast during the early catch-up phase.[19]

Does this mean that the magnitude of the rise in China's imports over the next two decades is likely to be smaller than it was during the period 1990–2000? The product-specific projections in table 2.6 indicate that the volume of China's primary imports is likely to grow less on average than it did between 1990 and 2000. However, when China started integrating into the world economy, its per capita income was much lower than that of Japan and the Republic of Korea when they began their rapid integration. Consequently, China can be expected to maintain a relatively strong growth in imports of energy and raw materials for a number of years to come in order to maintain its growth momentum.

Table 2.6

MAGNITUDE OF CHANGE IN SELECTED RAW MATERIAL IMPORTS BY JAPAN, THE REPUBLIC OF KOREA, CHINA AND INDIA, SELECTED PERIODS

	Japan						*China*			
	1955–1965		*1965–1975*		*1975–1995*		*1990–2000*		*2000–2010*	*2000–2020*
Product	*Volume*	*Value*	*Volume*	*Value*	*Volume*	*Value*	*Volume*	*Value*	*Volume*	*Volume*
Soybeans	2.3	2.3	1.8	4.2	1.4	1.5	11 490.5	7 072.6	1.5[a]	2.5[b]
Natural rubber and similar natural gums	2.3	1.4	1.4	1.7	2.4	6.9	2.5	2.0	2.3	..
Wood, lumber and cork	..	8.0	..	5.3	..	3.9	..	5.2	..	..
Cotton	1.5	1.2	1.0	1.9	0.5	0.9	0.6	0.2	3.4	..
Iron ore and concentrates	7.1	6.4	3.4	4.2	0.9	1.4	4.9	4.7	5.0[c]	..
Ores and concentrates of non-ferrous base metals	5.3	8.6	3.2	6.1	0.8	2.7	4.0	4.3	2.1[d]	5.6[d]
Coal, coke and briquettes	6.0	4.8	3.6	12.8	2.0	1.9	..	0.9	..	..
Petroleum, crude and partly refined	9.9	7.0	3.1	18.8	1.0	1.5	24.0	35.1	2.5[e]	4.1[e]
Petroleum products	..	3.4	..	4.4	..	4.2	6.0	6.5	..	..

	Republic of Korea						*India*			
	1964–1970		*1970–1980*		*1980–2000*		*1990–2000*		*2000–2010*	*2000–2020*
	Volume	*Value*	*Volume*	*Value*	*Volume*	*Value*	*Volume*	*Value*	*Volume*	*Volume*
Soybeans	3.6	3.3	18.4	48.5	2.7	2.0	..	..	1.1	..
Natural rubber and similar natural gums	2.7	2.8	4.6	13.6	2.8	1.3	0.2	0.2	3.0	..
Wood, lumber and cork	..	6.8	..	7.0	..	1.0	..	1.9	..	..
Cotton	1.7	1.7	3.0	9.5	1.0	0.7	159.0[f]	111.5[f]	1.1	..
Iron ore and concentrates	25.1	149.3	121.3	168.8	4.3	5.5	2.7	2.6	..	..
Ores and concentrates of non-ferrous base metals	38.0	25.0	13.7	31.8	6.3	7.2	6.8	3.0	..	..
Coal, coke and briquettes	..	1.2	..	147.8	..	4.9	..	2.6	..	..
Petroleum, crude and partly refined	12.4[g]	9.4	2.8	44.9	4.9	4.5	3.6	4.4	1.6[e]	2.3[e]
Petroleum products	..	0.6	33.6	69.7	8.0	9.5	..	0.5	..	..

Source: Trade data for Japan from Japan Statistics Bureau; data for the Republic of Korea, China and India from UN COMTRADE. Projections for rubber and cotton from FAO, 2003; soybeans from FAO, 2003, and Rosegrant et al., 2001; iron ore from UNCTAD, 2004b; total extraction industries from van Meijl and van Tongeren, 2004; and petroleum from IEA, 2004b.

Note: The numbers in the table indicate by how many times imports increased, e.g. "2" indicates a doubling of imports.

a Oil meal. ***b*** 1997–2020. ***c*** Projection up to 2009. ***d*** Total extractive industries.

e Projections over base year 2002. ***f*** 1979–1981 to 1989–1991. ***g*** 1965–1970.

(c) Export composition

The sustained growth of exports that has been a characteristic common to all industrialization episodes in Asia over the past five decades would not have been possible in the absence of shifts in export composition. The accumulation of capital, both physical and human, raises the productivity of labour, and thus tends to be associated with higher wages, even though there is no direct link between sector-specific productivity growth and wage increases (*TDR 2004*, chap. IV, annex 1). As a result of the ensuing change in comparative advantage, industrializing countries need to upgrade their export structure towards products with a comparatively higher potential for productivity growth in order to sustain output growth.

In this context, it is important for domestic firms to enter export markets in sectors with high productivity and market potential, and to use the export proceeds to finance imports of the capital goods, intermediate imports and primary commodities needed for further productivity increases and industrialization. Even though productivity and market potentials vary within broad product categories, there is widespread agreement that manufactures, particularly of the skill-intensive type, have a more favourable potential than other products. This is because primary sectors face adverse terms-of-trade movements in the long run, as well as limits to raising productivity; and markets for labour-intensive manufactures exported by developing countries risk becoming rapidly oversupplied.

China's exports continue to include a large proportion of imported inputs ... but there are indications of a rise in the share of domestic value added in China's processing trade.

The growth in the share of manufactures in the export composition of rapidly industrializing countries is a recurrent feature. For some of the now developed countries, such as Canada, Japan, Sweden and the United States, the proportion of manufactured exports rose sharply over the first six decades of the twentieth century. In Canada and the United States it increased continuously up to the mid-1950s, when it stabilized, while in Japan and Sweden it continued to rise. In Japan, it doubled over the 60-year period to reach 88 per cent in 1959, with the vast bulk of the rise occurring after the Second World War.

To examine the links between industrialization and export upgrading in Asia, table 2.7 uses the six broad product categories listed in table 2.5. The table shows that Japan, the Republic of Korea and China (but not India, as discussed later) have indeed been successful in upgrading the composition of their merchandise exports from primary commodities to manufactures. Within manufactures, the early stages of rapid growth and industrialization saw a high share of labour-intensive items, particularly clothing, while further industrial development in Japan and the Republic of Korea was accompanied by a strong rise in the share of electronics, as well as other, more skill-intensive manufactures, particularly cars.

The sequence of these changes has been broadly similar for all three countries, although it occurred at different periods of time. The share of primary commodities in Japan's merchandise exports had already begun falling sharply before the Second World War and the importance of textiles and clothing reached its peak in the 1950s. The table shows that textiles, as well as iron and steel, still accounted for a sizeable share of Japan's exports in the mid-1960s, but by the mid-1980s, with the rise of the automobile industry, road motor vehicles became the single most important export item. At the same time, exports of capital goods, in particular non-electrical machinery and electronics began to gain in importance. It is noteworthy that the share of finished products in the electronics sector peaked in the mid-1980s, and subsequently parts and components of electrical and electronic products, together with road motor vehicles, became the most important items in Japan's merchandise exports. Protectionist tendencies in Japan's main export markets (i.e. the United States and Western Europe), the appreciation of the yen following the Plaza Accord of 1985, and increased competition from the NIEs played a significant role in the evolution of Japan's export pattern (see, for example, Balassa and Noland, 1988).

Table 2.7

PRODUCT STRUCTURE OF EXPORTS FROM SELECTED ASIAN COUNTRIES, 1965–2003

(Percentage of total merchandise exports)

	Japan					Republic of Korea					China[a]			India[a]			
Product group	*1965*	*1975*	*1985*	*1995*	*2003*	*1965*	*1975*	*1985*	*1995*	*2003*	*1987*	*1995*	*2003*	*1975*	*1985*	*1995*	*2003*
Primary commodities	*8.8*	*4.4*	*2.7*	*2.8*	*2.9*	*40.6*	*18.4*	*8.7*	*6.7*	*7.3*	*37.7*	*15.7*	*9.2*	*55.1*	*41.8*	*25.6*	*23.0*
All food products	4.4	1.5	0.8	0.5	0.5	16.7	13.2	4.1	2.3	1.4	15.6	8.3	4.4	37.7	25.3	19.0	11.4
Agricultural raw materials	2.3	1.4	0.6	0.6	0.5	8.6	1.6	0.7	1.3	0.9	6.3	1.8	0.7	4.0	2.8	1.3	1.3
Minerals, ores and metals	1.7	0.4	0.9	1.1	1.4	14.3	1.3	0.7	1.0	1.5	3.4	2.1	1.6	12.3	7.6	3.6	4.4
Fuels	0.4	1.1	0.3	0.6	0.4	1.1	2.2	3.1	2.0	3.6	12.4	3.6	2.5	1.1	6.0	1.7	5.9
Labour- and resource-intensive manufactures	*23.9*	*8.7*	*5.5*	*3.8*	*3.3*	*41.4*	*48.7*	*32.0*	*19.0*	*10.0*	*35.7*	*37.3*	*27.7*	*27.8*	*42.2*	*48.5*	*40.3*
Textiles	13.7	5.3	2.8	1.7	1.4	15.1	13.0	8.4	10.1	5.6	16.2	9.5	6.2	13.8	11.6	14.0	11.0
Clothing	3.4	0.6	0.4	0.1	0.1	11.8	22.6	14.7	4.1	1.9	14.5	16.3	11.9	4.5	10.2	13.2	10.7
Footwear, leather and travel goods	1.4	0.4	0.2	0.1	0.0	2.4	5.5	6.8	3.0	0.9	2.4	6.8	4.5	5.3	6.8	4.4	2.9
Cork, wood and paper products	2.2	1.0	0.8	0.7	0.7	10.5	5.4	0.9	1.3	1.1	1.4	2.4	3.3	0.4	0.2	0.5	0.7
Non-metallic mineral manufactures	3.2	1.3	1.2	1.2	1.1	1.6	2.1	1.1	0.6	0.5	1.2	2.3	1.8	3.8	13.4	16.4	14.9
Low-skill and technology-intensive manufactures	*30.6*	*35.7*	*15.3*	*9.5*	*9.0*	*8.7*	*10.3*	*28.8*	*13.0*	*11.8*	*4.0*	*8.8*	*7.2*	*6.1*	*2.5*	*6.2*	*9.2*
Iron and steel	15.4	18.5	7.8	3.9	3.8	7.3	4.6	6.0	4.5	4.1	1.1	3.7	1.2	2.7	0.5	3.3	5.1
Fabricated metal products	3.6	3.3	2.0	1.7	1.6	1.3	2.5	5.0	3.0	1.6	2.2	3.0	3.3	2.1	1.4	1.9	3.3
Simple transport equipment	2.7	3.1	2.0	1.4	1.5	0.0	0.6	1.2	1.0	0.2	0.3	1.5	2.0	1.2	0.6	1.1	0.6
Ships and boats	8.9	10.9	3.4	2.5	2.2	0.0	2.7	16.7	4.5	5.8	0.4	0.6	0.7	0.1	0.0	0.0	0.2
Medium-skill and technology-intensive manufactures	*15.0*	*27.4*	*40.8*	*41.8*	*45.0*	*2.8*	*5.6*	*7.4*	*20.5*	*22.8*	*6.4*	*8.8*	*12.1*	*5.7*	*5.8*	*6.3*	*8.4*
Rubber and plastic products	1.9	1.4	1.3	1.5	1.6	0.7	3.5	1.9	1.8	1.6	0.5	2.2	2.2	0.5	0.8	1.7	1.4
Non-electrical machinery	7.1	10.8	13.4	18.8	17.2	1.4	0.6	2.0	5.9	6.9	1.4	3.2	4.9	3.0	3.0	2.2	3.6
Electrical machinery excluding electronics	2.8	2.8	3.3	4.8	4.7	0.2	1.4	1.4	5.4	2.4	0.6	3.0	4.2	1.1	1.0	0.7	1.4
Road motor vehicles	3.2	12.4	22.7	16.6	21.5	0.5	0.1	2.1	7.4	11.8	3.9	0.4	0.6	1.1	0.9	1.8	2.0
High-skill and technology-intensive manufactures	*9.8*	*11.0*	*9.4*	*12.6*	*15.2*	*0.5*	*3.1*	*5.2*	*8.9*	*10.4*	*7.8*	*8.8*	*7.1*	*2.8*	*4.2*	*8.6*	*12.4*
Industrial chemicals	6.0	6.8	4.1	6.4	7.7	0.2	1.2	3.0	7.0	8.5	5.0	5.0	3.8	1.8	2.2	5.9	8.5
Pharmaceuticals	0.4	0.2	0.2	0.4	0.7	0.0	0.2	0.1	0.2	0.2	1.1	1.1	0.7	0.7	1.5	2.3	3.2
Aircraft	0.1	0.0	0.1	0.1	0.3	0.1	0.3	0.8	0.2	0.2	0.1	0.1	0.1	0.0	0.2	0.0	0.1
Scientific instruments	3.3	3.9	5.0	5.6	6.4	0.2	1.4	1.3	1.4	1.5	1.6	2.6	2.6	0.3	0.4	0.3	0.6
Electronics	*7.5*	*10.9*	*23.5*	*27.5*	*22.6*	*0.9*	*9.4*	*13.5*	*29.1*	*35.8*	*3.4*	*12.3*	*30.3*	*0.8*	*0.8*	*1.9*	*1.9*
Communications equipment (less parts thereof) and household equipment	5.0	5.7	9.2	2.6	3.7	0.8	2.9	5.8	5.2	4.2	2.3	4.4	6.0	0.4	0.1	0.2	0.3
Computers and office machines (less parts thereof)	0.3	1.2	4.8	4.9	2.0	0.0	0.4	1.4	3.4	5.0	0.3	2.1	9.9	0.1	0.1	0.3	0.3
Parts and components[b]	2.3	4.1	9.4	20.0	17.0	0.1	6.1	6.3	20.5	26.5	0.7	5.8	14.4	0.3	0.5	1.3	1.3
Other manufactures	*4.4*	*1.9*	*2.7*	*1.9*	*1.8*	*5.0*	*4.6*	*4.4*	*2.7*	*1.7*	*5.1*	*8.1*	*6.2*	1.6	2.6	2.8	4.7

Source: UNCTAD secretariat calculations, based on UN COMTRADE.

a Data for earlier years not available.

b Includes SITC 759, 764, 772 and 776.

In the Republic of Korea, primary commodities accounted for about 40 per cent of merchandise exports even in the mid-1960s, while labour and resource-intensive manufactures (mainly, textiles, clothing and cork, wood and paper products) constituted another 40 per cent. The decline in importance of primary commodities in the 1970s, and clothing in the 1980s and 1990s, was accompanied by a rise in the share of transport equipment, machinery, industrial chemicals and electronics. In electronics, the shares of finished products, and parts and components rose fairly evenly during the 1980s; thereafter, the rapid increase in the share of parts and components has made electronics the single most important export item in the country's export composition. The falling shares of clothing and of finished products in the electronics category have been spurred by the increasing importance of production networks with assembly operations located in China.

As for China, following the international oil price hikes of the 1970s, fuels constituted a substantial proportion of its export earnings. As a result, primary commodities, including also a large share of food products, continued to account for the highest share of China's total merchandise exports until the mid-1980s. Thereafter, the rapid rise in domestic demand for energy products and the sharp fall in international oil prices substantially reduced China's earnings from primary commodity exports. Labour- and resource-intensive manufactures (mainly textiles, clothing and footwear), chemicals, machinery and, increasingly, electronics have since accounted for the bulk of China's merchandise exports. Unlike Japan and the Republic of Korea, China's electronics exports continue to be fairly evenly spread between finished products and parts and components. This reflects the fact that a large proportion of China's assembly operations are based on inputs imported from other countries, including Japan and the Republic of Korea.

Despite the similarities in the broad evolution of the export structure of the latecomers to industrialization and the leaders, the changes are based on rather different production structures and are related in different ways to their import structures. Upgrading in Japan's export composition emanated from a strong indigenous technological base, developed prior to the country's global economic integration in the 1950s. On the other hand, China, and earlier, during the 1970s and 1980s, the Republic of Korea, were able to take advantage of participation in the labour-intensive segments of international production networks. In this context, the Republic of Korea imported mainly technology and equipment that fed into exports with a high domestic value-added content (*TDR 2002*). By contrast, China has relied relatively more on the assembly of final products – the most labour-intensive segment of production – from imported parts and components, and its exports continue to include a large proportion of imported inputs.

However, there are indications that suggest a rise in the share of domestic value added in China's processing trade. According to data from China's Customs Statistics, the export–import ratio of processing with imported materials has been rising steadily, from 1.2 in 1994 to about 1.5 in 1998–2001, and 1.7 at the end of 2004. The electronics sector is likely to have contributed most to upgrading in processing trade, given that an increasing share of parts and components used in such trade comes from domestic production, in particular those traded between different foreign affiliates located in China, rather than being imported (Lemoine and Ünal-Kesenci, 2004: 840–841).

Most important for the dynamism of domestic value added in China's electronics exports is the recent massive geographic dispersion of chip design (a process that creates the highest value in the electronics industry) away from developed countries towards leading Asian electronics exporting countries, including China (Ernst, 2004). The adoption of modular design methodology (an approach pioneered in the automobile industry some two decades ago) has facilitated the reuse of design building blocks, and thus the disintegration and geographic dispersion of design teams to multiple locations with different, yet complementary, specialization profiles. This has improved design productivity and enabled an improved management of the rapidly growing cost of chip design, which increasingly reflects complex design requirements. The attractiveness of Asian developing countries, particularly China, as new locations for chip design stems from a combination of factors, including their relatively low wages

for skilled labour, policy incentives in the form of tax rebates[20] and, not least, proximity to the providers of design and engineering support services, as well as the rising number of end-users in the rapidly growing markets of Asian developing countries.

Unlike the strong upgrading in China's export composition, there has been little change in India's merchandise export structure. While similar to the other countries in that the share of primary commodities has declined and that of textiles and clothing has increased, these shifts have not been as far-reaching as in the other three countries. Four resource- and labour-intensive products – food products, non-metallic mineral manufactures (i.e. gems, jewellery and related products), textiles and clothing – jointly continue to account for about half of India's merchandise exports. Such a structure is typical of a country at an early stage of industrialization. However, as mentioned above, since a number of important trade policy reforms have been implemented only recently, it is probable that the main changes in India's export structure that would be expected to accompany trade reform have yet to occur.

So far, India has not experienced a manufacturing export boom of the kind seen in other rapidly growing Asian economies.

Two of India's policy instruments, namely price controls and reserving market segments for small-scale firms, have had noticeable, but widely varying, impacts on the composition of its merchandise exports. It is often argued that the relatively small share of labour-intensive manufactures in India's merchandise exports is partly due to the reserving of market segments for small firms. Small-scale firms in labour-intensive manufacturing sectors, where production is often also scale intensive, have been neither innovative nor agents of industrial diversification. This has contributed to sidelining India from mass markets that require long production runs and goods of a standard quality. As a result, the share of clothing in India's merchandise exports, for example, has remained relatively small. Yet India's relatively abundant supply of low-skilled labour gives it a comparative advantage for the production of labour-intensive manufactures (fig. 2.4).

The introduction of price ceilings on the domestic market, on the other hand, seems to have had a positive impact on India's exports of pharmaceuticals (Amsden, 2001: 156).[21] These ceilings tended to make exports more profitable, and thus provided an incentive for domestic pharmaceutical firms to engage in export activities. They also helped boost innovation, because local firms that manufactured new medicines on the basis of indigenous technologies were exempted from price controls for five years. However, domestic innovativeness in India's pharmaceutical sector owes most to the Indian Patents Act of 1970. One stated objective of that Act was the development of an independent and self-reliant pharmaceutical industry (Jha et al., 2005: 12). The Act facilitated the acquisition of foreign technology, as it protected production processes but not products (i.e. it permitted reverse engineering, whereby molecules can be reconstituted using production techniques that are different from the inventor's technique). This enabled India to become the world's leading exporter of generic medicines, and for Indian companies to capture 65 per cent of the domestic market in pharmaceutical products, compared to 25 per cent in 1971 (Chauvin and Lemoine, 2003: 36).

Export prospects for India's pharmaceutical industry depend to a large extent on the effects of the new Patent (Third Amendment) Act 2005. India had to change its patent legislation to comply with its obligations under the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). The new Act provides for the granting of product patents. However, it affects only newly invented medicines, whereas specific regulations apply to those medicines that were invented between 1995 and 2005. India was allowed to delay the patenting of pharmaceutical products until 2005, but had to establish a system (a so-called "mailbox") for receiving and filing patent applications starting in 1995. The Indian patent office will decide whether these mailbox applications meet the patentability criteria laid down in the Act, and accept or reject them accordingly. If the application is accepted, Indian

companies can continue producing such medicines after payment to the patent-holder of a "reasonable" royalty, provided that they made "significant" investment and were producing and marketing the concerned medicines prior to 2005.[22] Moreover, exports to countries with no manufacturing capacity of patented medicines produced in India through a compulsory licence will be possible based solely on the notification by the importing country, in accordance with the implementation of the Doha Declaration on the TRIPS Agreement and Public Health.[23] If the granting of such compulsory licences does not lead to protracted litigation processes between the patent-holder and the producers of generic medicines, India can continue supplying the developing world with, for example, affordable antiretrovirals for the treatment of HIV/AIDS.

So far, India has not experienced the kind of manufacturing export boom that has characterized the other rapidly growing economies in Asia. By contrast, it has become a leading exporter, particularly to the United States, of software and so-called information-technology (IT)-enabled services. These services cover many different kinds of data processing and voice interactions that use some IT infrastructure as inputs. India's software exports have increased about sixfold since the early 1990s, and were worth almost $30 billion in 2003. Given the relatively slower growth of merchandise exports, the share of software and IT-enabled services in India's total export earnings increased from about 20 per cent in 1990 to more than 30 per cent in 2003. This improved India's share in total developing-country services exports from about 3 per cent in 1990 to about 7 per cent in 2003. But it is also interesting to note that China's services exports have increased about eightfold since 1990, reaching a level of about $47 billion in 2003, and they correspond to a share of 8 per cent in total developing-country services exports. Given the strong increase in China's merchandise exports, the contribution of services to the country's total export earnings rose only marginally, from 9 to 10 per cent over the same period of time.

India's high absolute number of high-skilled labour supported the rise in its exports of software and IT-enabled services. Singh (2003: 28), for example, reports that about 140,000 Indian engineers graduate every year, the largest number in the world after the United States, and that every year about 100,000 new IT professionals are added to the workforce. However, the number of graduates available for employment in domestic companies has suffered from outward migration of graduates to the United States and elsewhere. But the strong growth of Indian software and IT-enabled services exports, destined mainly to the United States, is probably mainly due to other advantages that are specific to the sector, in particular: networks of Indian engineers recruited by firms in the United States during the 1980s, widespread command of the English language, the country's convenient location (in terms of time zones) with respect to the United States, minimal regulation, the fact that transport by telecommunications makes the services industry less vulnerable to current infrastructure constraints (such as poor water and road transport), and, perhaps most importantly, the relatively low development of India's manufacturing sector, which strongly reduces the opportunity costs for skilled workers to work in the software sector. But specific demand-related events have also played a crucial role in the rise of India's IT-related services exports: the adoption of a common currency in Western Europe, which required a large amount of data to be converted into euros, and the large number of Y2K-related projects in the late 1990s (Arora and Gambardella, 2004). The specific importance of these events lies in the fact that they occurred just when some developed countries were experiencing a shortage of labour possessing specialized skills during the IT-industry's unprecedented expansion. As a result, United States firms, for example, outsourced IT-related activities to countries where skilled workers were more readily available, and at wages well below those of their domestic counterparts.

> The share of software and IT-enabled services in India's export earnings may not continue to rise substantially over the medium term.

It is highly uncertain whether the share of software and IT-enabled services in India's export earnings will continue to rise substantially over

the medium term. This is because of strong competition in the software market from producers with equally well-educated labour forces (in Central and Eastern Europe, as well as elsewhere in Asia), and, following the bursting of the IT-bubble, the shortage of software engineers in developed countries has eased. Moreover, it is widely expected that an improvement in transport facilities and continued economic reforms could reduce the current disadvantages of other Indian sectors in exporting, so that resources could be diverted away from the software sector (Wood and Calandrino, 2000). Also, greater automation of software development may reduce the scope of outsourcing such activities from developed to developing countries. Over the next few years, the absolute value of India's software and IT-enabled services exports may continue to grow, because of the self-perpetuating momentum of connections and experience, in particular if the Indian industry succeeds in upgrading towards systems architecture, design, development and technology strategy services (Chadwick, 2003). However, export dynamism in other sectors is likely to become stronger.

D. World market shares and prices

The discussion in sections B and C focused on the evolution of domestic consumption and external trade in China and India, with an emphasis on volumes and trade composition. However, it is clear that the values associated with traded volumes depend on prices. Given that a simultaneous expansion of the internationally traded volumes of a specific good by a large number of countries, or even by large individual countries such as China and India, can have a significant impact on international prices, this section highlights the effects that greater trade integration by China and India has had over the past few years.

1. *The growing impact of China and India on global primary commodity markets*

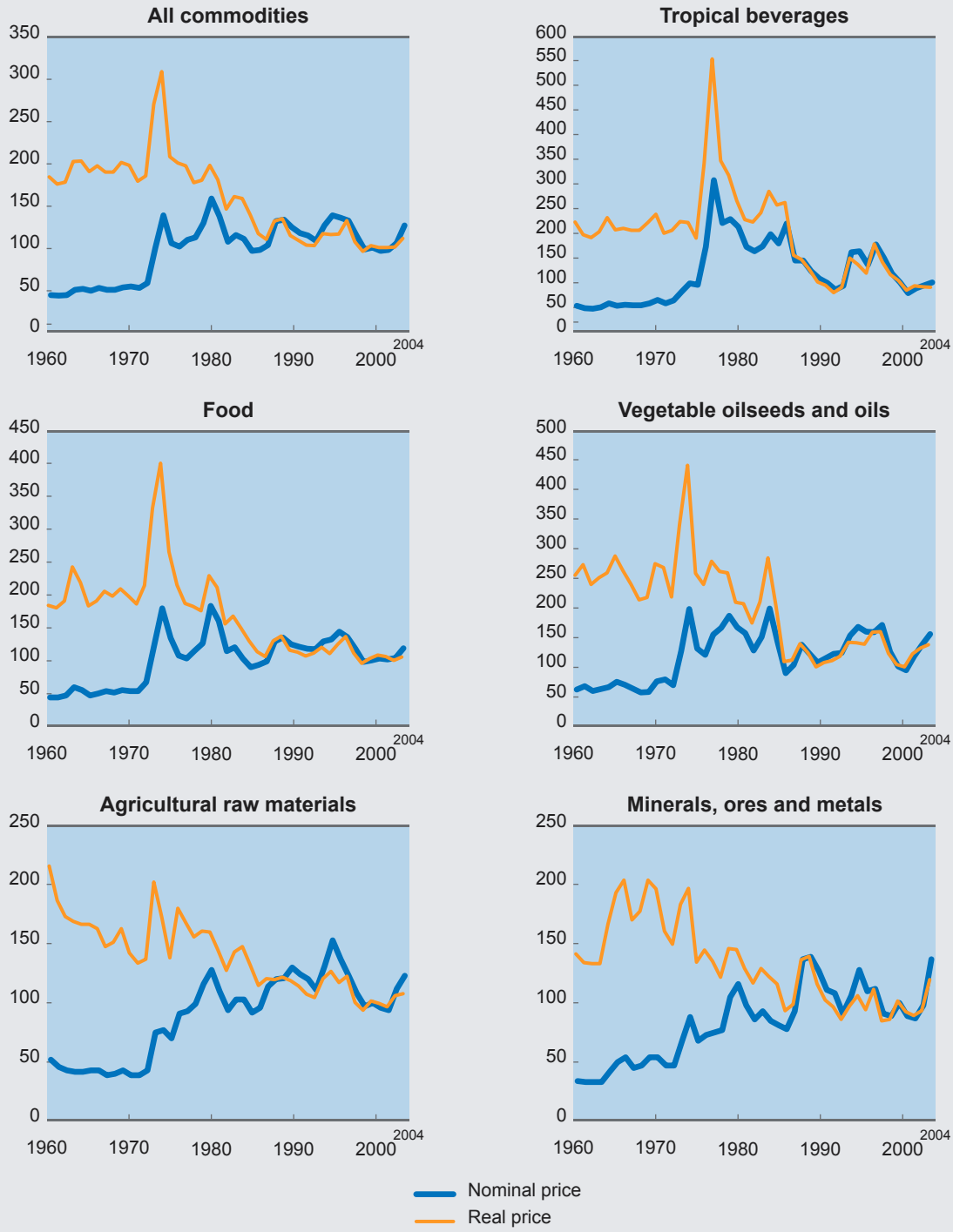
The evolution of real commodity prices – i.e. nominal prices deflated by the unit value index of manufactures exported by developed countries – has been characterized by sizeable short-term variation around a long-term downward trend (fig. 2.6). This downward trend was particularly strong between the mid-1970s and late 1980s. It has been most pronounced for those commodity groups that are of export interest to developing countries, such as tropical beverages, food and vegetable oilseeds and oils. By contrast, since 2002, commodity prices of all commodity groups have surged both in real and, in particular, nominal terms (table 2.8). But this price increase is most marked for minerals, ores and metals, reflected by the fact that the UNCTAD price index for this commodity group (as well as individually for a number of metals such as copper, iron ore and nickel) approached all-time record levels in nominal terms at the end of 2004 and early 2005.

The long-term downward trend of real prices for primary commodities has been related to the relatively low income elasticity of demand that characterizes many primary commodities. It has also been related to the transmission of productivity growth in primary production to lower prices in the commodity-consuming industrialized coun-

Figure 2.6

NON-FUEL PRIMARY COMMODITY PRICES, NOMINAL AND REAL, BY COMMODITY GROUP, 1960–2004

(Index numbers, 2000 = 100)



Source: UNCTAD, *Commodity Price Bulletin,* various issues; and United Nations Statistics Division, *Monthly Bulletin of Statistics,* various issues.

Table 2.8

WORLD PRIMARY COMMODITY PRICES, 1999–2004

(Percentage change over previous year)

Commodity group	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*
All commodities[a]	**-14.0**	**2.0**	**-4.0**	**1.0**	**8.2**	**20.0**
Food and tropical beverages	**-17.4**	**0.0**	**0.0**	**1.0**	**2.0**	**13.6**
Tropical beverages	-21.3	-15.3	-21.0	12.7	5.6	6.4
Coffee	-21.3	-25.1	-29.0	4.7	8.7	19.8
Cocoa	-32.1	-22.1	22.7	63.3	-1.3	-11.8
Tea	-7.0	6.7	-20.1	-9.6	8.4	2.0
Food	-16.9	2.0	3.0	-1.0	2.0	14.4
Sugar	-30.0	30.4	5.6	-20.3	2.9	1.1
Beef	6.2	5.6	10.0	-0.3	0.5	17.8
Maize	-10.0	-2.8	1.1	10.5	6.4	5.0
Wheat	-11.0	3.1	9.0	16.5	-0.8	7.1
Rice	-18.7	-18.0	-15.0	10.6	4.3	23.5
Bananas	-9.9	-2.3	38.8	-9.6	-28.7	39.9
Vegetable oilseeds and oils	**-26.5**	**-20.0**	**-6.0**	**24.5**	**17.1**	**13.1**
Soybeans	-17.4	5.3	-8.0	8.7	25.0	16.0
Agricultural raw materials	**-10.2**	**3.1**	**-4.0**	**-2.1**	**19.1**	**9.8**
Hides and skins	-6.3	11.1	5.0	-2.9	-16.7	-1.2
Cotton	-18.6	11.5	-19.0	-3.6	37.2	-3.3
Tobacco	-7.1	-3.8	0.0	-8.0	-3.3	3.4
Rubber	-12.6	7.9	-14.1	33.1	41.7	20.3
Tropical logs	-7.2	3.7	6.4	-10.5	20.1	19.2
Minerals, ores and metals	**-2.2**	**12.4**	**-11.0**	**-2.2**	**12.6**	**39.8**
Aluminium	0.3	13.8	-6.8	-6.5	6.1	19.9
Phosphate rock	4.6	-0.4	-4.5	-3.3	-5.9	7.8
Iron ore	-9.2	2.7	4.5	-1.1	8.5	17.4
Tin	-2.9	1.0	-18.0	-8.5	20.0	74.4
Copper	-4.9	15.3	-13.0	-1.1	14.1	61.1
Nickel	29.9	43.7	-31.2	14.0	42.2	43.5
Tungsten ore	-9.3	12.1	45.5	-41.8	18.0	22.9
Lead	-5.0	-9.7	4.9	-5.0	13.8	72.0
Zinc	4.6	4.0	-21.0	-12.0	5.2	29.1
Crude petroleum	**38.7**	**55.6**	**-13.3**	**2.0**	**15.8**	**30.7**

Source: UNCTAD, *Monthly Commodity Price Bulletin,* various issues.

Note: This table has been revised from *TDR 2004*, table 2.2, because the base year for the commodity price index has been changed to 2000.

a Excluding crude petroleum.

tries, rather than to higher wages in the commodity-producing developing countries. Substitution of raw materials by synthetics and, particularly since the mid-1980s, sharp increases in the supply of primary commodities (owing to the need of many developing countries to maintain export revenues to service growing debt obligations in the presence of credit rationing, and to the dismantling of international commodity agreements) have also had an adverse effect on commodity prices.

Much of the short-term variations in commodity prices have traditionally been attributed to fluctuations in the real exchange rate of the

dollar[24] and to the state of the business cycle in the developed countries. However, it is clear that, in addition to mere short-term effects related to the business cycle, demand conditions in commodity-consuming countries also have long-term price effects resulting from shifts in the share of industry in total income. Thus, structural change in developed countries away from raw-material-intensive industrial production to services has contributed to the long-standing price decline of primary commodities over the past three decades. More recently, the growing importance of manufacturing in a number of developing countries is poised to have an opposite effect.

Since 2002, commodity prices have surged, driven by strong demand and emerging supply constraints.

The recent upward movement in commodity prices has been driven by very strong demand and emerging supply constraints. Rising imports by China, and, for some commodities also by India, have been the main sources of additional demand. Sustained industrialization and income growth have led to China's emergence as the world's largest consumer of many primary commodities. While China is also a major producer of several commodities, in many cases domestic producers have been unable to satisfy the growing domestic demand. The resulting surge in China's imports, particularly since 2002, has occurred in the context of largely stagnating demand for primary commodities in developed countries and short-term supply constraints. These constraints are, at least partly, the result of sluggish investment in primary commodity production and processing capacities that followed the decline of commodity prices from their previous short-term peak between 1994 and 1997.

Rising imports by China, and, for some commodities also by India, have been the main sources of additional demand.

The current situation therefore contrasts with that prevailing when primary commodity imports by Japan and the NIEs were increasing rapidly. The growth of import demand from these economies was smaller in magnitude. Moreover, it occurred when a number of developed countries had started to experience structural change away from the raw-material-intensive industrial sector (*TDR 2003*), which liberated production and processing capacities to meet the growing demand for primary commodity imports by Japan and the NIEs.

Figure 2.7 shows the change in world import shares of China and India between 1990 and 2003 for selected commodities that are important during rapid industrialization and per capita income growth. It shows that by 2003 China had become a major importer of most of these commodities, resulting in their shares increasing considerably from very low levels in 1990. China's imports of iron ore and soybeans in 2003 are the most outstanding examples, accounting for 28.7 per cent and 32.1 per cent, respectively, of total world imports. The share of India in world imports of all these commodities also increased (except for copper and natural rubber), although at lower levels than those of China.

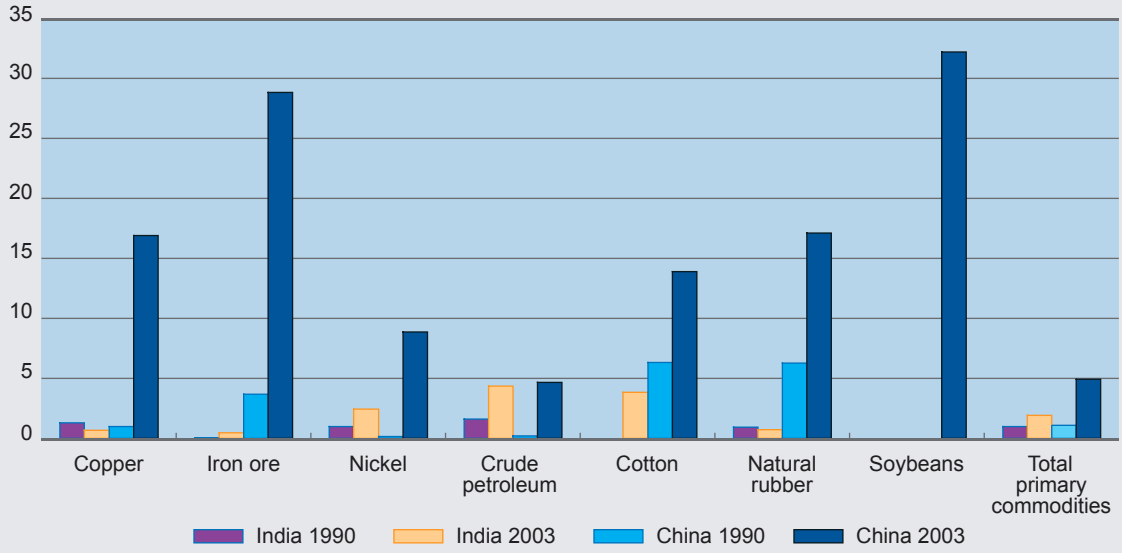
In order to examine the possible influence of growing commodity imports by China and India on world commodity prices, figure 2.8 depicts the net trade (in value terms) of the two countries against the prices of some representative commodities of the different commodity groups between 1990 and 2004. For most commodities, China's net trade position has been moving increasingly into deficit, in particular since 2000, a trend associated with price increases that accelerated between 2002 and 2004. For India too, the figure shows growing net trade deficits with recently rising commodity prices, particularly of petroleum, but also of nickel.

The changes in China's net trade position for a number of primary commodities has made the country a key participant in the world trade of a range of products. For example, China has become the world's largest importer of natural rubber (driven by higher demand for tyres), tropical sawn wood, pulp and paper, and soybeans (resulting from rising demand for its use as animal feed, as discussed earlier);[25] its imports

Figure 2.7

SHARES IN WORLD IMPORTS OF SELECTED PRIMARY COMMODITIES, CHINA AND INDIA, 1990 AND 2003

(Per cent)



Source: UNCTAD secretariat calculations, based on UN COMTRADE.
Note: India's imports of soybeans were negligible.

of iron ore rose tenfold between 1990 and 2003, accounting for almost 80 per cent of the expansion of this commodity's world imports (in volume terms) during this period. This is closely related to the rapid growth of steel production and use. While China's domestic production had covered about 85 per cent of domestic consumption, by 2003 this share fell to about 45 per cent, making the country the world's largest iron ore importer. UNCTAD (2004b) expects China to remain the most dynamic force in the global iron ore market for many years to come.

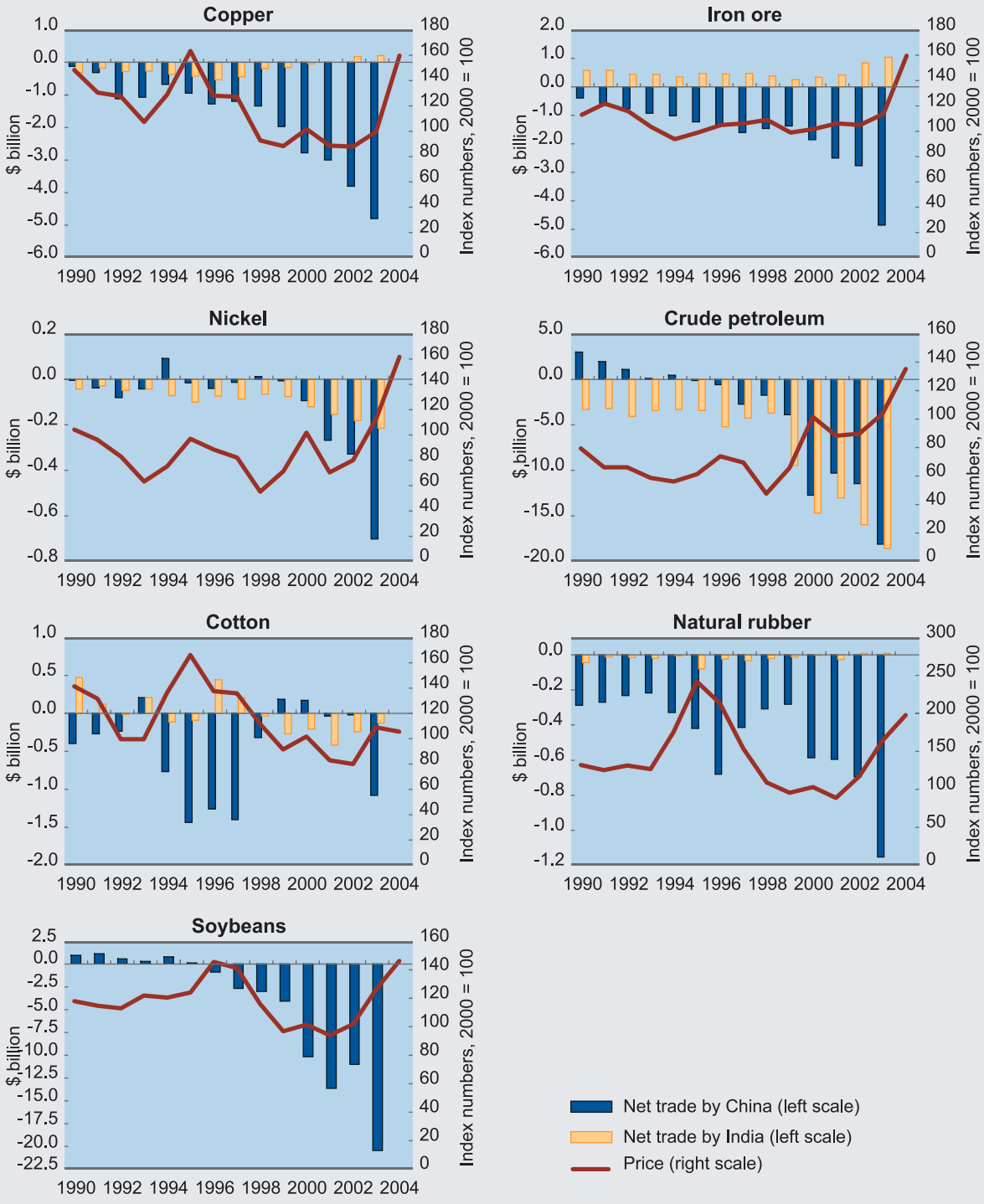
Changes in world cotton prices are closely related to the evolution of the Chinese market. This is because China accounts for about one fourth of world production and, as the world's leading cotton consumer, it represents approximately one third of total world consumption and over one fourth of total world imports (in volume terms). Thus, China's bad harvest, combined with its increasing demand for cotton for its booming clothing industry, strongly influenced the sharp rise in international cotton prices in 2003. Since then, growing cotton production in all the major producing countries, including China, has eased price pressures on world cotton markets. But sustained high world oil prices will make cotton an increasingly attractive substitute for man-made fibres in clothing production, thus boosting demand for this commodity. The future dynamism of China's clothing exports will be a key determinant of its cotton imports. But if the growing clothing exports of China are associated with production relocation from other countries, the resulting additional demand from China should be matched by reduced cotton consumption in other countries, as a result of their lower clothing production, and thus may not push up prices.

Between 2003 and 2004, China's petroleum imports increased by more than 40 per cent, accounting for more than 30 per cent of the incremental global oil demand (IEA, 2005). Since 1999,

Figure 2.8

NET TRADE BY CHINA AND INDIA AND WORLD PRICES, SELECTED PRIMARY COMMODITIES, 1990–2004

(Billions of dollars and index numbers 2000 = 100)



Source: UNCTAD secretariat calculations, based on UN COMTRADE; and UNCTAD, *Commodity Price Bulletin*, various issues.
Note: India's trade of soybeans was negligible. Trade data available only to 2003.

India's petroleum trade deficit has also markedly increased, its value exceeding that of China's deficit. But there has also been a strong increase in oil imports by the United States, which is by far the world's leading oil consumer, accounting for over one fourth of total world oil consumption and imports. Continuous growth of its oil consumption, combined with a lower level of its self-sufficiency in oil, made the United States the second largest source of incremental oil demand after China for the period 1995–2004; the two countries accounted for 19.9 per cent and 24.3 per cent, respectively (Brook et al., 2004).

Supply constraints in the metals and energy sectors have played a key role in the strong price reaction of commodity markets.

While the growing demand from China and India has clearly had a significant impact on the recent rise in international commodity prices, a number of other factors have also played a part. For example, many raw material producers succeeded in raising dollar prices in order to compensate for the negative effect of the depreciation of the dollar on their export earnings. Moreover, speculators have at times taken substantial positions on commodity exchanges to benefit from frequent punctuations in the general upward price movements, as prices have reacted with substantial volatility to news of emerging or easing supply constraints.[26]

Emerging supply constraints, particularly in the metals and energy sectors, have played a key role in the strong price reaction of commodity markets to the rising demand from China, India and other major importers, including for replenishing inventories. However, additional supply capacity is due to go on-stream following a recent increase in investment in production and processing capacities, as well as in exploration.[27] As a result, it is widely expected that by the end of 2005 many commodity prices will start falling. Prices may, nonetheless, remain at levels above their averages since the mid-1980s, as the mining industry is likely to be more cautious when planning new investment. This is because of concerns that past episodes of over-investment, and the consequent dramatic fall in prices, may be repeated, and because of a steep rise in the discovery cost per unit of metal due to a decline in discovery rates and in the average size of discovered deposits.[28] Contrary to the time lag in supply response to the rise in world metal prices, tight supply conditions tend to be short-lived for most soft commodities.[29]

In conclusion, the strong Asian demand for primary commodities may persist for several years to come. This could lead to a substantial rise in the volume of international trade in some primary commodities, particularly petroleum, copper, iron ore, nickel, natural rubber and soybeans. Consequently, the prices for these commodities might remain, for some time, at levels above their averages for the period since the mid-1980s. These factors combined could boost the volume and/or prices of other developing countries' primary exports. On the other hand, developed countries still account for two thirds of non-fuel commodity imports, and they are likely to remain a dominant influence in commodity markets for many years to come (United Nations, 2004b). Thus it is unlikely that the growing imports of primary commodities by China and India will cause a reversal of the long-term decline in their real prices.

The long-term downward trend in real commodity prices is unlikely to be reversed by higher demand from China and India.

Rising prices of China's commodity imports have considerably increased its import bill. In 2004 alone, the surge in the prices of a number of primary commodities (such as copper, iron ore, nickel, petroleum and rubber), combined with a rise in their import volumes, resulted in an increase in China's import bill for primary commodities by almost $50 billion (a year-on-year increase of almost 60 per cent).[30] Moreover, while data on price inflation of raw materials in China are not available, there can be little doubt that the sharp increase in prices of primary commodity imports has considerably exceeded domestic consumer price inflation, which has remained

below 4 per cent despite a sharp rise between 2002 and 2004. Consequently, a number of enterprises whose activities contain a large input of imported primary commodities have suffered a profit squeeze.

2. The role of textile and clothing exports

Much of the recent attention on the impact of China's growing exports on world trade flows has focused on textiles and clothing. For this reason, this sector is examined here.

The production of textiles and clothing relies on relatively simple technology and a comparatively large input of low-skilled labour. Therefore, countries with a relatively abundant supply of such labour and a relatively scarce supply of natural resources per worker have a comparative advantage in these industries. Thus textiles, and especially, clothing production, have often provided the "natural" entry point for industrialization and for diversification of exports away from primary commodities. Indeed, these industries have led industrial development, creating a wide range of production, employment and export opportunities across the developing world over the past five decades. In particular, they have played a key role in export growth and industrialization in East Asia over the past five decades.

The "flying geese" paradigm has often been used to describe the pattern of the spread of labour-intensive production and exports in East Asia. It explains the life cycles of various industries in the course of economic development, and the relocation of industries from one country to another through trade and FDI in response to shifts in competitiveness (*TDR 1996*). The "flying geese" paradigm considers rising labour costs during the process of economic development to be the main reason for the gradual erosion of export competitiveness in the relatively more advanced countries.

Table 2.9 reflects the flying geese pattern in its comparison of the evolution over the past four decades of world market shares in clothing and total manufactures of some major developed countries and developing Asian economies. Japan's market share of clothing exports consistently declined while those of the Republic of Korea and Taiwan Province of China first rose and then fell, giving way to China and other countries, including Viet Nam. The table also shows that the fall in world market shares of clothing exports from the Republic of Korea and, less markedly, from Taiwan Province of China was initially accompanied by a rise in these economies' world market shares of other manufactured exports.

It is clear that, apart from shifts in relative unit labour costs, access conditions in the markets of the United States and the EU have shaped the relocation of production activities in the textiles and clothing industry across East Asian countries. Indeed, the rapid growth of textiles and clothing exports first from Japan and then from the Republic of Korea, as well as a number of other Asian developing economies, stirred protectionist sentiments in North America and Western Europe. In 1956 the Japanese Government imposed so-called "voluntary export restraints" (VERs) on cotton products to the United States for the first time in the post-war period. Subsequently, exports of cotton textiles from Japan and other major Asian economies, such as Hong Kong (China), India, Pakistan, the Republic of Korea and Taiwan Province of China encountered discriminatory quantitative restrictions under the Short-term and Long-term Arrangements on Cotton Textiles. Japan and the three East Asian economies responded to these external pressures by shifting their production of textile materials from cotton to synthetic fibres. However, the new VER arrangements for wool and man-made fibre products between the above four Asian exporters and the United States, which were concluded in 1971–1972, paved the way, in 1974, for the Arrangement on International Trade in Textiles, better known as the Multi-Fibre Arrangement (MFA). The MFA formally governed quantitative restrictions on trade in textiles and clothing until 1994, when it was succeeded by the Uruguay Round Agreement on Textiles and Clothing (ATC) (UNCTAD, 1994a, chap. V). With the full implementation of the ATC at the beginning of 2005, all textile and clothing products became subject to all the multilateral disciplines under the rules of the WTO. This terminated the series of trade-distorting regimes that had governed the textiles and clothing trade for about four decades and put an end to its status as the only sector of inter-

Table 2.9

SHARES IN WORLD EXPORTS OF MANUFACTURES[a] OF SELECTED ASIAN DEVELOPING ECONOMIES AND MAJOR DEVELOPED COUNTRIES, 1962–2003

(Percentage)

	United States[b]		*United Kingdom*		*Germany*[c]		*Japan*		*Republic of Korea*		*Taiwan Province of China*		*China*	
Period	*Total manu-factures*	*Clothing*	*Total manu-factures*	*Clothing*	*Total manu-factures*	*Clothing*	*Total manu-factures*	*Clothing*	*Total manu-factures*	*Clothing*	*Total manu-factures*	*Clothing*	*Total manu-factures*	*Clothing*
1962–1965	19.2	5.5	12.2	6.0	18.2	7.9	7.1	11.7	0.1	0.3	0.2	0.5	..	..
1966–1970	17.2	5.1	9.6	5.1	18.3	7.7	9.1	9.6	0.2	2.5	0.4	2.1	..	..
1971–1975	14.4	3.1	7.8	4.3	19.3	8.0	11.1	4.1	0.7	6.5	0.8	5.6	..	..
1976–1980	13.8	3.4	7.6	5.2	17.8	8.7	12.2	1.9	1.5	10.1	..	..	..	..
1981–1985	14.5	2.9	6.3	4.1	14.8	7.3	14.9	1.8	2.3	11.2	..	..	0.9	5.5
1986–1990	11.9	2.3	6.1	3.0	15.5	6.9	13.5	0.9	2.7	9.9	2.8	4.4	1.5	7.8
1991–1995	13.1	3.5	5.4	2.7	13.2	5.4	12.2	0.5	2.9	4.7	2.9	2.9	2.9	13.7
1996–2000	13.3	4.6	5.3	2.5	10.8	4.2	9.4	0.3	3.0	2.6	2.8	1.8	3.9	16.5
2001–2003	12.0	3.0	5.1	1.9	11.1	4.1	8.1	0.3	3.1	2.0	2.6	1.2	6.2	20.8

Source: UNCTAD secretariat calculations, based on UN COMTRADE.

a SITC 5–8 less 68.

b Including Puerto Rico for 1962–1980.

c Including eastern Länder after 1991.

national trade in industrial goods that had remained outside multilateral rules since the conclusion of the Uruguay Round.

While there are many similarities in the successive rise and fall of production and export activities in textiles and clothing across East Asia, there is also one major distinction between these cycles. When Japan emerged as a major textile and clothing exporter during the first three decades of the twentieth century, it did not face much competition from any other newly emerging major clothing exporters. By contrast, the rapid growth of textile and clothing exports in the second wave of Asian economic catch-up occurred among the entire group of NIEs, giving rise to fears that the risk of a fallacy of composition could arise if an increasing number of developing countries were trying to achieve the same export–GDP ratio (Cline, 1982). According to the fallacy of composition (sometimes also called the "adding-up problem"), what is viable for one small exporter acting in isolation may not be viable for a group of exporters acting at the same time. If all, in particular large, developing countries try to substantially increase their exports of labour-intensive manufactures, they risk not only encountering rising protective resistance from developed countries, but also losses, as the falling prices of those manufactures will not be compensated by a sufficient increase in the volume of exports (*TDR 2002*; see also Kaplinsky, 2004). Indeed, the rise of China's clothing exports occurred at a time when several developing countries had adopted more outward-oriented development strategies, and many had developed production and export activities in the clothing sector partly as a reaction to the quota regulations under the MFA. This simultaneous move of many developing countries towards clothing exports, combined with the large size of the Chinese economy, may have accentuated the risk of a fallacy of composition.

China's increasing participation in international trade could contribute to a decline in the unit values of some of its major export items.

Exploiting its current export market potential in textiles and clothing may not be in China's own development interest.

Indeed, evidence from United States apparel imports suggests a positive relation between the rise in China's market share and the decline in import unit values (table 2.10). The rise of China's share in United States imports between 2001 and 2004, by about 50 per cent in value terms, corresponds to a more than doubling of its market share in volume terms, as the unit value of China's imports fell by more than one third during this period. However, from the Greater China area (comprising mainland China, Hong Kong (China), Macao (China), and Taiwan Province of China), these imports increased much more modestly, by about 20 per cent in value and 45 per cent in volume. This implies that the unit value of imports from the Greater China area declined only by about one fifth. Part of the rise in mainland China's market share was due to a shift towards direct exports (i.e. bypassing middlemen in Hong Kong (China), Macao (China) and Taiwan Province of China).

The middlemen factor aside, there has clearly been a genuine growth of exports from China to the United States. Yeung and Mok (2004) note that in 1998 the Chinese Government implemented a restructuring, downsizing and efficiency policy leading to the closing down of a number of firms and to fierce competition among Chinese producers for export market shares. These factors combined may have enabled some Chinese firms to export a larger share of their output at lower prices. The surge in China's clothing exports may even have led to a glut in the United States market as indicated by the decline, albeit small, in the unit value of United States imports from the rest of the world between 1998 and 2002.[31]

This evidence indicates that China's increasing participation in international trade, and its consequent weight in international markets due to the very large size of its economy, could contribute to a decline in the unit values of some of its currently major export items. However, it is not clear

Table 2.10

UNITED STATES APPAREL IMPORTS FROM SELECTED SOURCES, MARKET SHARES AND UNIT VALUES, 1995–2005

	1995	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*[a]
						Value-based market shares (*per cent*)					
Greater China area	*30.3*	*28.5*	*26.7*	*24.6*	*22.9*	*21.3*	*20.8*	*21.4*	*22.6*	*24.3*	*27.6*
Mainland of China	10.2	10.4	10.5	8.9	8.6	7.9	8.2	9.8	11.9	13.8	21.2
Hong Kong, China	12.1	10.6	9.2	9.2	8.4	7.8	7.5	6.8	6.1	5.9	3.5
Macao, China	2.2	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.1	2.2	1.4
Taiwan Province of China	5.9	5.4	4.8	4.4	3.9	3.6	3.2	2.8	2.6	2.4	1.6
Other Asia											
Bangladesh	3.1	3.1	3.4	3.4	3.3	3.7	3.7	3.3	3.0	3.1	3.3
India	3.2	3.3	3.1	3.1	3.0	3.1	3.0	3.3	3.3	3.4	5.0
Indonesia	3.4	3.6	3.7	3.4	3.3	3.6	3.9	3.6	3.5	3.7	4.2
Pakistan	1.6	1.5	1.4	1.4	1.4	1.6	1.6	1.5	1.7	1.8	1.7
Republic of Korea	4.7	3.8	3.5	3.9	4.1	4.0	3.9	3.6	3.0	2.8	1.7
Viet Nam	0.0	0.1	0.1	0.1	0.1	0.1	0.1	1.6	3.9	4.0	3.6
Sub-Saharan Africa											
Kenya	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.4
Lesotho	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.6	0.6	0.7	0.6
Mauritius	0.6	0.5	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3
Mexico	7.4	9.8	11.8	13.5	14.8	14.7	13.8	13.0	11.3	10.3	9.5
						Volume-based market shares (*per cent*)					
Greater China area	*26.3*	*24.3*	*21.6*	*20.2*	*18.4*	*17.3*	*17.2*	*19.0*	*21.4*	*23.7*	*29.0*
Mainland of China	9.3	8.9	8.3	7.1	6.5	5.8	6.1	9.1	12.1	14.9	24.4
Hong Kong, China	8.9	7.9	6.5	6.7	6.0	5.7	5.7	4.8	4.2	3.7	1.9
Macao, China	1.7	1.6	1.6	1.6	1.5	1.6	1.7	1.8	2.0	2.2	1.1
Taiwan Province of China	6.5	5.9	5.2	4.8	4.5	4.2	3.8	3.3	3.1	2.9	1.6
Other Asia											
Bangladesh	5.6	5.5	5.9	5.8	5.5	6.0	6.0	5.4	4.8	4.7	5.0
India	2.8	3.1	2.8	2.8	2.7	2.5	2.5	2.9	2.8	3.1	4.2
Indonesia	3.4	3.4	3.5	3.4	3.1	3.3	3.7	3.4	3.3	3.5	4.0
Pakistan	1.7	1.7	1.7	1.7	1.7	2.1	2.2	2.2	2.4	2.6	2.6
Republic of Korea	3.7	3.0	2.8	3.6	3.8	3.7	3.9	3.8	3.1	3.1	1.5
Viet Nam	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1.8	3.9	3.9	3.4
Sub-Saharan Africa											
Kenya	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.4
Lesotho	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.5	0.6	0.6	0.5
Mauritius	0.5	0.4	0.3	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.2
Mexico	8.4	11.4	13.7	15.4	16.4	15.8	14.2	12.5	10.5	9.5	8.6
						Unit values (*$ per square metre*)					
Greater China area											
Mainland of China	4.1	4.4	4.7	4.7	4.8	4.8	4.7	3.6	3.2	3.0	2.7
Hong Kong, China	5.1	5.1	5.3	5.1	5.1	4.9	4.6	4.7	4.7	5.2	5.5
Macao, China	4.9	4.9	5.3	4.9	4.9	4.5	4.2	3.6	3.4	3.2	4.0
Taiwan Province of China	3.4	3.4	3.5	3.4	3.1	3.1	2.9	2.7	2.7	2.7	3.1
Other Asia											
Bangladesh	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.0	2.0	2.1	2.0
India	4.3	3.9	4.3	4.2	4.1	4.5	4.3	3.7	3.8	3.6	3.7
Indonesia	3.8	4.0	4.1	3.8	3.8	3.9	3.7	3.4	3.5	3.4	3.3
Pakistan	3.6	3.5	3.2	3.1	3.1	2.8	2.7	2.3	2.3	2.2	2.0
Republic of Korea	4.7	4.8	4.7	4.1	3.9	3.9	3.5	3.2	3.1	2.9	3.5
Viet Nam	1.3	1.8	1.8	1.7	1.7	1.6	1.7	2.8	3.2	3.3	3.3
Sub-Saharan Africa											
Kenya	2.6	2.6	3.0	3.3	3.1	3.5	3.5	3.6	3.6	3.8	3.5
Lesotho	3.6	4.3	4.1	4.2	4.3	4.1	4.2	3.8	3.8	4.1	3.9
Mauritius	4.1	4.8	5.4	6.3	6.0	6.2	5.8	5.4	6.0	6.1	5.6
Mexico	3.3	3.2	3.2	3.3	3.3	3.3	3.4	3.4	3.5	3.5	3.4
Memo item:											
World, excluding China	3.7	3.7	3.7	3.7	3.5	3.5	3.4	3.3	3.3	3.3	3.2

Source: UNCTAD secretariat calculations, based on data from United States Department of Commerce, Office of Textiles and Apparel (OTEXA).

a January to May.

whether, as some contend, there is likely to be a further strong rise in China's share in world clothing exports.

Indeed, it is not clear whether fully exploiting its current export market potential in textiles and clothing is in China's own developmental interest. Figure 2.4 above indicates that China's comparative advantage is not in low-skill, labour-intensive production, such as clothing, but in manufacturing sectors with a higher skill content. Important clothing exporters from South Asia (such as India) have an unusual combination of relatively low levels of skill per worker and land per worker that gives them a strong comparative advantage in labour-intensive manufactures, which use little of either skill or land per unit of labour. Moreover, since there has been hardly any change in the relative endowment positions of the various country groups, there is little reason to anticipate a large move of South Asian countries away from, and of China towards, a comparative advantage in labour-intensive manufactures. Instead, rising incomes in China are likely to be associated with higher wages for low-skilled workers so that the share of skill-intensive items in China's manufactured exports is likely to increase. Indeed there are indications of rising wages in China's coastal provinces. This is partly because of the growing reluctance of workers to migrate to coastal provinces to work in export-oriented production, and partly due to the effects of previously strict family planning policies, which have resulted in fewer entrants to the labour market. Consequently, exporting firms in the coastal areas are finding it increasingly difficult to recruit workers unless they offer higher wage incentives (*Financial Times*, 5 July and 3 November 2004).

The fact that in China most labour-intensive activities have been heavily concentrated in the coastal areas raises the question as to whether in the years to come a similar relocation pattern will occur across the different provinces within China (as well as moving further afield to, for example, Viet Nam). This could facilitate the upgrading of clothing exports of the coastal provinces towards higher value-added products, for which short turnover periods and speed to market play a more important role in export competitiveness. Moreover, the relocation of labour-intensive production to the Chinese hinterland could make a valuable contribution to employment creation and poverty alleviation, while also serving as a supply base for pent-up domestic demand. But for the country as a whole, a general upgrading of its export basket towards more skill-intensive manufactures is likely to facilitate the financing of its growing imports of primary commodities, required to sustain the country's continued economic catch-up and industrialization process. As discussed above, such a process seems to be already under way in the electronics sector. ■

Relocation of labour-intensive production to the Chinese hinterland could contribute to employment creation and poverty alleviation.

Notes

1 Rising incomes and industrialization also boost the demand for capital equipment and intermediate production inputs. But the higher demand for these latter goods is usually met by imports, as discussed in section C.

2 In Japan, per capita calorie intake increased only slowly after the Second World War – given the already high level of per capita income – and peaked around 1970–1975. By contrast, the shift in the composition of food consumption continued, with a rising share of household expenditure on animal products, mainly marine fish and, more recently, meat, dairy products and products with a high sugar content. The Republic of Korea experienced a similar change in dietary structure, but with a time lag of about 20 years. While at the end of the 1960s cereals still accounted for more than half of total calorie intake in the Republic of Korea, their share fell to less than 30 per cent by the mid-1990s. At the same time, the intake of animal products increased significantly: meat and poultry consumption, for example, increased tenfold between 1969 and 1995 (Popkin, 1993; and Kim, Moon and Popkin, 2000).

3 All data from FAOSTAT.

4 Rosegrant et al. (2001: 75) project that between 1997 and 2020 the increase in per capita calorie intake in China will be only about two thirds that in India.

5 Data are from the World Bureau of Metal Statistics, various; World Bank, 2004a; International Iron and Steel Institute, 2004; International Copper Study Group, 2004; and World Bank, World Development Indicators online database: http://publications.worldbank.org/WDI/.

6 Figure 2.1 also shows that the intensity of metal use in the Republic of Korea increased throughout the period 1960–2003, even though the pace of growth slowed down considerably over the past decade, particularly for aluminium and copper. This indicates that the Republic of Korea is approaching the peak of its intensity-of-use curve. The intensity of metal use in both Japan and the United States has declined over the past two decades, as anticipated by the intensity-of-use hypothesis for mature, industrialized economies.

7 While the studies generally agree that gains in energy efficiency are the key determinant, their findings differ as to the relative importance of structural change. The importance given to structural change is higher in studies that employ firm-level, rather than sectorally aggregated, data.

8 While there is clearly no one-to-one relationship between the size of a country's territory and the economic value of its natural resources, technological progress has increasingly narrowed the differences in the relative economic values of different sorts of land. For example, Diamond (1997) points out that North Americans could realize the agricultural potential of the western prairies only once they had steel ploughs and draft animals; and it required modern geologic prospecting technology for the pastoralists in the Middle East to discover the fuel resources under their sand.

9 While comparative advantage for broad product categories largely depends on differences in the relative abundance of factor endowments, comparative advantage at a less aggregate level is heavily influenced by industry-specific changes in relative levels of unit labour costs. These changes can be the result of uneven productivity growth across industries combined with more even growth in wage rates and, more generally, of changes in the nominal exchange rate (*TDR 2004*).

10 One advantage of this formulation is that, contrary to some other variants of the Heckscher-Ohlin trade theory, it requires a much weaker and more plausible assumption of efficiency and factor-price equalization, namely, that in all countries the ranking of goods in terms of resource input combinations is similar – for example, that the land–labour input ratio in agriculture is always higher than in manufacturing and that the skill–labour input ratio in manufacturing is always higher than in agriculture.

11 It is clear that there is a variation, sometimes wide, in terms of both the land–labour ratio and, less so, the skill–labour ratio, among the countries within all the country groups; nonetheless, regional averages provide a useful broad-brush starting point for further analysis.

12 Data from UNESCO Institute of Statistics, Statistical tables online: http://www.uis.unesco.org/; UNESCO, 2003; and OECD, 2003.

13 Rodrik and Subramanian (2004: 19) argue that the reforms of the 1980s "were not pro-liberalization but pro-business in the important sense that they served to boost the profits of existing businesses without threatening them with real competition", and that this attitude change of the Government and the associated pro-business policy changes, implemented in a very haphazard and gradual manner, elicited a large productivity response, particularly in manufacturing. This was followed by a sustained rise in exports from 1987 onwards. Panagariya (2004: 29) argues that the policy changes in the 1980s were deeper than is generally appreciated, and that they can be characterized as "liberalization". He notes that, given their ad hoc and quiet implementation, they were often described as "liberalization by stealth", while the reforms in the 1990s were systematic and systemic. Panagariya (2004: 15) also mentions the importance of export incentives during the rapid export expansion of the late 1980s. These incentives resembled the measures taken earlier in the Republic of Korea to animate a profit–investment and an investment–export nexus; they included income tax deductions for business profits from exports, subsidization of interest rates on export credit, and facilitation of imports of capital goods in selected export industries. By contrast, the standard policy-oriented account of India's integration process (e.g. Ahluwalia, 2002) emphasizes the adoption of far-reaching reforms in the 1990s and argues that India embarked on the economic reform and trade liberalization process in earnest only following its balance-of-payments crisis in 1991.

14 The data refer to trade excluding trade among the member States of the EU. All data are from WTO, 2005b.

15 Anderson (2003: 12–13) estimates that China's food, feed and fibre self-sufficiency will be only slightly reduced by reforms associated with WTO accession, and that additional net food imports will represent only one per cent of total imports by 2007.

16 For a further discussion of these categories, see *TDR 2002*, chap. III.

17 The quota regulations of the Multi-Fibre Arrangement (MFA) have also played an important role, as discussed below.

18 Comprehensive product-specific import data for China are available only from 1987, so that the evolution of China's imports during its first 15 years of economic catch-up and greater trade integration is not reflected in the table.

19 While the fallout from the Asian crisis certainly played a role in the observed decline of imports in the Republic of Korea, it is more likely to have accelerated than provoked the decline.

20 According to Ernst (2004), chips designed by foreign or domestic companies in China are eligible for a 14 per cent rebate on the nominal 17 per cent value-added tax on sales of imported or domestically produced chips.

21 These price ceilings were introduced mainly to guarantee widespread access to medicines, in spite of the virtual absence of health insurance coverage.

22 The Act does not include a clear definition of what "significant investment" and a "reasonable royalty" actually are.

23 The relevant decision of the WTO is contained in document WT/L/540 of 2 September 2003. This decision introduced a waiver of the TRIPS Agreement with respect to the granting by an exporting Member of a compulsory licence.

24 Commodity prices are measured by a dollar-denominated index and deflated by a dollar-denominated price index, while demand in countries other than the United States depends on the price of commodities relative to output prices in those countries.

25 For further detail see International Rubber Study Group and Economic Social Institute (2003); and ITTO (2003).

26 According to Burghardt (2005), for example, speculative trading on commodity exchanges increased substantially in 2004: the volume of global futures and options in agricultural commodities increased by nearly 5 per cent, while the growth in the volume of trading was close to 12 per cent for energy products and 16.4 per cent for non-precious metals.

27 More precisely, worldwide non-ferrous metal exploration budgets had fallen at an average annual rate of 17 per cent between 1997 and 2002, before strongly bouncing back in 2003 and 2004. Moreover, the last quarter of 2004 was the seventh consecutive quarter that showed an increase in planned mining investment, with a pipeline of projects amounting to $122 billion (Metals Economics Group (2005); and Raw Materials Group, Sweden, quoted in the *Mining Journal*, London, 4 February 2005: 18–19).

28 Barton Suchomel, WMC Resources, quoted in *Mining Journal*, London, 22 April 2005: 2.

29 For instance, in response to the rising Chinese demand for soybean imports and higher soybean prices in 2002 and 2003, soybean growers in the United States and major Latin American producing countries rapidly increased their soybean production. In the 2002/03 season, soybean production increased by 19.5 per cent in Brazil, 18.3 per cent in Argentina and 26.8 per cent in Paraguay (United States Department of Agriculture, 2005).

30 Data for 2004 from *China's Customs Statistics, 2004*, 12, Series No. 184.

31 For detailed evidence and discussion, see Mayer, 2004.

REFERENCES

Aglietta M (2004). L´économie américaine au fil de rasoir. In: Chevalier JM et Mistral J,eds., *La Raison du plus fort. Les paradoxes de l'économie américaine*. Paris, Robert Laffont.

Ahluwalia MS (2002). Economic reforms in India since 1991: Has gradualism worked? *Journal of Economic Perspectives*, 16 (3): 67–88.

Akiyama T and Larson DF (1994). The adding-up problem. Strategies for primary commodity exports in sub-Saharan Africa. Policy Research Working Paper, 1245, World Bank, Washington, DC, January.

Akyüz Y and Gore C (1996). The profit-investment nexus in East Asian industrialization. *World Development*, 24 (3): 461–470.

Amsden AH (2001). *The Rise of "the Rest": Challenges to the West from Late-Industrializing Economies*. New York, Oxford University Press.

Anderson K (2003). Agriculture and agricultural policies in China and India post-Uruguay Round. Centre for International Economic Studies Discussion Paper, 0319. Australia, University of Adelaide.

Andriamananjara S, Arce H and Ferrantino MJ (2004). Transshipment in the United States. Office of Economics Working Paper No. 2004-04-B, United States International Trade Commission, Washington, DC, April.

Arora A and Gambardella A (2004). The globalization of the software industry: perspectives and opportunities for developed and developing countries. NBER Working Paper No. 10538. Cambridge, MA, National Bureau of Economic Research, June.

Balassa B and Noland M (1988). *Japan in the World Economy*. Washington, DC, Institute for International Economics.

Banco de Mexico (2005). Informe sobre inflación, January-March; at: www.banxico.gob.mx

Bank Negara Malaysia (2005). Economic and financial developments in the Malaysian economy in the first quarter 2005, May; at: www.bnm.gov.my.

Barro RJ and Lee JW (2001). International data on educational attainment: updates and implications. *Oxford Economic Papers*, 53 (3): 541–563. Oxford, Oxford University Press.

Benham F (1940). The Terms of Trade. *Economica,* N.S.7: 360–367.

Bethell L (1986) (ed.). *The Cambridge History of Latin America*, *Volume V: 1870 to 1930*. Cambridge, Cambridge University Press.

Bhalla GS, Hazell P and Kerr J (1999). Prospects for India's cereal supply and demand to 2020. Food, Agriculture and the Environment Discussion Paper 29. Washington, DC, International Food Policy Research Institute.

Bleaney MF (1993). Liberalisation and the terms of trade of developing countries: A cause for concern? *The World Economy*, 16: 453–466.

Bresnahan TF and Ramey VA (1992). Output fluctuations at the plant level. NBER Working Paper No. 4105. Cambridge, MA, National Bureau of Economic Research.

British Petroleum (BP) (2004). *Statistical Review of World Energy.*

British Petroleum (BP) (2005). *Statistical Review of World Energy.*

Brook, AM et al. (2004). Oil price developments: drivers, economic consequences and policy responses. Economics Department Working Paper No. 412. Paris, Organisation for Economic Co-operation and Development (OECD).

Brown LR (1995). *Who Will Feed China? Wake-up Call for a Small Planet*. New York, WW Norton.

Burghardt G (2005). Futures Industry Association Annual Volume Survey: the invigorating effects of electronic trading. *Futures Industry Magazine*, March/ April.

Campodónico H (2004). Reformas e inversión en la industria de hidrocarburos de América Latina. *Serie Recursos Naturales e Infraestructura*, 78. Santiago, Chile, ECLAC, October.

Chadwick W (2003). Global trends in the information technology outsourcing services market. *United States International Trade Commission Industry Trade and Technology Review,* November.

Channel News Asia (2005). Asian countries subsidizing fuel hit hard by higher oil prices; at: www.channel newsasia.com (accessed May 2005).

Chauvin S and Lemoine F (2003). India in the world economy: traditional specialisations and technology niches. Working paper, 2003–09. Paris, Centre d'Etude Prospectives et d'Informations Internationales (CEPII).

Chenery HB, Robinson S and Syrquin M (1986). *Industrialization and Growth: A Comparative Study*. New York, Oxford University Press.

Chevalier JM (2004). *Les Grandes Batailles de l'Energie.* Paris, Gallimard.

Cline WR (1982). Can the East Asian model of development be generalized? *World Development*, 10 (2): 81–90.

Croke H, Kamin SB and Leduc S (2005). Financial market developments and economic activity during current account adjustments in industrial economies. International Finance Discussion Paper 827. Washington, DC, United States Board of Governors of the Federal Reserve System, February.

Crompton P and Wu Y (2005). Energy consumption in China: past trends and future directions. *Energy Economics*, 27: 195–208.

Debelle G and Galati G (2005). Current account adjustment and capital flows. Working Paper 169, Bank for International Settlements, Basel, February.

Del Pino V, Marambio G , Muñoz C and Venegas L (2005). Desempeño Financiero y Tributario. Gran Minería del Cobre de Chile. Santiago, Chile, Chilean Copper Commission (Cochilco).

Diamond J (1997). *Guns, Germs and Steel.* London, Chatto and Windus.

Eatwell J, Murray M and Newman P (2002). *The New Palgrave: A Dictionary of Economics.* Basingstoke, Palgrave Macmillan, 3: 6.

ECLA (1951). *Economic Survey of Latin America 1949.* New York, United Nations, Economic Commission for Latin America.

ECLAC (2005). *Economic Survey of Latin America and the Caribbean, 2004-2005*. Santiago, Chile, Economic Commission for Latin America and the Caribbean.

Eden L (2001). Transfer pricing, intrafirm trade and the BLS international price program. Working Paper No. 334, United States Bureau of Labor Statistics, Washington, DC.

EIA (2004). Country analysis brief: Kazakhstan. United States Energy Information Administration website at: www.eia.doe.gov.

EIU (2005a). China economy: gathering speed again? *ViewsWire*, Economist Intelligence Unit, 20 June.

EIU (2005b). *Business Latin America.* London, Economist Intelligence Unit*,* 25 April.

Ernst D (2004). Internationalisation of innovation: Why is chip design moving to Asia? Working paper 64, East-West Center, Honolulu, HI, March.

ESCWA (2005). *Survey of Economic and Social Developments in the ESCWA Region* 2005. Summary. Beirut, Economic and Social Commission for Western Asia; at: www.escwa.org.lb (accessed 28 April 2005).

Espinasa (2005). Domestic fuel pricing and taxation in Latin American and Caribbean energy exporters: the cases of Ecuador and Venezuela. Paper presented at the Third Regional Workshop on Fiscal Policy and Environment organized by the Economic Commission for Latin America and the Caribbean, Santiago, Chile, 25 January.

Fan S and Zhang X (2002). Productivity and productivity growth in Chinese agriculture: new national and regional measures. *Economic Development and Cultural Change*, 50 (4): 819–838.

FAO (2002). *World Agriculture: Towards 2015/2030.* Summary report. Rome, Food and Agriculture Organization of the United Nations.

FAO (2003). *Medium-term prospects for agricultural commodities: Projections to the year 2010.* Rome, Food and Agriculture Organization of the United Nations.

Fisher-Vanden K et al. (2004). What is driving China's decline in energy intensity? *Resource and Energy Economics*, 26: 77–97.

Flassbeck H, Dullien S and Geiger M (2005). China's spectacular growth since the mid-1990s: Macroeconomic conditions and economic policy challenges. In: UNCTAD, *China in a Globalizing World.* Forthcoming. Geneva, United Nations Conference on Trade and Development.

Freund C (2000). *Current Account Adjustments in Industrialized Countries.* International Finance Discussion Paper 692, Board of Governors of the Federal Reserve System. Washington, DC, United States, December.

Gaffney, Cline & Associates Inc. (2004). Proyecto de Evaluación Económica, Financiera y Ambientales de las operaciones que realiza la empresa estatal Petrocecuador, Informe final de la Fase I. February.

Gale F (2005). China's agricultural imports boomed during 2003–04. (WRS-05-04). Washington, DC, United States Department of Agriculture, Economic Research Service.

Gale F, Lomar B and Tuan F (2005). China's new farm subsidies. (WRS-05-01). Washington, DC, United States Department of Agriculture, Economic Research Service.

Ghoshal R (2003). *Eastern India: The Emerging Employment Scenario.* New Delhi, International Labour Office, Subregional Office for South Asia.

Gulati A and Mullen K (2003). Responding to policy reform: Indian agriculture in the 1990s and after. Working paper 189, Stanford University, Stanford Center for International Development, Stanford, CA.

Hannesson R (2002). Energy use and GDP growth, 1950–97. *OPEC Review*, 26 (3): 215–233.

Hooper P, Johnson K, and Marquez J (1998). Trade elasticities for G-7 countries. International Finance Discussion Paper 609, Board of Governors of the Federal Reserve System, Washington, DC, United States, April.

Houthakker H and Magee S (1969). Income and price elasticities in world trade. *Review of Economics and Statistics* 51: 111–125.

Huang J and Rozelle S (2003). Trade reform, the WTO and China's food economy in the twenty-first century. *Pacific Economic Review*, 8 (2): 143–156.

Huang J, Li N and Rozelle S (2004). Projections of food supply and demand and impacts of green policies. In: van Tongeren F and Huang J, eds., *China's Food Economy in the Early 21st Century*. Report 6.04.04. The Hague, Agricultural Economics Research Institute, February.

Hummels D (2001). Time as a trade barrier. Mimeo. West Lafayette, IN, Purdue University, July.

IEA (2004a). Analysis of the impact of high oil prices on the global economy. Paris, International Energy Agency.

IEA (2004b). *World Energy Outlook 2004*. Paris, International Energy Agency.

IEA (2005). *Oil market report*. Paris, International Energy Agency, March.

IMF (2004a). Advancing structural reforms. *World Economic Outlook*. Washington, DC, International Monetary Fund.

IMF (2004b). China's emergence and its impact on the global economy. *World Economic Outlook*. Washington, DC, International Monetary Fund.

IMF (2004c). India. Staff Report for the 2004 Article IV Consultation. Washington, DC, International Monetary Fund.

IMF (2004d). Country Report: United Arab Emirates. Report no.04/175. Washington, DC, International Monetary Fund, June.

IMF (2005a). *World Economic Outlook*. Washington, DC, International Monetary Fund, April.

IMF (2005b). Country Report: Chad. Report no. 05/74. Washington, DC, International Monetary Fund, March.

INEGI (2005). Estadísticas económicas database, at: www.inegi.gob.mx. Mexico, Instituto Nacional de Estadística, Geografía e Informática.

International Copper Study Group (ICSG) (2004). *Copper Bulletin,* 11 (4). April, Lisbon.

International Iron and Steel Institute (2004). *Steel Statistical Yearbook 2004*. Brussels.

International Rubber Study Group and Economic Social Institute (IRSG) (2003). The future of the tyre and rubber sector of China and consequences for the world rubber industry: a multi-client study. London, International Rubber Study Group, and Amsterdam.

IPEA (2005). *IPEA Economic Quarterly*. Rio de Janeiro and Brasilia, Instituto de Pesquisa Econômica Aplicada, June.

ITTO (2003). *Annual Review and Assessment of the World Timber Situation*. Yokohama, Japan, International Tropical Timber Organization.

Jha V et al. (2005). Product patents: Implications for the pharmaceutical industry and consumers. Mimeo. Study prepared for the DFID/Government of India/ UNCTAD project on Strategies and Preparedness for Trade and Globalization in India. New Delhi, UNCTAD.

Kaplinsky R (2004). Globalisation, Poverty and Inequality: Between a Rock and a Hard Place. (Book manuscript). Cambridge, Polity Press.

Kaufmann R (2004). The forecast for world oil markets. *Project LINK Oil Forecast*, Fall 2004; at: www.chass.utoronto.ca/link/.

KDI (2005). *Current Economic Trends: The Green Book*. Seoul, Korea Development Institute; at http://epic.kdi.re.kr. (accessed June 2005).

Kim S, Moon S and Popkin BM (2000). The nutrition transition in South Korea. *American Journal of Clinical Nutrition*, 71: 44–53.

Klein LR and Ozmucur S (2005). Weekly update on the US economy and financial markets. Forecast summary. Philadelphia, PA, University of Pennsylvania; at: www.chass.utoronto.ca/link/ (accessed 27 June 2005).

Krugman P (1988). Differences in income elasticities and trends in real exchange rates. NBER Working Paper No. 2761. Cambridge, MA, National Bureau of Economic Research, November.

Lardy NR (2002). *Integrating China into the Global Economy*. Washington, DC, Brookings Institution Press.

Lavandero J (2003). *Royalty, regalía o renta minera.* Santiago, Chile, Lafken.

Lemoine F and Ünal-Kesenci D (2004). Assembly trade and technology transfer: the case of China. *World Development*, 32 (5): 829–850.

Lipkewich MP (2003). Teck Cominco Operation, Presentation at Teck Cominco Investors Day. Toronto (ON), 30 September; at: www.teckcominco.com/presentations/investorday/.

Malembaum W (1973). Material requirements in the United States and abroad in the year 2000. Philadelphia, PA, University of Pennsylvania. Research Project for the National Commission on Materials Policy.

Mann C (2003). *The US Current Account, New Economy Services, and Implications for Sustainability.* Washington, DC, Institute for International Economics, August.

Marsh P (2004). A little local difficulty in the supply chain. *Financial Times*, 23 June.

Mattoo A (2004). The services dimension of China's accession to the WTO. In: Bhattasali D, Li S and

Martin W, eds., *China and the WTO: Accession, Policy Reform, and Poverty Reduction Strategies*. Washington, DC, World Bank and Oxford University Press.

Maury T-P and Pluyaud B (2004). The breaks in per capita productivity trends in a number of industrial countries. Working Paper No. 111, Banque de France, Paris,

Mayer J (2004). Not totally naked: textiles and clothing trade in a quota free environment. UNCTAD Discussion Paper 176, Geneva.

Metals Economics Group (MEG) (2005). *World Exploration Trends*. A special report from the Metals Economics Group for the PDAC 2005 International Convention.

Morgan Stanley (2004). *India and China: A Special Economic Analysis. New Tigers of Asia*, 26 July.

Moussa N (1999). El desarrollo de la minería del cobre en la Segunda mitad del Siglo XX. *Serie Recursos Naturales e Infraestructura,* 4. Economic Commission for Latin America and the Caribbean, Santiago, Chile, November.

NESDB (2005). *Economic Performance in Q1/2005 and Outlook for 2005*. Bangkok, National Economic and Social Development Board of Thailand; at: www.nesdb.go.th. (accessed 6 June 2005)

NIESR (2005). The World Economy. *National Institute Economic Review* 192: 19. London, National Institute of Economic and Social Research, April.

Ocampo JA and Parra M (2003). The terms of trade for commodities in the twentieth century. *CEPAL Review* 79, April .

OECD (2003). *Science, Technology and Industry Scoreboard*. Paris, Organisation for Economic Co-operation and Development.

Otto J et al. (2000). *Global Mining Taxation Comparative Study* (second edition). Golden, CO, Colorado School of Mines.

Panagariya A (2004). India in the 1980s and 1990s: a triumph of reforms. Working Paper 04/43, International Monetary Fund, Washington, DC.

Popkin BM (1993). Nutritional patterns and transitions. *Population and Development Review*, 19 (1): 138–157.

Prebisch R (1950). *The Economic Development of Latin America and its Principal Problems.* Lake Success, NY, United Nations Economic Commission for Latin America.

Prebisch R (1952). *Problemas teóricos y prácticos del crecimiento económico.* Santiago, Chile, ECLA (reprinted in *Cincuenta años de pensamiento de la CEPAL, Vol 1*. Comisión Económica para América Latina y el Caribe, Fondo de Cultura Económica (CEPAL-FCE) Santiago, Chile, 1998).

Rodrik D and Subramanian A (2004). From "Hindu growth" to productivity surge: the mystery of the Indian growth transition. NBER Working Paper No.10376. Cambridge, MA, National Bureau of Economic Research, March.

Rosegrant MW et al.(2001). *Global food projections to 2020. Emerging Trends and Alternative Futures*. Washington, DC, International Food Policy Research Institute.

Sánchez Albavera F, Ortiz G and Moussa N (2001). Mining in Latin America in the late 1990s. *Serie Recursos Naturales e Infrastructura*, 1. Santiago, Chile, ECLAC.

Singer HW (1950). The distribution of gains between investing and borrowing countries. *American Economic Review*, 15. (Reprinted in *Readings in International Economics*. London, George Allen and Unwin, 1968).

Singh N (2003). India's information technology sector: What contribution to broader economic development? Working paper 207, OECD, Paris.

Sinton JE and Fridley DG (2000). What goes up: recent trends in China's energy consumption. *Energy Policy*, 28: 671–687.

Syrquin M (1988). Patterns of structural change. In: Chenery HB and Srinivasan TN eds., *Handbook of Development Economics,* 1. Amsterdam, Elsevier.

Syrquin M and Chenery HB (1989). Patterns of Development, 1950 to 1983. Discussion Paper 41, World Bank, Washington, DC.

The Economist (2004). Amazingly, China has labour shortages. London, 9 October.

Tilton J, ed. (1990). *World Metal Demand: Trends and Prospects*. Washington, DC, Resources for the Future.

Timmer CP (2002). Agriculture and economic development. In: Gardner B and Rausser G, eds., *Handbook of Agricultural Economics,* 2. Amsterdam, Elsevier.

UNCTAD (1994a). *The Outcome of the Uruguay Round: An Initial Assessment*. *Supporting Papers to the Trade and Development Report 1994*. United Nations publication, sales no. E.94.II.D.28, New York and Geneva.

UNCTAD (1994b). A review of major developments in the world copper market and industry from 1980 to 1992 and future prospects. UNCTAD/COM/37, Geneva, 8 February.

UNCTAD (2003a). *Economic Development in Africa: Trade Performance and Commodity Dependence.* United Nations publication, sales no. E.03.II.D.34, New York and Geneva.

UNCTAD (2003b). *Report of the Meeting of Eminent Persons on Commodity Issues*. TB/B/50/11, Geneva, UNCTAD, 22–23 September.

UNCTAD (2004a). *World Investment Report 2004*. United Nations publication, sales no. E.04.II.D.33, New York and Geneva.

UNCTAD (2004b). *The Iron Ore Market 2003–2005*. Geneva.

UNCTAD (2004c). New geography of international trade: South-South cooperation in an increasingly interdependent world. TD/404, Geneva, 4 June.

UNCTAD (2005a). *Review of Maritime Transport 2005*. Geneva.

UNCTAD (2005b). *World Investment Report, 2005*. United Nations publication, sales no. E.05.II.D.10, New York and Geneva.

UNCTAD (2005c). *Economic Development in Africa: Rethinking the Role of Foreign Direct Investment.* UNCTD/GDS/AFRICA/2005/1, United Nations publication, sales no. E.05.II.D.12, Geneva.

UNCTAD (2005d). International trade negotiations, regional integration and South-South trade, especially in commodities. UNCTAD/DITC/TNCD/MISC/2004/3, Geneva, 18 March.

UNCTAD (2005e). Some key issues in South-South trade and economic cooperation: outcome and papers presented to the workshop on trade, Doha High-level Forum on Trade and Investment. UNCTAD/DITC/TNCD/2005/6, Geneva, 28 April.

UNCTAD (various issues). UNCTAD *Handbook of Statistics*. New York and Geneva.

UNCTAD (various issues). *Trade and Development Report*. New York and Geneva.

UNESCO (2003). *Global Education Digest.* Montreal, UNESCO Institute of Statistics.

United Nations (2004a). China common country assessment: balancing development to achieve a *xiaokang* (well-off) society in China. Report of the UN China Country Team, Beijing, August:16.

United Nations (2004b). World Commodity Trends and Prospects. Note by the Secretary-General. Report prepared by UNCTAD and submitted by the Secretary-General of the United Nations to the 59th Session of the General Assembly. General Assembly Document A/59/304, New York, United Nations.

United Nations, IMF, Commission of the European Communities, OECD and World Bank (1993). *System of National Accounts 1993*. Brussels, Luxembourg, New York, Paris, Washington, DC.

United States Department of Agriculture (2005). Oilseeds: world markets and trade. Circular series FOP 3-05. Washington, DC, March.

van Meijl H and van Tongeren F (2004). Projections of the Chinese economy to 2020: the impact of agricultural and trade policies and implications for global trade. In: van Tongeren F and Huang J, eds., *China's Food Economy in the Early 21st Century*. Report 6.04.04. The Hague, Agricultural Economics Research Institute, February.

Wood A and Calandrino M (2000). When the other giant awakens: Trade and human resources in India. *Economic and Political Weekly,* XXXV (52, 53): 4677–4694, 30 December–5 January 2001.

World Bank (1996). *Global Economic Prospects and the Developing Countries*. Washington, DC, World Bank.

World Bank (2004a). *Global Economic Prospects, Commodity Market Briefs;* at: http://globaloutlook.worldbank.org/globaloutlook/outside/ (accessed November 2004)

World Bank (2004b). *Global Economic Prospects*. Washington, DC, World Bank.

World Bank (2005). *Global Economic Prospects*. Washington, DC, World Bank.

World Bureau of Metal Statistics (various issues). *World Metal Statistics.* Ware, Hertfordshire, United Kingdom.

World Tourism Organization (2005). *World Tourism Barometer*, 3 (2). Madrid, June.

WTO (2003). *World Trade Report*. Geneva, World Trade Organization.

WTO (2005a). World trade 2004, prospects for 2005. World Trade Organization, Press release 14. Geneva, April.

WTO (2005b). Developing countries' goods trade share surges to 50-year peak. World Trade Organization, Press release 401, Geneva, 14 April.

Wu Y (2005). Growth, expansion of markets, and income elasticities in world trade. Working Paper, No.05/11, International Monetary Fund, Washington, DC, January.

Yang DL (2005). China's Looming Labor Shortage. *Far Eastern Economic Review*, 168 (2), Jan/Feb.

Yeung G and Mok V (2004). Does WTO accession matter for the Chinese textile and clothing industry? *Cambridge Journal of Economics*, 28: 937–954.

Zhang ZX (2003). Why did the energy intensity fall in China's industrial sector in the 1990s? The relative importance of structural change and intensity change. *Energy Economics*, 25: 625–638.