14

China's trade expansion and the Asia Pacific economies

Kunwang Li and Ligang Song

Chinese foreign trade expanded at an average annual rate of 17 per cent from 1979 to 2000, which was twice the average annual growth rate of China's GDP during the same period. Both growth rates have been considerably higher than the respective world averages over the same period. Accession to the WTO in 2001 has given new impetus to expansion of China's external trade. In 2003, China's total external trade reached US\$851 billion, an increase of 37 per cent from 2002—China's first year as a member of the WTO. In that year, with total imports reaching US\$413 billion, China passed Japan to become the largest import market in Asia. With total external trade surpassing US\$1000 billion in 2004, China has exceeded Japan and become the world's third largest trading nation after the United States and Germany.

China's emergence as a major exporter of a wide variety of manufactures in the past two decades has intensified the competitive impact on both industrial and developing economies alike. From the point of view of people in industrial economies who are involved in labour-intensive and other sectors, the Chinese comparative advantage is strong or strengthening and the expansion of China's exports hurts employment, especially for unskilled labour. This contributes to surges in trade protectionism against Chinese exports in industrial countries. Increasingly, these have taken the form of anti-dumping or other safeguard

measures such as re-imposing quotas and setting limits on quantities or growth targets for certain Chinese exports entering their markets.¹ Protectionism prompted the Chinese government to lobby intensely to be granted 'market-economy' status by other members of the WTO, especially industrial countries, in order to ease anti-dumping measures.

There are also anxieties among developing economies over China's rising trade. Developing economies are concerned that China's increasing exports will substitute for their exports in third markets. There are also concerns voiced in some developing economies, especially in East and Southeast Asia, that much needed foreign direct investment could be diverted to China, which has become a magnet in attracting FDI, especially in recent years. Developing economies fear that both trends will slow the growth in their exports and incomes (Lall 2004; Shafaeddin 2004; Song 2004; Weiss 2004).

What is the balance between competition and opportunities for China's trading partners? This chapter explores China's contributions to the trade expansion of China's major trading partners in Asia and the Pacific from 1990 to 2003. The economies included are China's major trading partners in East Asia, including Japan, Korea, Hong Kong, Taiwan, and the five major economies of ASEAN—Indonesia, Malaysia, the Philippines, Singapore and Thailand. Given the important role played by the United States in international as well as regional trade, the United States is also covered. The term 'region' in this chapter refers to East Asia plus the United States.

Trade reform, comparative advantage and the rise of Chinese trade

Chinese economy's remarkable international performance is based on the success of its domestic reform. These, together with trade liberalisation, directly affected China's external trade through increased specialisation, increased market size, and technological advance, supported by foreign direct investment (Song and Sun 2003). China's trade expansion has been based on its underlying comparative advantage, relying strongly on exports of labour-intensive products in its early expansionist period. And then the accumulation of capital in the process of growth saw comparative advantage shift progressively towards increasingly capital-intensive and then further to technology-intensive products. The relationships between factor endowments and trade patterns change over time in a dynamic fashion, with comparative advantage shifting as endowments change. These shifts expand export supply potential (Song 1996).

With the Chinese economy increasingly dependent on a high degree of trade, it is less than ever in China's best interest to try to protect its domestic industries by limiting imports (Song and Sun 2003). As pointed out by McKinnon,

keeping imports out reduces the effective demand for, and consequently the price of, foreign exchange relative to the domestic costs of labour, capital, intermediate inputs, and so on that producers of export products must pay. Since exporters sell in foreign markets at this less favourable 'real' exchange rate, they are caught in a profit squeeze, which reduces traditional exports and blocks new export development—particularly of manufactures (1973:134).

Furthermore, domestic reform conforming with the WTO requirements has further improved China's trading system, and helped facilitate the expansion of its imports through increased transparency and efficiency. Thus China's increasingly important position in world trade provides huge export opportunities for China's trading partners, as it introduces new competitive pressures on these economies.

In the period 1990–2003, China's exports and imports grew at the average rates of 16 and 17 per cent respectively. Exports and imports increased by 6 and 6.7 times respectively. In comparison, the growth rates of exports and imports in all developing economies were 9 and 8.7 per cent respectively. China's shares in world total exports and imports have increased from 1.8 and 1.5 per cent in 1990 to 5.9 and 5.3 per cent respectively in 2003 (Appendix Table C1 in Appendix C).

The rapid growth of China's exports cannot be separated from the growth of its imports. Amongst other reasons, this is because a large part of China's export industries are in processing trade, in which all or part of imported raw materials, intermediate inputs, and other inputs are exported after being processed or assembled. The share of processing trade in exports reached 55 per cent in 2003.

The economies from which China imports are mainly located in the Asia Pacific region, especially in East Asia. From 1990 to 2003, Japan remained the largest exporter to China, with its share of China's imports rising from 14.2 per cent in 1990 to 18 per cent in 2003 (Table 14.1). The second largest exporter to China is the European Union, with its share in China's imports reaching 13.2 per cent in 2003 despite following a declining trend from 1995. The US position has witnessed great changes during these years. It was the third largest exporter to China in 1990 after Japan and the European Union, with its share in China's imports reaching 12.2 per cent. By 2000, however, the United States was overtaken by Taiwan and Korea with respect to its share in China's total imports. In 2003, the United States' share in China's imports fell even further to 8.2 per cent, lagging behind Japan, Taiwan, ASEAN, and Korea.

Table 14.1 **Sources of China's imports from selected economies, 1990–2003** (per cent of the total)

	1990	1995	2000	2003
Asia	41.0	47.1	50.6	54.9
ASEAN	5.6	7.4	8.9	11.0
Hong Kong	27.1	6.5	9.6	2.7
Japan	14.2	21.9	17.8	18.0
Korea	0.4	7.8	10.0	10.5
Taiwan		11.2	11.3	11.6
United States	12.2	12.2	9.6	8.2
European Union	17.0	16.1	13.4	13.2

Source: International Monetary Fund, (various years). *Direction of Trade Statistics Yearbook*, International Monetary Fund, Washington, DC.

The East Asian economies' dependence on exports to the Chinese market has increased in recent years. Except for Hong Kong, the East Asian economies' exports to China grew faster than to other trading partners. By 2003, Taiwan, ASEAN and Korea had risen to become the third, fourth and fifth-largest exporters to China, with their shares in China's imports reaching 11.6, 11 and 10.5 per cent respectively. The trend towards accelerated growth of trade within East Asia has been strengthened in recent years. The emerging Chinese economy, with its strong trade-orientation, has played a pivotal role in boosting the push for closer economic integration in the East Asian region. East Asia's share of China's imports increased from 41 per cent in 1990 to 55 per cent in 2003 (Table 14.1).

There is great variety in the commodity composition of each economy's exports to China. In both 1990 and 2003, capital-intensive products were the largest component of US exports to China, representing around 70 per cent of total exports to China. Agriculture-intensive products were the second largest component at around 20 per cent (Table 14.2). Labour-intensive and minerals-intensive products occupied relatively small shares in China's imports from the United States, although the share of minerals-intensive products rose during this period. Japan's exports to China have been predominantly capital-intensive products, which rose steadily

Table 14.2 Commodity composition of exports to China from the regional economies (per cent)

	Agriculture-intensive	Minerals-intensive	Labour-intensive	Capital-intensive
Indonesia				
1990	51.0	25.5	0.2	23.2
1995	40.3	38.9	4.6	16.1
2000	37.2	26.0	5.4	31.5
2003	30.8	23.9	5.0	40.3
Japan				
1990	4.2	2.5	11.5	81.9
1995	2.7	3.3	12.0	82.0
2000	2.2	3.9	10.7	83.2
2003	1.5	3.4	6.8	88.3
Malaysia				
1990	78.7	7.5	1.4	12.5
1995	66.3	6.2	4.3	23.2
2000	21.5	9.5	2.4	66.7
2003	14.4	7.7	1.3	76.7
Korea				
1990	17.4	1.8	20.3	60.5
1995	13.4	5.4	21.6	59.6
2000	7.5	11.7	13.6	67.4
2003	3.2	6.8	7.5	82.6
Philippines				
1990	31.7	30.1	1.4	36.8
1995	22.0	61.2	3.7	13.1
2000	6.8	12.6	0.7	79.9
2003	2.3	4.6	0.4	92.8
Singapore				
1990	19.5	48.4	3.6	28.4
1995	20.9	31.9	10.5	36.6
2000	1.5	18.1	2.7	77.6
2003	1.3	15.8	2.2	80.7
Thailand				
1990	77.8	1.1	7.3	13.8
1995	37.4	4.7	13.7	44.2
2000	21.2	10.0	3.1	65.6
2003	17.2	8.6	3.0	71.2
United States				
1990	25.7	2.7	2.7	69.0
1995	25.8	4.1	3.5	66.6
2000	16.5	5.2	2.0	76.3
2003	20.1	5.1	2.2	72.7

Source: Authors' calculations using the data from UN Comtrade database.

from 81.8 per cent in 1990 to 88.3 per cent in 2003. Japan's exports of labour-intensive products to China fell continuously from 11.5 per cent in 1990 to 6.8 per cent in 2003. A similar trend can also be observed for Korea, where the share of labour-intensive products in exports to China fell from 20 per cent in 1990 to about 7 per cent in 2003, providing more evidence of shifting comparative advantage in the process of East Asian industrialisation.

The commodity composition of ASEAN's exports to China has changed a great deal over the same period. In the early 1990s, ASEAN's exports to China were mainly of agriculture-intensive and minerals-intensive products, followed by capital-intensive and labour-intensive products. In 2002, however, capital-intensive products had become the major component in ASEAN's exports to China, followed by agriculture-intensive products and minerals-intensive products. The share of capital-intensive products in ASEAN's exports to China continued to rise to 72.1 per cent in 2003, while the shares of agriculture-intensive and minerals-intensive products were falling. The pattern of bilateral trade between China and ASEAN bears further study, including by looking intra rather than inter-industry trade (see Chapter 13).

There are variations in commodity composition within the ASEAN five in relation to China. While agriculture-intensive and minerals-intensive products remained the major components in Indonesia's exports to China, their shares are declining and the share of capital-intensive products rising. At the beginning of the 1990s, Malaysian exports to China were mainly concentrated on agriculture-intensive products, but the share of these goods dropped drastically after 1995 when capital-intensive products' share was on the rise. The situation with the Philippines and Thailand is similar to that of Malaysia. Singapore demonstrated a different pattern from other members in ASEAN as the share of minerals-intensive products in its exports to China was relatively high, due to its role as an important re-exporter of related products.

Despite all the differences, there is similarity among China's imports from the members of ASEAN—all export only low proportions of labour-intensive products to China. To study the bilateral trading relationships between China and ASEAN further, an export similarity index was used, defined as the degree of similarity between the commodity composition of China's exports to ASEAN and that of ASEAN's exports to China. If this index increases, it indicates a convergence of the structure of the two trade partners' exports, and also suggests greater competition between the two partners in third-country markets. On the other hand, a decline in the index suggests that specialisation between them is increasing in a third market. Furthermore, if the convergence occurs between a developing

country and an industrial economy, rising indexes can also be interpreted as a reflection of fast growth and industrialisation for the developing country (Xu and Song 2000).

Table 14.3 provides the bilateral export similarity indexes between China and the five members in ASEAN. Except for Indonesia and the Philippines, the bilateral export similarities between China and Malaysia, Thailand and Singapore have been steadily increasing (statistically significant at the 1 per cent, 5 per cent, and 10 per cent levels respectively). Increase in trade overlap between China and the three members of ASEAN indicates that there has been a convergence in their industrial and export structures, and greater competition between them in third-country markets. The increasing similarity in their export structure, together with increased intensity of bilateral trade, suggests that the patterns of trade between China and ASEAN are of intra-industry, rather than inter-industry, trade. For example, the large amount of capital-intensive products among ASEAN exports to China has a great deal to do with multinational corporations' direct investment in East Asia.

The recent surge in bilateral trade between China and ASEAN indicates that a new pattern of trade has begun to emerge between the two, driven primarily by firms seeking economies of scale and product differentiation through the operation of multinational corporations. The formation of the bilateral free trade arrangement (FTA), the so-called '10+1', can be expected to strengthen bilateral trade between

Table 14.3 The bilateral export similarity index between China and ASEAN countries, 1995–2003

	Indonesia	Malaysia	Philippines	Singapore	Thailand
1995	0.330	0.520	0.307	0.557	0.435
1996	0.322	0.529	0.256	0.504	0.381
1997	0.274	0.537	0.426	0.513	0.479
1998	0.314	0.561	0.607	0.553	0.509
1999	0.301	0.596	0.664	0.637	0.605
2000	0.243	0.635	0.612	0.650	0.554
2001	0.299	0.634	0.410	0.610	0.514
2002	0.332	0.634	0.419	0.574	0.550
2003	0.369	0.539	0.461	0.585	0.502
Spearman coefficient	0.345	0.770***	0.503	0.588*	0.697**
p-value	0.328	0.009	0.138	0.074	0.025

Note: The estimates with ***, **, * denotes significance at 1 per cent, 5 per cent and 10 per cent levels respectively.

Source: Authors' calculations.

Table 14.4 Impact of '10+1' gain in regional economies' exports to China
(change in per cent)

Indonesia	Malaysia	Japan	Korea	Philippines	Singapore	Taiwan	Thailand	US
28.38	29.96	1.19	0.03	36.12	29.75	0.42	30.03	0.51

Source: Calculated by Zhang Bowei based on the GTAP modeling techniques with the base year of 1997.

ASEAN and China further. To assess the potential impact of this regional grouping on region's economies, a simulation analysis is carried out by employing the computable general equilibrium (CGE) model based on the GTAP to examine how China's imports from the regional economies will change after the realisation of free trade between China and ASEAN.

Trade liberalisation between China and ASEAN will enhance ASEAN's exports to China considerably (Table 14.4). This appears especially significant to two members of ASEAN—the Philippines and Thailand. For the economies outside '10+1', while trade liberalisation between China and ASEAN produces no negative effect on their exports to China, the positive effects are minimal, especially for Korea, Taiwan and the United States. Formation of a bilateral FTA between China and ASEAN could reduce their engagement with other regional economies as engagement with each other comes to dominate, yielding new pressures within China, ASEAN and the other economies.

Diminished gains from trade accompany a diminished pressure to adjust. The FTA-induced separation of third countries, including economies in the region, from East Asian dynamism reduces opportunities for rising living standards. This is likely to be most damaging to potential suppliers of the natural resource-based products in which China's comparative disadvantage is most pronounced, and especially in agricultural industries in which trade distortion is endemic. The trade-off between costs of adjustment and gains from trade through the rise of China is affected by the presence of FTAs. For the world as a whole, the trade-off between adjustment costs and gains from trade is more favourable if the movement is towards specialisation according to global comparative advantage, as it is modified by growth and structural change in individual economies (Garnaut and Song forthcoming). This message becomes clearer through China's contributions to regional trade and economic growth.

China's contributions to regional export growth

The Asia Pacific economies continued to perform well above world average in terms of growth of trade from 1990 to 2003. The total exports of the Asia Pacific economies (including the United States) increased 1.4 times over this period. The growth rate of the 10 developing economies was much higher than that of the two industrial countries, the United States and Japan. Within the developing economies, China's exports grew the fastest, followed by ASEAN, South Korea, Taiwan and Hong Kong. What have been the major sources of rapid growth of the regional economies' exports?

Employing the method described in Appendix A, the eleven regional economies' export growth can be decomposed into three components. The first component is the demand effect, which reflects the inducement from overall world trade expansion. The second, a competitiveness effect, represents the improvement in an economy's international competitiveness either through price or product quality. An economy can increase its share in the world market by expanding its exports faster than the world average. Thus, changes in export share in world markets provide an indication of changes in an economy's international competitiveness. The first two effects will basically determine an economy's export growth. However, there is a deviation between the sum of these two parts and the realised-growth rate. The reason for this deviation is that there are some factors, such as geographical proximity, social and cultural ties, special trade arrangements that may lead to an uneven distribution of an economy's exports among its various trading partners. Thus, the third effect is introduced as the location effect, which includes all factors other than the first two.

Table 14.5 reports the results of the decomposition of the three effects for the eleven economies as well as the region's total export growth. First, the demand effect is very prominent in the region's export growth. On the whole, the region's total exports increased by 142 per cent over the period 1990–2003, of which 135 percentage points were brought about by the demand effect. That is, the demand effect contributed 95 per cent of total growth (135 per cent/142 per cent), while the competitiveness effect contributed 25 per cent, and the location effect –18.8 per cent.

Second, the region's developing economies have seen exports grow more through improvements in their international competitiveness—China, Malaysia, the Philippines and Thailand, in particular, benefited more from increased international competitiveness driving export growth. In contrast, for NIEs, the contribution of the demand effect exceeds that of the competitiveness effect. This is especially

Table 14.5 Decomposition of export growth of the regional economies
(per cent)

	Total	Demand	Competitiveness	Location
(a)1990–2003				
China	598.3	137.2	512.1	–51.0
Hong Kong	172.5	256.1	83.0	–166.5
Indonesia	137.6	117.6	16.3	3.6
Japan	64.7	140.7	–61.3	–14.7
Korea	184.2	116.1	61.8	6.3
Malaysia	256.8	125.1	138.3	–6.7
Philippines	342.1	124.7	224.8	–7.3
Singapore	178.6	140.2	57.3	–18.8
Taiwan	174.6	147.6	60.0	–33.0
Thailand	248.2	121.7	127.6	–1.2
United States	84.1	110.7	–35.2	8.6
Region	142.4	135.8	25.4	–18.8
(b)1990–1995				
China	137.3	85.0	115.6	–63.2
Hong Kong	111.3	74.2	77.7	–40.7
Indonesia	76.9	57.3	33.2	–13.6
Japan	54.0	60.3	8.7	–15.0
Korea	93.6	52.1	49.5	–8.0
Malaysia	150.6	67.3	119.7	–36.4
Philippines	112.0	54.8	69.8	–12.7
Singapore	126.1	74.7	94.5	–43.1
Taiwan	86.7	66.9	46.4	–26.6
Thailand	147.9	55.5	108.4	–15.9
United States	48.4	45.0	2.3	1.1
Region	74.4	57.8	32.7	–16.2
(c)1995–2000				
China	67.3	23.5	37.6	6.2
Hong Kong	16.4	45.8	–13.5	–15.9
Indonesia	36.7	25.3	8.2	3.2
Japan	7.9	31.8	–20.9	–3.0
Korea	30.9	29.2	2.6	–0.9
Malaysia	33.1	25.8	4.8	2.6
Philippines	119.9	32.3	94.5	–6.9
Singapore	17.9	24.1	–11.4	5.2
Taiwan	32.7	32.5	4.5	–4.4
Thailand	20.6	26.4	–7.6	1.8
United States	32.3	22.6	3.9	5.9
Region	27.5	28.4	–1.2	0.3

Table 14.5 Decomposition of export growth of the regional economies
(per cent) cont.

	Total	Demand	Competitiveness	Location
(d)2000–2003				
China	75.9	10.6	54.4	10.9
Hong Kong	10.8	36.4	–8.2	–17.4
Indonesia	–1.8	12.0	–18.7	5.0
Japan	–0.9	15.2	–18.4	2.3
Korea	12.2	18.5	–5.8	–0.5
Malaysia	7.0	10.3	–10.3	6.9
Philippines	–5.2	9.1	–21.4	7.1
Singapore	4.8	12.8	–13.2	5.1
Taiwan	10.8	20.3	–7.2	–2.2
Thailand	16.5	12.4	–1.4	5.5
United States	–6.3	19.4	–24.5	–1.2
Region	9.0	17.8	–9.4	0.6

Source: Authors' calculations.

so for the United States and Japan, whose export growth was determined by demand rather than competitiveness. This seems to suggest that the more developed the economy, the more likely it is to depend on demand rather than competitiveness to sustain export growth. In fact, for industrialised economies, the contribution of competitiveness to export growth was actually negative as they are losing international competitiveness over a wide spectrum of manufacturing products. In the case of China, the demand effect is important, but the competitiveness effect plays an overwhelming role in sustaining its rapid export growth.

Third, there is a dynamic feature in these three effects over the different periods. The demand effect in regional export growth continued to play an important role in enhancing export expansion in the region's economies over the sub-periods, although its contribution fell over time. The competitiveness effect is falling, presumably because of the strong influence of the industrial economies. Interestingly, the location effect has become more and more important in the regional economies over time, especially during 2000–2003. The next step is to look at how China contributes to the demand effect of regional trade.

China's impact on regional economies' trade expansion can be assessed by looking at China's contribution to the demand effect component of other economies' export expansion. Table 14.6 provides the results of this estimation. For comparison, the estimation also includes the contributions made by the two largest economies in the Asia Pacific region—the United States and Japan.

During the period 1990–2003, the proportion of the US contribution to the regional demand effect was 19.1 per cent, making it the largest contributor among the three, followed by China, which contributed 16.2 per cent. Japan's contribution is comparatively low at a mere 4.6 per cent, reflecting the sluggishness of the Japanese economy and Japan's declining role in leading regional economic growth since the early 1990s.

By looking at the results over different periods, it can be seen that China's contribution to the demand effect has been rising continuously. Before 2000, the US contribution led, but things began to change dramatically after 2000. In the period 2000–2003, China's role increased rapidly to 32.8 per cent, and the US role fell drastically from 33.2 per cent during 1995–2000 to about 5 per cent during 2000–2003. Japan's becomes inconsequential, a mere 0.4 per cent.

Except for the Philippines, to which China and the United States contribute roughly equal effects in raising the demand for export growth, China has had a more powerful role in the export growth of all other regional economies. Within the region, China's impact in raising NIEs' export growth was stronger than that of ASEAN. Among the NIEs, Hong Kong is the largest beneficiary from rising demand in China, followed by Taiwan and Korea. Compared with the previous period, 1995–2000, China's contributions to the demand effect of export growth of ASEAN increased substantially. China has now become an engine for driving export growth in the region's economies.

Industrial linkages between China and the regional economies through trade

To analyse the impact of China's final demand on regional economies' production, an index of international division of labour (IDL) is introduced. The index is defined as the ratio of each economy's value-added to the total value-added in the region by sector, generated by an extra unit of demand in that sector in China. The index can be constructed by using an input–output methodology, which allows us to calculate and assess China's impact on regional economies through trade at the industrial level (see Appendix 14B for details). The data required are from the *Asian International Input–Output Table 1995*, published by the Institute of Developing Economies.

The degrees of international division of labour between China and other regional economies as defined are shown in Table 14.7. For each sector, the figures across different economies (rows) sum to unity, indicating the extent to which an extra unit of demand from China is being distributed. In sector 1—agriculture, livestock, forestry and fishery—98 per cent of China's demand is met within China and

Table 14.6 China's contributions to the demand effect of export growth of the regional economies in comparison with the United States and Japan (per cent)

	China	United States	Japan
(a)1990—2003			
China		9.4	6.7
Hong Kong	64.5	14.4	1.4
Taiwan	15.3	37.1	5.4
Indonesia	18.4	17.0	22.7
Japan	10.1	34.3	0.0
Korea	0.0	10.1	37.6
Malaysia	11.2	20.6	7.7
Philippines	4.0	46.3	10.0
Singapore	7.2	23.1	3.9
Thailand	6.4	28.4	8.9
United States	7.4	0.0	7.0
Region	16.2	19.2	4.6
(b)1990—1995			
China	0.0	4.9	7.4
Hong Kong	48.5	15.7	3.3
Taiwan	7.4	26.4	8.2
Indonesia	8.3	11.2	31.8
Japan	5.2	25.8	0.0
Korea	0.0	27.0	15.3
Malaysia	4.6	12.4	9.7
Philippines	2.0	34.0	15.5
Singapore	3.0	14.0	5.0
Thailand	3.1	20.1	13.3
United States	4.0	0.0	11.8
Region	8.3	14.5	7.4
(c)1995—2000			
China	0.0	42.8	10.5
Hong Kong	51.1	28.8	1.7
Taiwan	25.7	45.3	4.6
Indonesia	10.6	33.3	13.9
Japan	10.9	52.4	0.0
Korea	16.8	38.5	5.8
Malaysia	7.0	48.9	6.3
Philippines	2.6	67.2	6.3
Singapore	6.8	45.9	4.2
Thailand	7.6	40.4	8.1
United States	6.3	0.0	6.3
Region	15.9	33.2	4.2

Table 14.6 China's contributions to the demand effect of export growth of the regional economies in comparison with the United States and Japan (per cent) cont.

	China	United States	Japan
(d)2000–2003			
China	0.0	10.7	1.5
Hong Kong	79.2	3.5	0.1
Taiwan	54.2	6.8	0.5
Indonesia	31.1	6.2	1.8
Japan	35.0	10.8	0.0
Korea	48.5	6.5	0.6
Malaysia	25.0	10.8	1.2
Philippines	16.0	17.9	1.5
Singapore	25.4	7.3	0.5
Thailand	27.5	9.4	1.1
United States	8.9	0.0	0.4
Region	32.9	5.0	0.4

Source: Authors' calculations.

about 2 per cent is divided among the other regional economies. Among these, the United States and Japan are benefiting more than the other economies in this sector.

Overall rankings are United States, Japan, Korea, Taiwan, Indonesia, Malaysia, Singapore, Thailand and Philippines, which suggests that increased demand in China benefited industrial economies more than the developing economies in the region. The international division of labour between China and the United States, Japan, South Korea and Taiwan is greater than that between China and all members in ASEAN except Indonesia. This difference in IDL indicates that China's trade dependence on the industrial economies and the NIEs within the region is higher than its dependence on the ASEAN economies.

For individual sectors, China's indices of IDL in transport equipment, machinery, chemicals, paper products, presswork and textiles are relatively low (approximately 90 per cent), suggesting that China's demand for those products is more heavily dependent on world markets. For example, China's demand for both machinery and transport equipment had to be met chiefly by Japan and to a lesser degree the United States in the mid 1990s; and Japan, the United States plus NIEs were relatively more important in providing other manufacturing goods to China.

In comparison, China's indices of IDL in sectors such as agriculture, food, energy and minerals are relatively high, suggesting China relied more on domestic supplies to meet demand at that time. The figures show that China relied relatively more on Malaysia to meet its demand for timber and Thailand to meet its demand for rubber.

In brief, the degree and pattern of international division of labour between China and other regional economies largely reflected underlying comparative advantage. In relation to other regional economies, China relied more on imports of capital-intensive products and on exports of labour-intensive products. This is consistent with the finding that China has been importing increasing amounts of capital-intensive products from other economies in the region.

For energy and mineral sources, the results presented here were obtained based on 1995 data, when China's energy and mineral sectors still had a relatively high degree of self-sufficiency. As China's economy and trade rapidly expand, however, it will depend more and more on foreign resources, including energy and raw materials, to meet domestic demand, as demonstrated by the surge of China's demand for these products in recent years.

Conclusion

This chapter has examined how China has played an important role in enhancing the export expansion of its trading partners, through increasing imports from the regional economies. We examined the sources of export growth of these economies and their international industrial linkages with China. The results show that China has played an increasingly important role in the rapid development of the Asia Pacific region since 1990. China replaced Japan as the engine of regional trade growth in the second half of the 1990s. Since 2000, China has surpassed the United States and become the most powerful engine in the region's trade expansion.

The emergence of China into the world market has resulted in significant competitive pressures on other East Asian economies, but it has at the same time offered enormous opportunities to other Asian and Pacific economies. To take these opportunities, it is important for both China and its regional trading partners to continue to adjust their industrial structures in response to intensifying competition in the regional economies. A closer trading relationship centering on China in the East Asian region is now taking shape. It is imperative for the regional economies to maintain an open trading regime as such a regime underscored the great achievements of the regional economies in the past decades. And there is no doubt that such a regime will continue to play an important role in securing the region's prosperity in the future.

Table 14.7 Indexes of international division of labour (IDL): China versus its trading partners

Sector	Indonesia	Malaysia	Philippines	Singapore	Thailand	China	Taiwan	Korea	Japan	United States
1	0.0010	0.0008	0.0001	0.0004	0.0005	0.9813	0.0009	0.0019	0.0051	0.0075
2	0.0011	0.0008	0.0001	0.0007	0.0004	0.9742	0.0015	0.0031	0.0131	0.0049
3	0.0023	0.0015	0.0002	0.0010	0.0011	0.9610	0.0023	0.0048	0.0187	0.0071
4	0.0013	0.0023	0.0002	0.0008	0.0035	0.9568	0.0008	0.0027	0.0089	0.0218
5	0.0017	0.0019	0.0002	0.0007	0.0017	0.9187	0.0058	0.0206	0.0302	0.0185
6	0.0155	0.0128	0.0003	0.0013	0.0011	0.9342	0.0030	0.0067	0.0163	0.0087
7	0.0090	0.0016	0.0002	0.0014	0.0011	0.9026	0.0056	0.0173	0.0275	0.0337
8	0.0031	0.0038	0.0008	0.0019	0.0014	0.9174	0.0063	0.0143	0.0307	0.0202
9	0.0217	0.0034	0.0001	0.0040	0.0004	0.9508	0.0012	0.0047	0.0094	0.0042
10	0.0063	0.0038	0.0004	0.0014	0.0171	0.9198	0.0048	0.0114	0.0242	0.0108
11	0.0030	0.0013	0.0002	0.0011	0.0007	0.9609	0.0026	0.0055	0.0164	0.0083
12	0.0030	0.0014	0.0005	0.0014	0.0006	0.9396	0.0059	0.0077	0.0282	0.0117
13	0.0020	0.0026	0.0003	0.0011	0.0006	0.9022	0.0013	0.0108	0.0604	0.0176
14	0.0021	0.0023	0.0003	0.0016	0.0013	0.8954	0.0070	0.0095	0.0608	0.0170
15	0.0023	0.0018	0.0003	0.0025	0.0009	0.9199	0.0049	0.0134	0.0359	0.0182
Total	0.0036	0.0022	0.0003	0.0018	0.0016	0.9403	0.0038	0.0085	0.0246	0.0134

Note: Figures are as defined in the text; See Appendix B for the list of these sectors.

Source: Authors' calculation using data from the *Asian International Input-Output Table*, Institute of Developing Economies, 1995.

Acknowledgments

The authors would like to thank Shi Binzhan for his valuable help with processing the data and Zhang Bowei for his input in carrying out the CGE modeling work.

Notes

- ¹ See the recent trade disputes between China and the European Union over imports of textile/clothing into the EU markets.

References

- Garnaut, R. and Song, L., (forthcoming). 'Truncated globalisation: the fate of the Asia Pacific economies?', in H. Soesastro and C. Findlay (eds), *Reshaping the Asia Pacific Economic Order*, Routledge, London.
- Institute of Developing Economies (IDE), 2001. *Asian International Input-Output Table 1995*, IDE Statistical Data Series 82, Tokyo.
- Lall, S., and Albaladejo, M., 2002. 'The competitive impact of China on manufactured exports by emerging economies of Asia', in C.A. Magarinos, Y. Tu and F.C. Sercovich (eds), *China in the WTO: the birth of a catching-up strategy*, Palgrave Macmillan, Houndmills:76–110.
- , 2004. 'China's competitive performance: a threat to East Asia manufactured exports?', *World Development*, 32(9):1441–66.
- Li, K. and Xue, J. 1998. 'Regional trade growth among APEC: an empirical analysis' (APEC qu yu nei mao yi zeng zhang de yin su fen xi), *World Economy*, 1:43–50.
- McKinnon, R.I., 1973. *Money and Capital in Economic Development*, The Brookings Institute, Washington, DC.
- Sano, T. and Chihatsu T., 1993. *International Industrial Linkages and Economic Interdependency in Asia-Pacific Region*, Institute of Developing Economies, Tokyo.
- Shafaeddin, S. M., 2004. 'Is China's accession to WTO threatening exports of developing countries?', *China Economic Review*, 15(2):109–44.
- Song, L., 1996. 'Institutional change, trade composition and export supply potential in China', in M.Guitian and R. Mundell (eds), *Inflation and Growth in China*, International Monetary Fund, Washington, DC:190–225.
- and Song, S., 2003. 'A changing role in world trade', in R. Garnaut and L. Song (eds), *China: New Engine of World Growth*, Asia Pacific Press, Canberra:151–75.

- Song, L., 2004. 'The export competitiveness of ASEAN, China and the East Asia NIEs, 1987–2000', proceedings of Rising China and the East Asian Economy conference, The Korea Institute for International Economic Policy, Seoul, 19–20 March.
- Weiss, J., 2004. *People's Republic of China and its neighbours: partners or competitors for trade and investment?*, ADB Institute Discussion Paper 12, Asian Development Bank Institute, Tokyo.
- Xu, X. and Song, L., 2000. 'Export similarity and the pattern of East Asia development', in P. Lloyd and X. Zhang (eds), *China in the Global Economy*, Edward Elgar, Cheltenham:154–64.
- Xue, J. and Zhang B., 2004. 'Free trade agreements in East Asia: a simulation analysis using the computable general equilibrium modeling techniques', *World Economy*, 6:51–59.

Appendix 14A Decomposition of export growth

Let $X=(x_{ij})$ be the trade matrix among the economies in the region, where x_{ij} denotes the trade flow from economy i to economy j .

The sum by row is total exports (X_i) and the sum by column is total imports (M_j) of the economy j as follows

$$\sum_j x_{ij} = X_i \quad (14A.1)$$

$$\sum_i x_{ij} = M_j \quad (14A.2)$$

Changes in total imports of economy j between time t and 0 will be expressed as

$$b_j = \frac{M_j^t}{M_j^0} \quad (14A.3)$$

which reflects the changes in domestic demand for imports.

Changes in economy i 's position in the world market are reflected in the changes in relative competitiveness of the economy, which can be measured by the change in the share of exports of economy i in the world trade (X_w) as

$$a_i = \frac{s_i^t}{s_i^0} = \frac{X_i^t / X_w^t}{X_i^0 / X_w^0} \quad (14A.4)$$

Assuming that the improvement of economy i 's competitiveness prevails in all the markets at the same rate, economy i 's exports to economy j expand at the same rate as the growth rate of economy i 's total exports. However, the realised export at time t might differ from this assumed level due to such factors as geographical proximity and special trade arrangements between trading economies. The unexplained residual, referred to as the location effect, can be formulated as follows

$$g_{ij} = \frac{x_{ij}^t}{\bar{x}_{ij}^t} = \frac{x_{ij}^t}{a_i b_j x_{ij}^0} \quad (14A.5)$$

Rearranging the above formula, Equation 14A.5 can be expressed as

$$x_{ij}^t = a_i b_j g_{ij} x_{ij}^0 \quad (14A.6)$$

Thus, changes in economy i 's exports between time t and 0 can be decomposed into the following three components

$$\begin{aligned}\Delta X_i &= X_i^t - X_i^0 = \sum_j x_{ij}^t - \sum_j x_{ij}^0 = \sum_j \mathbf{a}_i \mathbf{b}_j \mathbf{g}_{ij} x_{ij}^0 - \sum_j x_{ij}^0 \\ &= \sum_j (\mathbf{b}_j - 1) x_{ij}^0 + \sum_j (\mathbf{a}_i - 1) \mathbf{b}_j x_{ij}^0 + \sum_j \mathbf{a}_i \mathbf{b}_j (\mathbf{g}_{ij} - 1) x_{ij}^0\end{aligned}\quad (14A.7)$$

The first component of the right-hand side of Equation 14A.7 is the demand effect, the second one is the competitiveness effect, and the third one is the location effect.

Appendix 14B: The calculation formula on impacts of final demand on regional value added

The intermediate transaction segments, given in the *Asian International Input–Output Table 1995*, include ten economies, namely Indonesia, Malaysia, the Philippines, Singapore, Thailand, China, Taiwan, Korea, Japan and the United States. Let $B = (b_{ij}^{ab})$ denote the 'Inverse Matrix', known as the 'Leontief Inverse', where

- $\mathbf{a}$ denotes a supplying economy ($\mathbf{a}$ represents the 10 economies)
- $\mathbf{b}$ denotes a demanding economy ($\mathbf{b}$ represents the 10 economies)
- i denotes the i -th industry of economy $\mathbf{a}$ (1££n)
- j denotes the j -th industry of economy $\mathbf{b}$ (1££n)
- n is the number of industries

Thus B is the matrix with the size of $10n \times 10n$. Herein, the $10n$ dimensional vector V is defined as follows

$$V = [V_1^I, \dots, V_n^I, \dots, V_1^U, \dots, V_n^U] \quad (14B.1)$$

where V_j^E is defined as the ratio of value added to gross inputs in industry j of economy E .

The ratio of international division of labour by economy E , when one unit of demand for industry j of China is created, can be defined as follows

$$IDL_j^E = \frac{\sum_i V_i^E b_{ij}^{EC}}{\sum_E \sum_i V_i^E b_{ij}^{EC}} \quad (14B.2)$$

where $\sum_E$, $\sum_i$ are summations over 10 economies and all the industries respectively (Table 14B.1).

Appendix table B14.1 **Listed industries by sectors**

Number	Sector
1	Agriculture, livestock, forestry and fishery
2	Crude petroleum and natural gas
3	Other mining
4	Food, beverage and tobacco
5	Textile, leather, and the products thereof
6	Timber and wooden products
7	Pulp, paper and printing
8	Chemical products
9	Petroleum and petro products
10	Rubber products
11	Non-metallic mineral products
12	Metal products
13	Machinery
14	Transport equipment
15	Other manufacturing products

Source: Authors' calculations.

Appendix table C14.1 The trade matrix of the regional economies (US\$ million)

	China	Hong Kong	Taiwan	Indonesia	Japan	Korea	Malaysia	Philippines	Singapore	Thailand	US	ROW	Total
1990													
China		27163	320	400	9210	433	370	205	2016	854	5314	16474	62760
Hong Kong	20331		3462	754	4680	1907	578	862	2615	1076	19817	26060	82144
Taiwan	2254	7456		1346	8509	1452	1627	854	2711	1728	23917	14661	66515
Indonesia	834	618	849		10923	1363	253	161	1902	188	3365	5218	25675
Japan	6145	13106	15461	5052		17499	5529	2510	10739	9150	91121	111366	287678
Korea	0	3780	1249	1079	12638		708	500	1805	968	19419	25665	67812
Malaysia	619	934	639	342	4505	1359		394	6753	1033	4986	7856	29420
Philippines	62	331	209	61	1622	229	127		240	156	3104	2054	8194
Singapore	799	3429	1900	1283	4616	1173	6873	671		3490	11215	18587	52753
Thailand	269	1038	335	154	3969	394	575	167	1696		5240	9234	23072
United States	4807	6841	11560	1897	48585	14399	3425	2471	8019	2991	0	288111	393106
Rest of world	17689	17788	17769	9635	126047	34196	9104	4196	22460	11772	329521	1816419	2417881
Total	53809	82482	53753	22005	235307	74405	29169	12993	60954	33407	517020	2341705	
1995													
China		36003	3095	1438	28466	6688	1281	1030	3410	1752	24744	40957	148955
Hong Kong	57861		4619	1062	10596	2803	1546	2009	4944	1615	37851	48648	173556
Taiwan	14785	16710		1550	14329	2560	3952	1534	5116	3421	30158	30093	124208
Indonesia	1742	1657	1650		12288	2917	987	590	3767	703	6322	12806	45428
Japan	21934	27780	28984	9969		31292	16802	7100	23006	19719	122034	134428	443047
Korea	9144	10682	3887	2958	17048		2951	1493	6689	2427	24344	49688	131312
Malaysia	1889	3941	2280	970	9199	2015		651	14960	2868	15313	19638	73724
Philippines	209	822	568	126	2740	442	314		994	799	6217	4139	17371
Singapore	2759	10126	4813	2367	9219	3243	22665	1928		6823	21576	35035	118187
Thailand	1642	2921	1354	811	9476	801	1554	414	7917		10078	20231	57201
United States	11749	14220	17925	3395	64298	25413	8818	5294	15318	6402		410618	583451
Rest of world	8450	67901	25801	15982	158367	56935	16750	6238	38183	27161	472335	2325240	3221711
Total	132163	192765	94976	40629	336027	135110	77620	28282	124394	73692	770972	3131521	

Appendix table C14.1 The trade matrix of the regional economies (US\$ million) cont.

	China	Hong Kong	Taiwan	Indonesia	Japan	Korea	Malaysia	Philippines	Singapore	Thailand	US	ROW	Total
2000													
China		44520	5040	3062	41654	11292	2565	1464	5761	2243	52161	79431	249195
Hong Kong	69744		5112	950	11195	3827	1806	2011	4717	1837	47084	53707	201990
Taiwan	21669	15975		1270	17891	4701	4611	2255	5965	2895	41907	45661	164800
Indonesia	2768	1554	2378		14415	4318	1972	819	6562	1026	8489	17800	62102
Japan	30356	27187	35977	7607		30703	13886	10257	20830	13634	144009	143736	478179
Korea	18454	10708	8027	3505	20466		3515	3360	5648	2015	37806	58321	171826
Malaysia	3028	4440	3729	1707	12780	3235		1727	18050	3550	20162	25744	98152
Philippines	663	1907	2861	183	5609	1173	1377		3124	1206	11405	8693	38203
Singapore	5377	10841	8225	3788	10404	4916	25041	3387		5872	23891	39977	137932
Thailand	2806	3474	2415	1338	10164	1265	2813	1082	5997	6538	14706	22902	68961
United States	15964	14567	23833	2479	64537	27337	10829	8677	17497			579731	771991
Rest of world	54112	78145	30633	7623	170414	67712	13779	-549	40478	21106	836579	2828026	4148058
Total	224942	213319	128230	33511	379530	160479	82195	34489	134630	61923	1238200	3903731	
2003													
China		76288	9005	4482	59422	20096	6141	3094	8868	3828	92633	154390	438250
Hong Kong	95477		5436	1001	12088	4570	1981	2227	4589	2304	41780	52420	223874
Taiwan	49362	16134		877	14264	5880	4131	1861	6470	3229	33018	47414	182640
Indonesia	3802	1183	2233		13603	4323	2364	945	5399	1392	7386	18362	60995
Japan	57480	29918	31320	7179		34823	11250	9011	14858	16043	117384	144644	473911
Korea	35110	14654	7045	3378	17276		3852	2975	4636	2524	34369	66931	192750
Malaysia	6810	6784	3777	2129	11222	3039		1437	16522	4615	20539	28090	104966
Philippines	2145	3094	2492	296	5768	1313	2462		2431	1234	7274	7714	36224
Singapore	10134	14423	6897	4155	9696	6058	22793	3236		6156	20570	44157	144121
Thailand	5707	4331	2613	2275	11403	1588	3887	1622	5873		13669	27361	80329
United States	28418	13542	17488	2521	52064	24098	10920	7992	16576	5841		544149	723611
Rest of world	118390	52194	32894	4251	176219	73033	12944	3099	41772.26	28636	916626	3651303	5111362
Total	412836	232545	121200	32544	383025	178824	82726	37499	127996	75804	1305250	4786939	

Note: The row denotes exports of a specific economy, and the column denotes imports of a specific economy.

Source: The International Monetary Fund (IMF), (Various issues), *Direction of Trade Statistics Yearbook*, The International Monetary Fund, Washington, DC.