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1996

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No. 35 (7/96) CAPS

**EXPORT COMPETITIVENESS OF CHINA
AND ASEAN IN THE US MARKET**

by

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Hong Kong
1996**

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Export Competitiveness of China and ASEAN in the US Market

Introduction

China and ASEAN (Association of South East Asian Nations)¹ have been experiencing dynamic economic growth over the last two decades or so. The dynamic growth of these economies are attributed, *inter alia*, to their successful reforms, industrial restructuring and export-led industrialisations. Aside from sharing similar rates of growth, there are some other common features between China and the ASEAN countries. For example, in their initial stages of growth, China and ASEAN were predominantly specialising in the production of primary-based and labour-intensive commodities (eg. crude minerals, textiles, clothing and electrical goods), as in contrast to the NIE's and Japan's production of largely capital- and technology-intensive products.² Another similarity is that both China and the ASEAN countries are heavily dependent on the United States (US) and Japan as important destinations of their exports. By exporting similar products (eg. labour-intensive goods) to the same markets, these economies tend to face a high degree of export competition or rivalry among themselves.

¹ The ASEAN economic grouping comprises Singapore, Malaysia, Thailand, Indonesia, Philippines, Vietnam and Brunei.

² Japan and the Newly Industrialising Economies (NIEs) have staged a massive relocation of their labour-intensive operations to ASEAN and then to China in the form of foreign direct investments (FDIs) over the last decade.

This paper aims to provide a comparison of the changing pattern of export competitiveness among China and the four ASEAN countries comprising Indonesia, Malaysia, Singapore and Thailand (hereafter ASEAN-4) as exporters of primary commodities, labour-intensive goods as well as technology-intensive manufactures in the US market. Competitiveness is defined as country A's ability to gain market share on a common export destination (such as the US import market).³ There are many possible factors contributing to the changing level of competitiveness of a trading country. In this paper, we confine our analysis to evaluating how important relative changes in real exchange rate, product composition, industry structure and growth rates are in influencing export competitiveness of China and ASEAN-4 in the US import market. The degree of export rivalry among China and ASEAN-4 is examined by using a shift-share model (see for example, Herschede 1991). In particular, the model assesses the effects of different industry structures and growth rates on the export performance of China and each of the four ASEAN countries in the US market.

This paper is organised as follows. In the next section, the changing patterns of China's and ASEAN-4's primary and manufactured exports to the US are analysed. The shift-share methodology is presented in the following section for assessing and comparing the differences in competitiveness among China and the ASEAN countries in the US market. The empirical results and implications of the analysis are then presented.

³ Competition, however, measures the intensity with which countries compete for market share of similar goods on a common import market. A more intense competition is often experienced among similar (homogeneous) than dissimilar (heterogeneous) products. Hence, there is little competition to be expected between China and Singapore, for example, if these two economies export very different products to the US. This happens if China and Singapore grow in specialisation in their exports of more labour-intensive manufactures and less labour-intensive manufactures, respectively, to the US.

Exports of China and ASEAN-4 to the US

In this paper, total exports of China and ASEAN-4 to the US are segregated into 4 major product groups: (i) agricultural products (AP), which include food, livestock and beverages (SITC codes 0-2), (ii) primary products (PP), comprising minerals, crude materials, fuels and oils (SITC codes 3-4), (iii) relatively more labour-intensive manufactures (MLIM) (SITC codes 6 and 8) and (iv) relatively less labour-intensive manufactures (LLIM) (SITC codes 5, 7 and 9)⁴. Following Garnaut and Anderson (1980), LLIM includes textile, yarn and fabrics (under SITC 65), glass (SITC 664-666), clothing (SITC 84), footwear (SITC 85), travel goods and handbags (SITC 83), toys and sporting goods (SITC 894), plastic (SITC 893), office supplies (SITC 895), furniture (SITC 82), plumbing, heating and lighting equipments (SITC 81), and other manufactured goods (SITC 899). Notice that most of the LLIM are categorised under SITC single-digit codes 6 and 8. Goods that are grouped under single-digit SITC codes 5, 7 and 9 are considered to be more capital or technology intensive than those grouped under SITC codes 6 and 8 (Tyers, Phillips and Findlay 1987).

⁴ Of the total exports, manufactures constituted more than 80% of China's and ASEAN-4's exports to the US in 1994. In this paper, the manufactured goods were grouped into MLIM and LLIM according to the single-digit Standard International Trade Classification (SITC). Of the manufactured products, textiles and clothing are a major category, accounting for around half of total manufactured exports in China and ASEAN-4 (especially Indonesia and Thailand).

(a) Export Growth Rates and Market Shares

Table 1 shows China's and ASEAN-4's growth rates of AP, PP, MLIM and LLIM exports to the US during the period 1980-1994. The growth rates of manufactures are observed to be very high in China and in each of the ASEAN-4 countries over the period. In contrast, the growth rates of agricultural and primary products are very low (less than 10 per cent per year in most countries). Of the manufactured products, the growth rate of LLIM appeared to have slowed down faster than the growth rate of MLIM over the last decade in China, Thailand and Singapore, implying that LLIM grew to be less important than MLIM over the period. However, the growth of LLIM, but not MLIM, seems to have gained momentum in Malaysia and Indonesia. Overall, we observe that ASEAN-4's exports of manufactured goods to the US were rising in absolute value despite the entry of China since 1979. This may possibly be attributed to the accelerated growth of US MLIM imports coupled with the decreases in exports of manufactured products by Japan and by other developed countries to the US.

Table 1, however, does not seem to be useful for detecting the phenomenon of competition among China and the ASEAN countries. The degree of competition may be better indicated by the dynamic changes in export shares of China and ASEAN-4 in the US (or any other common buyers) market (see Tables 2 and 3). Table 2 shows that among China and ASEAN-4, Indonesia dominated the market shares of AP and PP in the US market. The AP and PP shares of China and each of the ASEAN countries did not appear to have changed significantly over the period 1980-1994. In contrast to AP and PP, China and Singapore registered the highest shares of MLIM and LLIM,

respectively, in the US market over the same period. China's share of MLIMs was rising very substantially over the period at the expense of all the other ASEAN-4 competitors. This may be because labour costs in China are substantially lower than those in ASEAN-4 (except perhaps Indonesia), which give a competitive edge to the former, particularly in the production of MLIM.

In the case of LLIM, China's share was also increasing compared to ASEAN-4's (see Table 3). It is of interest to note that Indonesian, Malaysian and Thailand's share appeared to have increased slightly in recent years notwithstanding the rising Chinese share. Unlike the MLIM, these competing countries were not substantially affected by the entry of China in their exports of LLIM to the US. Indonesia, Malaysia and Thailand have maintained their export competitiveness (by not losing their market share to China) in the US market over the period 1989-1994. There are indications in more recent years that the relatively high labour costs in ASEAN-4 were being neutralised by productivity increases through education and technological innovations.⁵ The main loser in the competition for LLIM in the US market, as shown in Table 3, is Singapore.

(b) Movements in Real Exchange Rates and Product Composition

The competitiveness of China over ASEAN-4 in exports of manufactured goods to the US may be attributed, *inter alia*, to the persistently favourable changes in real exchange

⁵ Labour cost represents only a fraction of the total costs of production in most manufacturing activities (Kueh and Voon 1995). Non-wage components may be more important as determinants of competitive advantage, particularly in the production of LLIM. It is likely for China to specialise in unskilled production of LLIM, while ASEAN-4 will focus on the more skill-intensive processes. Over time, this would tend to reduce the force of rivalry between China and ASEAN-4.

rates of China vis-a-vis ASEAN-4 (see Table 4)⁶. All the ASEAN-4 countries except Singapore registered positive changes in average real exchange rates over the period. The reported changes in real exchange rates seem to explain partly why China was rising in competitiveness over ASEAN-4 and why Singapore was losing in competition to the other ASEAN competitors.

Export competitiveness of China and ASEAN-4 is hypothesised to be influenced by their changing product composition ratios ($PCR = LLIM/MLIM$). An increasing PCR implies a rise in the production of LLIM faster than a rise in the production of MLIM. This might be achieved, for instance, by improvements in physical and human capital-intensiveness of production, technology, and industry structure, which are in turn dependent on the stage of economic development of a competing country. Table 4 reveals that Singapore and Malaysia have much higher average PCR values than China, Indonesia and Thailand over the period 1980-1994. PCRs were rising markedly in Singapore and Malaysia but less substantially in China and Thailand.

Admittedly, as in the case of Singapore, which is a relatively capital-intensive producer, a rise in PCR could cause a fall in its export share in the US market. This could happen if Singaporean LLIM became increasingly similar in characteristics to US LLIM such that Singaporean exports to the US might increasingly be substituted by US domestic production, which is predominantly capital intensive. This led to a substantial decline in

⁶ The rate of change in real exchange rate (RE) is calculated using the relation $RE = E + P_f - P_d$ where E denotes percentage change in exchange rate, and P_f and P_d are, respectively, foreign and domestic inflation rates. Notice that if the domestic inflation rate relative to the foreign inflation rate is very high, the rate of change in real exchange rate can be negative, implying a decline in export competitiveness.

Singapore's export share in the US market (see Table 3). Hence, in terms of product likeness, Singapore seemed to compete with the US rather than with China and all other ASEAN-4 countries, and Malaysia seemed to be competing with Singapore in LLIM. China, Indonesia and Thailand were likely to be competing among themselves in MLIM exports to the US.

In what follows, we examine, among other things, how the differences in export performance among China and the ASEAN-4 countries in the US market might be explained by their differences in industry structures and growth rates.

The Shift-Share Technique

Shift-share analysis can be used to measure, for instance, how competitive China and the ASEAN-4 countries was in increasing their exports to the US (i.e. the actual change in export) compared to the effectiveness of the reference economy as a whole (i.e. the combined exports of China, Indonesia, Malaysia, Singapore, and Thailand). The effectiveness of the reference economy's exports is designated as the share effect (SE). The differences between competitor j 's actual exports (AC) and the reference economy's exports (SE) accrue to the differences in industry structure (production composition or industry mix), growth rates (the competitive effect) and interaction (interdependence) between the two variables. These may be elaborated as follows.

The modified version of the Esteban-Marquillas shift-share model is set out as follows. Let X_{oj} be the total exports to the US from competitor j ($j=1-5$), P_{ij} be the proportion of total exports to the US from competitor j accounted for by exports in industry category i ($i=1-4$) of competitor j , G_{ij} be growth rate of exports from industry category i in the competing country j from 1990 to 1994, P_{ir} be proportion of total exports to the US from the reference economy (combined exports of China and ASEAN-4) accounted for by exports in industry i of the reference economy, and G_{ir} be growth rate of exports to the US from industry category i of the reference economy for the period 1990 - 1994.

The shift-share technique expresses the various relevant effects as follows:

Share Effect: $SE = X_{oj}P_{ir}G_{ir}$

Industry Structure Effect: $ISE = X_{oj}(P_{ij}-P_{ir})G_{ir}$

Competitive Effect: $CE = X_{oj}P_{ir}(G_{ij}-G_{ir})$

Interactive Effect: $IE = X_{oj}(P_{ij}-P_{ir})(G_{ij}-G_{ir})$.

The actual exports of country j (AC) less the share effect (SE) equals (ISE + CE + IE).

In this paper, several adjustments to the previous mode of analysis are made. First, we do not provide a comparison of changes in competitiveness and industry structure between China and ASEAN as a region (as in Herschede 1991), but between China and each of the ASEAN-4 countries, and among the ASEAN-4 countries. A comparison of China with the ASEAN economy as a whole might not be reasonable because ASEAN is by no means a homogeneous grouping. For instance, Singapore and Indonesia are very

different in terms of size, per capita GDP and industry structure (eg. Singapore is more capital intensive in production than Indonesia). Second, we focus our analysis on the US rather than on the Japanese import market, as in contrast to Herschede (1991). The US has now overtaken Japan as the most important export market for ASEAN (see Ariff 1994 a and b). Third, it is of interest to update recent trends and changes in competitiveness and industry structure between China and ASEAN-4 by using recent data in our analysis. The intensity of ASEAN-4's export competition with China and with one another could have changed quite significantly in recent years as a result of a faster rate of growth in LLIM in ASEAN-4 than in China (see Table 4). Fourth, instead of examining each SITC product codes 0 to 9 (as in the previous studies), we segregate the total exports from China and ASEAN-4 to the US into 4 categories. Using such product grouping, we can examine, for instance, whether ASEAN-4 has grown to be more important and/or competitive than China in the production of more capital-intensive manufactured goods, as is commonly believed. This is of interest because as ASEAN-4 grew over time to be more competitive in production of LLIM (as each region specialises increasingly in different products) vis-a-vis China, export competition between China and ASEAN-4 would tend to be less intense than otherwise. Fifth, the analysis is extended to two different sub-periods (1982-1986 and 1990-1994). This enables us to compare the export performance among the competing economies as industry structure and competitiveness changed over time. Sixth, by analysing exports of ASEAN-4 and China to the US, we can compare our findings with those reported by Herschede (1991) whose analysis had concentrated on the Japanese import market. It is also of interest to compare China/ASEAN-4's rivalry in the US with the Japanese import markets.

The Data and Empirical Results

Single-digit SITC trade data on US imports from the ASEAN-4 countries were obtained from the US Foreign Trade Highlights (1984, 1986 and 1994 volumes) available at the US consular office in Hong Kong. The exchange rate data were collected from the International Marketing Statistics published by Euromonitor and Statistical Year Book for Asia and the Pacific, United Nations. Consumer price index data for computing the percentage changes in real exchange rates for China and ASEAN-4 were taken from the World Trade Tables (1995) published by the International Bank for Reconstruction and Development. The data on bilateral trade flows between China and ASEAN-4 (which will be presented in latter sections) were extracted from the individual ASEAN-4 countries' trade statistical tables (1978-1994) available at the Institute of Southeast Asian studies in Singapore.

For each of the four industry classifications (AP, PP, MLIM and LLIM), we first calculated country j 's increase in actual exports of category i to the US. These are tabulated in column 2 of Tables 5 and 6. Table 5 corresponds to the period 1982-1986 and Table 6 to the period 1990-1994. We then quantify country j 's share effect (see column 3 of Tables 5 and 6), which is interpreted as the change in category i 's exports that would have been experienced if these exports had grown at the same rate and represented the same percentage of total exports as this category's exports did in the reference economy. Any difference between actual change in exports (AC) and the share effect (SE) (see column 4) accrues to three possible sources: the industry structure (or

production mix) effect (column 5), the competitive effect (column 6), and the interaction effect (column 7). The industry structure effect considers how much of the difference in AC and SE is due to a difference in the importance of industry mix in competitor j's structure compared to its importance in the combined economy's structure. The competitive effect measures the amount of the difference that is due to difference in growth rates and efficiency of each industry category. The interaction effect measures the residual attributing to positive or negative impact resulting from the interdependence between structure and export growth rate. In interpreting the results, we restrict our following discussion initially to the most recent period 1990-1994. The reported findings for this period will then be compared to those for 1982-1986.

The share effect measures the changes in exports if competitor j's structure and efficiency were identical to that of the combined economy. A positive (negative) difference between competitor j's actual change in exports and the share effect (the change in exports if competitor j bears the same characteristics as the reference economy) denote more (less) exports than what the reference economy would have produced. A positive difference is attributed to a more superior structure and growth rate in country j than in the reference economy. Table 5 (column 4) shows that China and Malaysia, on average, performed better than Indonesia, Singapore and Thailand in the US market. However, China performed better than all the other ASEAN-4 countries. We also observe that China performed much better than Malaysia in MLIM but much worse in LLIM. Singapore was the worst performer among the competitors in the US market.

The industry structure effect (ISE) measures the difference in industry structure of the competing country and the reference economy. A favourable composition or structure results when the competitor j's percentage of exports in fast growing industries is greater than that of the reference economy, or when the competing country's percentage of exports in slow growing industries is lower than that of the reference economy. Table 5 shows that China and Singapore exhibited, on average, positive mix or favourable structure. Of all the competing countries, Indonesia exhibits the biggest structural disadvantage whereas Malaysia and Thailand experienced very marginal disadvantage. China has a structural advantage in MLIM and both Singapore and Malaysia in LLIM. The results are consistent with Table 3 which shows that a large share of Chinese exports in 1990s was in MLIM and large shares of Malaysia and Singapore exports to the US are in LLIM, all of which were considered to be relatively fast growing, having percentages of exports exceeding the average of the reference economy. By contrast, China had a structural disadvantage in LLIM whereas Malaysia and Singapore in MLIM. This is because the share of the fast-growing LLIM industry in China and the share of the fast-growing MLIM industries in Singapore and Malaysia vis-a-vis the other industries in the US market are smaller than the average share of the reference economy. Indonesia appears to be dominated by relatively fast growing industries (see Table 1) but the percentages of exports in these industries were lower than those in the reference economy.

The competitive effect measures by how much growth rates of industries in competing country j are faster or slower than those in the reference economy. A positive (negative) number denotes a competitive advantage (disadvantage). Table 8 shows that China,

Malaysia and Indonesia were at a competing advantage, implying that the growth rate of each country's aggregate exports to the US was higher than that of the reference economy. China was more competitive than all the ASEAN-4 economies except Indonesia. Notice that Indonesia exhibited an extremely strong growth in LLIM over the period 1990-1994 (see also Table 1), hence rendering its total growth rate extraordinary. Singapore registered a huge competitive disadvantage over the period, implying that its export growth to the US was lagging behind that of the reference economy. It is of interest that ASEAN-4 as a regional economy experienced a competitive advantage⁷. This is in contrast to earlier results by Herschede (1991) which showed that ASEAN was at a competitive disadvantage vis-a-vis China, albeit on the Japanese import market.

A competing country will exhibit a positive interaction effect in an industry if it has a positive industry structure/composition effect and a positive competitive effect, hence emphasising an industry in which it does relatively well, or it has both negative industry mix and competitive effects, which in this case, de-emphasises an industry in which it does relatively poorly. A negative interaction effect is caused by a structural advantage (disadvantage) coupled with a competitive disadvantage (advantage). We observe that China had rightly emphasised on MLIM whereas Malaysia on LLIM, in which each competitor did relatively well. Table 5 also shows that Singapore and Malaysia appeared to have done the right thing by not emphasising on MLIM in which they did relatively

⁷ If Singapore was excluded from the ASEAN configuration on the ground of its advanced stage of economic development, the combined growth rate of ASEAN-4's exports to the US would be significantly stronger. This is because Singapore showed a huge competitive disadvantage, hence including Singapore in the ASEAN configuration rendered the entire ASEAN region very uncompetitive as far as export to the US market is concerned.

poorly. Overall, there has been quite a balanced distribution of positive-negative and negative-positive relationships between structural and competitive effects in which a structural advantage was neutralised by a competitive disadvantage, or *vice versa*.

The above findings corresponding to the period 1990-1994. We also aim to evaluate in this paper how industry structure and competitiveness of country *j* changed over time (from the 1982-1986 period to the 1990-1994 period). A comparison of the differences between actual exports and share effects for the two periods indicates that China, Indonesia and Malaysia improved, but Singapore and Thailand deteriorated, over time, in their overall export performance in the US market. China appeared to improve in performance substantially faster than Malaysia and Indonesia whereas Singapore deteriorated in performance faster than Thailand in the US market. In terms of the individual industry grouping, MLIM industries in China and Indonesia improved (but LLIM got worse) in performance through time. By contrast, the MLIM industry in Malaysia got worse but the LLIM one improved quite substantially in performance through time. The industry performance of both MLIM and LLIM in Singapore and Thailand got worse from 1982 to 1994.

Overall, the industry structure improved in China and Indonesia as their percentage shares of exports in relatively fast-growing industries grew larger in size relative to that of the reference economy. On the contrary, the industry got worse overall in Malaysia, Singapore and Thailand. At the individual industry level, there were improvements in structure of MLIM in China and Indonesia, but deteriorations in structure of MLIM in Malaysia, Singapore and Thailand. In contrast, there were structural improvements in

LLIM in Malaysia and Singapore, but structural deterioration in LLIM in China and Indonesia from 1982 to 1994.

The competitiveness factor associated with the industry growth rate improved through time in China, Indonesia and Malaysia but got worse in Singapore and Thailand. At the disaggregated industry level, China had registered a substantial improvement in both MLIM and LLIM. Singapore's competitiveness fell dramatically in all the industry categories from 1982 to 1994. Indonesia, Malaysia and Thailand improved in competitive advantage in LLIM but deteriorated in MLIM.

In general, we observed that China performed better than the other ASEAN-4 countries in the US import market. This suggests that ASEAN-4 might have been hurt to some extent by the entry of China in their competition for market share on the huge US import market. The competition was hurting Singapore much more than all the other ASEAN-4 countries.

By comparing across the ASEAN-4 countries over the recent period, Malaysia's performance was seen to be better than the other ASEAN countries in the US market. Indonesia appeared to be lagging behind Thailand in the general export performance. It can be observed over recent years that ASEAN-4 was growing to be more important in the production of LLIM but not in the exports of MLIM to the US. In contrast, China was observed to be less important than ASEAN-4 in the export of LLIM: China possessed both structural and competitive advantages in MLIM production. The combined effect of these was a rise in the level of product heterogeneity of exports

between China and ASEAN-4 in the US market. Such a rise in product heterogeneity would tend to reduce the intensity of competition, hence lowering the level of rivalry between China and ASEAN-4. However, the level of competition among ASEAN-4 might not have been lowered as the regional economies grew in likeness of exports in the US market. In fact, there could be a rise in competition of ASEAN-4's exports with US domestic production of LLIM as production in ASEAN-4 became increasingly capital intensive.

In interpreting the results arising from the shift-share analysis, some caveats must be exercised. Shift-share analysis attributes the difference between actual exports and share effect to industry structure, competitive and interactive effects. However, it does not delineate the actual sources of changes in structure or in growth rate (the competitiveness factor). On the one hand, structural changes may be caused by changes in government policies or changes in trade barriers of the importing country, etc. On the other hand, changes in growth rates may be caused by economic restructuring, changes in productivity, infrastructural efficiency, real exchange rate movement, product quality, and so on. Shift-share analysis cannot be used to identify the actual causes of changes in structure and growth rates. Nevertheless, it provides a general but systematic description of the nature of the differences, which is very helpful.

Concluding Comments

(a) Implications of Competition for the Regional Economy

Several important implications emerge from the above analysis. First, information of changing trade patterns, export competitiveness and degree of rivalry between ASEAN and China on US market provide policy makers with the insight, for instance, as to how regional exports by the ASEAN bloc and China may be coordinated (or sources of exports diversified) where economic rivalry is inimical to mutual export performance, and how specific areas of competition may be intensified if they are conducive to mutual or regional growth. Second, the changing degree of economic rivalry between the hyper-growth economies of China and ASEAN-4 could have some ramifications for economic growth in other developing economies within the Asia-Pacific region. This is because many economies within the Asia-Pacific rim are inextricably linked with one another and with the rest of the world. However, an important question concerning the desirability of economic competition remains to be answered.

The preceding analysis indicates that the competition among China and ASEAN-4 could be hurting ASEAN-4 as the regional economy loses its export share in the US market to China. Notwithstanding, one observes that ASEAN-4's total exports to the US had been increasing quite substantially over the last two decades or so. ASEAN-4 may not necessarily be disadvantaged considering the increases in their absolute value of exports to the US. Over the long run, trade creation for ASEAN-4 and China's combined exports to the US appeared to be greater than trade diversion from ASEAN-4 to China. This is possible because both ASEAN-4 and China were rising in their export competitiveness vis-a-vis the rest of the world (Ariff 1994b). Indeed, the level of rivalry between China and ASEAN would be reduced somewhat if the market shares of Japan and the NIEs in the US market decreased.

Put it differently, competition among ASEAN-4 and between China and ASEAN-4 would have enabled exports of China and ASEAN-4 to compete with their competitors' outside the region more effectively in the US market. Hence, the increased export competitiveness of China and ASEAN-4 could have displaced the rest of the world's exports from the US market. If this is the case, the real losers were likely to be the rest of the world's exporters to the US whose production might have declined in competitiveness vis-a-vis China and ASEAN-4.

Meanwhile, it is crucial for China and ASEAN-4 to enhance their outward-looking stance and to encourage openness in trade despite their rivalry on their common export market. Economic openness ensures efficiency in production and resource allocation through competition in the international market. ASEAN-4 and China stand to benefit from their openness in international trade (eg. by adopting multilateral trade policy measures stipulated by the World Trade Organisation), considering their heavy reliance in the US (and Japanese market) as destinations of their exports. Intra-trade among the ASEAN-4 countries and between China and ASEAN-4 is quite small at present in comparison to their trade with their major trading partners. Openness among China and ASEAN-4 are expected to confer more competitive edge on these economies vis-a-vis the rest of the world.

Apart from openness in trade, there are some other possible ways by which China and ASEAN-4 could strength their competitive positions. First, as implied by the empirical analysis in this paper, the economies should be aware of the changing structures and

competitive positions of various industries within the region, and internationally. For example, the competing countries should continue to raise their respective competitive/comparative advantage by way of adjusting their export composition and production (perhaps via government policy incentives) in which each has the most competitive edge. Second, the abundance of FDI (eg. public investment in infrastructure and human capital development) will facilitate the development of productive manufacturing sectors. The continuing shift in market share between ASEAN-China and elsewhere may be influenced by the relative flows of FDI originated from the developed countries and the NIEs. An advantage of FDI is that resources are supplied, not extracted from the country.⁸ The availability of cheaper labour than the rest of the world (Japan and NIEs in particular) then facilitates the use of such resources. Intra-regional flow of FDI between China and ASEAN (eg. ASEAN investments in China) are now on the increase (see Ariff 1994a). This also bound to generate considerable complementarity and synergy. Third, the domestic industries of ASEAN and China must continually be liberated. At present, China and some of the ASEAN economies are still highly-protected and regulated. Reforms to the internal domestic economy appear to be of crucial importance. Porter (1990) pointed out that firms that turn out to be successful international competitors are most likely to emerge from a domestic industrial environment of vigorous internal domestic competition: subsidised domestic industries, as in Indonesia, and state-owned enterprises, as in China, seldom turn to be competitive in international markets. A liberalised economy coupled with stable macroeconomic

⁸ The emergence of new industry segment (e.g. integrated circuit in Malaysia) could be attributed to the inflows of FDI. Malaysia is now the world's largest exporter of integrated circuits, but the processing of silicon chips into integrated circuits is capital intensive but Malaysia is not a capital rich country (Warr 1994). This possibly points to the importance of FDI.

policies, changes in government regulations, a realistic exchange rate, good infrastructure, new technology, competitive labour markets, etc, constitute the ingredients for gaining international competitiveness.

(b) Future Trends and Direction

The shift-share analysis presented earlier also suggests, among other things, a possible positive spillover effect of the competition on the production of high-technology (more capital-intensive) goods in ASEAN-4.⁹ Over time, ASEAN bloc could have been compelled by market forces (evidenced, for example, by changes in industry structure, product composition and growth rates of different products) to continue the expansion of LLIM. In countries currently producing a large proportion of the more standardised MLIM, cost issues are critical. If labour cost constitutes the major determinant of where MLIM is produced, China would continue to raise its market share of MLIM production in the foreseeable future. On the contrary, any attempt by China to promote premature production of high-tech, differentiated products may divert the nation's scarcest resources away from their most productive uses and towards industries in which the nation is at present less competitive. The diversification process in ASEAN-4 away from MLIM production would be necessary: ASEAN-4 would need to adjust dynamically for the changing competitive advantage¹⁰

⁹ International competition has a stimulating effect on innovation of country j's manufacturing industries (Geroski 1990; Blundell, Griffith and Van Reenen 1994).

¹⁰ Competitive advantage theory elucidated by Porter (1990) stresses the importance of product mix. Ariff (1994b) showed that relative comparative advantage indices have significantly increased over the

The shift-share analysis revealed that ASEAN-4 as an integrated region was growing in competitiveness in the production of LLIM. Such a structural transformation in ASEAN-4 would be facilitated by the higher per capita income and better average educational attainment in ASEAN-4 countries than in China, which would render the transition from MLIM exports to human capital-intensive exports sooner in ASEAN-4 than China)¹¹. This is likely to be so considering the superiority of ASEAN-4's competitiveness over China's (see Table 7). This point may be verified by some other studies (eg. World Competitive Report 1995) showing that ASEAN-4 are generally more competitive than China¹². According to the World Competitiveness Reports (1995), all the ASEAN-4 countries were ranked in competitiveness ahead of China: Singapore was ranked first (even ahead of the US), Malaysia 21st, Thailand 26th, Indonesia 33rd and China 34th. Thus, we would expect China and ASEAN-4 to produce more MLIM and LLIM, respectively, in the foreseeable future¹³. This would lower the pressure arising from the product homogeneity-induced competition.

last two decades, suggesting that ASEAN is upgrading itself, following the footsteps of the Northeast Asian NIEs. There are indications that aside from Singapore, Malaysia and Thailand are developing comparative advantage in human capital intensive and technology-intensive manufactures.

¹¹ Wu (1995) showed that technical efficiency for China has improved within the rural sector (consisting of all enterprises run by townships and villages which are located in the rural areas of China and which employ mainly unskilled rural labourers) but not in the state sector (including manufacturing and mining). This would cause one to believe that China would continue to lag behind ASEAN-4 in the production of more capital-intensive manufactures.

¹² Competitiveness is evaluated from eight different perspectives (factors), describing not only the viability of an enterprise but also its competitive environment. By providing a supporting environment within which businesses can achieve competitive edge, countries do compete, for instance, for attracting the most competitive global companies (FDI in general) in selected industries.

¹³ The success of such ASEAN countries as Singapore, Malaysia and Thailand seemed to be related to the product cycle theory of development which stipulates that economic growth is facilitated by the gradual transformation of the cost base advantage in the production of relatively standardised products into the development of product-based advantage, centred on the development of differentiated products (see for example Porter 1990 and Warr 1994).

The level of rivalry between China and ASEAN-4 in the US market would also grow to be smaller with a rise in the level of bilateral trade between the two economies: an increase in the bilateral trade would reduce China's and ASEAN-4's tendency to over depend on the US market as sources of their exports. Table 8 shows that the bilateral exports to each other grew at an unprecedented rate since 1978 when China began to liberalise her economy. ASEAN as a whole is now China's fourth largest trading partner in the Asia-Pacific region, after Hong Kong, US and Japan. The growth rates in bilateral trade between China and ASEAN-4 appeared to be on par with, if not higher than, the growth rates in external trade of China and ASEAN-4 with their common importer, namely the US (see Table 1). If such a trend would persist¹⁴, we would expect the rivalry between China and ASEAN-4 to decline.

Table 9 suggests that even the compositions of China-ASEAN bilateral exports would have changed over the period 1978-1994. These are implied in Table 6 by sharp reductions in market share of Indonesian exports to China as well as in Indonesian import share of Chinese exports (having relatively high labour content) but concomitant increases in market shares of Malaysian and Singaporean exports to China as well as in Malaysian and Singaporean import shares of Chinese exports (having relatively high human and physical capital content). This suggests that Indonesian MLIM exports to China were increasingly substituted by Chinese domestic MLIM production while China was importing more LLIM from Malaysia and Singapore (and, to some extent, from

¹⁴ Furthermore, what distinguishes Asia, and particularly East Asia, from other regions is that it is becoming more interdependent and may be becoming integrated without discriminatory regional preferences in border trade and investment flows, or actions to harmonise tax rates or business laws or exchange rates within the region (Lloyd 1994).

Thailand) where competitiveness in their production of LLIM was rising vis-a-vis China. In view of the abruptly declining bilateral trade between China and Indonesia induced perhaps by their common problem of product likeness in the US market (recognising that both are predominantly MLIM producers), we would expect the competition between China and Indonesia to have grown in intensity over the period 1978-1994.

Indeed, the bilateral trade relationship between the two hypergrowth economies of China and ASEAN-4 should actively be fostered¹⁵ within the environment of open-regionalism so that the mutual concerns for export rivalry may be allayed. This is a particularly pertinent issue to be considered by China in view of the increasing US adverse reactions to its rising balance of trade deficits with China and the possibility of withdrawal of the Most Favoured Nations (MFN) status from China by the US.

¹⁵ This could be achieved, among other things, by a mutual agreement to lower the level of protection, such one proposed actively by the Asia Pacific Economic Cooperation (APEC). At present, Singapore and Malaysia have the lowest level of protection (and incidentally, they are the most competitive, according to The World Competitiveness Report 1995) compared with China, Indonesia and Thailand. Among the ASEAN-4 countries, Singapore and Malaysia exhibit the lowest tariff rates: its tariff rates appear more closely related in magnitude to those of the US and many developed countries (Derosa 1986).

References

- Ariff, M. (1994a), 'The Competitiveness of Malaysian Exports: Policy Perspectives', Asia-Pacific Development Journal, 1 (1), 91-102.
- Ariff, M. (1994b), 'ASEAN's Comparative Advantage in a Changing Pacific Division of Labour: Implications for ASEAN-China Economic Relations', in Tan, J.L.H. and Luo, Z. (Eds), ASEAN-China Economic Relations: Industrial Restructuring in ASEAN and China, Institute of Southeast Asian Studies, Singapore.
- Brakman, S. and Jepma, C.J. (1987), 'The Impact of the Composition of Exports on Export Performance', De Economist, 135 (2), 163-81.
- Blundell, R., Griffith, R. and Van Reenen, J. (1994), 'A Dynamic Count Model of Technological Innovation', Institute of Fiscal Studies Working Paper.
- Derosa, D.A. (1986), 'ASEAN-US Trade Relations', ASEAN Economic Bulletin, 4, 169-88.
- Esteban-Marquillas, J.M. (1972), 'A Reinterpretation of Shift-Share Analysis', Regional and Urban Economics, 2 (3), 249-61.
- Geroski, P.A. (1990), 'Innovation, Technological Opportunity, and Market Structure', Oxford Economic Papers.
- Garnaut, R. and Anderson, K. (1980), ASEAN Export Specialisation and the Evolution of Comparative Advantage in the Western Pacific Region, In ASEAN in a Changing

Pacific and World Economy. edited by R. Garnaut, Australian National University Press, Canberra.

Herschede, F. (1991), 'Competition among ASEAN, China, and the East Asian NICs: A Shift-Share Analysis', ASEAN Economic Bulletin, 7(3), 290-306.

Kueh, Y.Y. and Voon, T.J. (1995), 'The Role of Hong Kong in Sino-American Economic Relations', International Conference on Sino-US Economic Relations, 21-23 June, Hong Kong.

Lloyd, P.J. (1994), 'Intraregional Trade in the Asian and Pacific Region', Asian Development Review, 12 (2), 113-143.

Porter, M.E. (1990), The Competitive Advantage of Nations, Free Press, New York.

Tyers, R., Phillips, P. and Findlay, C. (1987), 'ASEAN and China Exports of Labour-intensive Manufactures', ASEAN Economic Bulletin, 3, 339-367.

Warr, P.G. (1994), 'Comparative and Competitive Advantage', Asian-Pacific Economic Literature, 8 (2), 1-14.

World Competitiveness Reports (1995), The World Competitiveness Reports, 15th Editions, World Economic Forum, USA.

Wu, Y. (1995), 'Productivity Growth, Technological Progress, and Technical Efficiency Change in China: A Three-Sector Analysis', Journal of Comparative Economics, 21(2), 207-229.

Table 1. Per cent Growth Rates in Exports of AP, PP, MLIM and LLIM for China and ASEAN-4 to the US: 1980-1994

		AP	PP	MLIM	LLIM	Total
China	1980-1985	53.2	88.9	278.0	156.5	264.0
	1985-1990	132.0	-37.2	331.4	817.6	260.4
	1990-1994	16.5	-76.1	183.1	220.3	170.6
Indonesia	1980-1985	-11.7	-20.1	319.1	-35.1	-10.3
	1985-1990	8.3	-73.5	158.9	75.0	-32.2
	1990-1994	41.3	-20.0	185.1	1553.6	127.8
Malaysia	1980-1985	-12.3	-77.3	-5.2	55.5	168.4
	1985-1990	17.6	81.4	203.5	121.9	119.6
	1990-1994	5.4	-54.2	124.1	223.7	123.0
Singapore	1980-1985	20.4	362.9	105.8	117	122.4
	1985-1990	23.7	54.3	62.3	164.6	4.0
	1990-1994	-28.1	17.6	20.4	53.4	15.8
Thailand	1980-1985	-44.5	1250.0	206.3	643.8	421.1
	1985-1990	386.0	107.4	215.5	659.7	13.9
	1990-1994	73.5	-60.7	80.1	129.3	55.6

Note: AP denotes agricultural products, PP is primary products, LLIM is less labour-intensive manufactures and MLIM is more labour-intensive manufactures.

Source: US Foreign Trade Highlights (1984, 1986 and 1994), US consular office, Hong Kong.

**Table 2: Changes in AP and PP Export Shares of China and ASEAN-4 in the US Market
by Product Category (SITC 0, 1, 2, 3, 4): 1980-1994**

	Agricultural Products SITC Code 0, 1, 2					Primary Products SITC Code 3, 4				
	Chin	Indo	Mala	Sing	Thai	Chin	Indo	Mala	Sing	Thai
1980	0.152	0.578	0.201	0.069	0.219	0.031	0.893	0.203	0.019	0.000
1981	0.299	0.454	0.180	0.068	0.132	0.052	0.879	0.091	0.022	0.000
1982	0.185	0.344	0.151	0.064	0.255	0.140	0.792	0.047	0.017	0.000
1983	0.151	0.389	0.157	0.085	0.217	0.087	0.844	0.042	0.020	0.001
1984	0.147	0.431	0.145	0.054	0.224	0.118	0.782	0.048	0.044	0.003
1985	0.201	0.440	0.152	0.072	0.134	0.196	0.664	0.043	0.084	0.010
1986	0.169	0.358	0.120	0.057	0.296	0.208	0.623	0.067	0.071	0.026
1987	0.176	0.324	0.105	0.062	0.333	0.274	0.521	0.081	0.098	0.030
1988	0.178	0.306	0.092	0.060	0.364	0.312	0.449	0.129	0.108	0.038
1989	0.240	0.288	0.117	0.045	0.310	0.202	0.547	0.135	0.071	0.037
1990	0.250	0.256	0.096	0.048	0.350	0.298	0.426	0.189	0.092	0.050
1991	0.208	0.258	0.087	0.037	0.410	0.371	0.312	0.130	0.020	0.067
1992	0.220	0.265	0.080	0.032	0.403	0.358	0.273	0.126	0.103	0.022
1993	0.209	0.260	0.071	0.028	0.433	0.179	0.446	0.128	0.131	0.034
1994	0.209	0.259	0.072	0.025	0.435	0.105	0.501	0.127	0.160	0.029
Aver	0.195	0.305	0.104	0.046	0.350	0.156	0.675	0.091	0.056	0.021

Note: China, Indonesia, Malaysia, Singapore and Thailand are abbreviated, respectively, as Chin, Indo, Mala, Sing, and Thai.

Source: US Foreign Trade Highlights (1984, 1986 and 1994), US consular office, Hong Kong.

Table 3: Changes in MLIM and LLIM Export Shares of China and ASEAN-4 in the US Market by Product Category (SITC 5, 6, 7, 8, 9): 1980-1994

	More-Labour-Intensive Manufactures SITC Code 6, 8					Less-Labour-Intensive Manufactures SITC Code 5, 7, 9				
	Chin	Indo	Mala	Sing	Thai	Chin	Indo	Mala	Sing	Thai
1980	0.379	0.080	0.220	0.185	0.135	0.046	0.027	0.371	0.543	0.012
1981	0.471	0.087	0.144	0.160	0.138	0.061	0.023	0.364	0.527	0.024
1982	0.534	0.085	0.069	0.145	0.167	0.060	0.027	0.380	0.494	0.038
1983	0.501	0.114	0.078	0.145	0.161	0.048	0.024	0.350	0.537	0.041
1984	0.501	0.120	0.086	0.137	0.156	0.046	0.023	0.329	0.553	0.049
1985	0.517	0.121	0.075	0.138	0.149	0.060	0.009	0.291	0.595	0.045
1986	0.573	0.112	0.072	0.120	0.123	0.070	0.008	0.257	0.606	0.060
1987	0.553	0.122	0.078	0.127	0.120	0.077	0.007	0.256	0.588	0.071
1988	0.578	0.116	0.076	0.128	0.102	0.074	0.008	0.231	0.599	0.088
1989	0.613	0.091	0.070	0.082	0.144	0.167	0.004	0.214	0.520	0.095
1990	0.643	0.090	0.066	0.064	0.136	0.175	0.005	0.207	0.504	0.109
1991	0.671	0.083	0.068	0.054	0.123	0.203	0.009	0.221	0.456	0.110
1992	0.685	0.091	0.065	0.045	0.113	0.221	0.017	0.245	0.403	0.114
1993	0.702	0.095	0.062	0.037	0.105	0.229	0.022	0.267	0.374	0.109
1994	0.714	0.101	0.058	0.030	0.096	0.240	0.036	0.287	0.331	0.107
Aver	0.652	0.098	0.068	0.065	0.117	0.176	0.018	0.262	0.449	0.095

Source: US Foreign Trade Highlights (1984, 1986 and 1994), US consular office, Hong Kong.

Table 4: Real Exchange Rate Movements and Product Composition Ratios (LLIM/MLIM) of China and ASEAN-4: 1980-1994

	Real Exchange Rate Changes (per cent)					Product Composition				
	Chin	Indo	Mala	Sing	Thai	Chin	Indo	Mala	Sing	Thai
1980	5.6	-15.6	8.1	-1.1	-2.0	0.19	0.52	2.58	4.49	0.13
1981	23.7	3.4	18.8	2.2	13.9	0.17	0.35	3.33	4.32	0.23
1982	14.3	5.3	-1.0	4.5	1.8	0.15	0.44	7.50	4.66	0.32
1983	6.7	32.9	-1.2	0.2	-0.6	0.13	0.28	10.7	5.02	0.35
1984	16.5	4.2	2.7	6.0	20.9	0.12	0.25	5.10	5.39	0.42
1985	20.9	3.0	5.2	1.2	-0.4	0.13	0.08	4.23	4.73	0.33
1986	6.5	37.1	17.4	8.1	-1.8	0.12	0.07	3.35	4.75	0.46
1987	3.9	-11.6	-5.9	-5.4	-5.0	0.15	0.06	3.55	4.96	0.64
1988	-9.2	1.4	8.4	-4.0	-1.2	0.13	0.07	3.14	4.82	0.90
1989	-2.1	-2.4	0.7	-0.3	1.6	0.29	0.04	3.26	6.69	0.70
1990	28.3	0.3	2.5	-7.7	-0.8	0.27	0.05	3.09	7.71	0.79
1991	7.1	1.3	3.1	-3.8	-2.0	0.28	0.10	2.97	7.79	0.82
1992	-1.9	-0.6	-10.0	-4.8	-1.4	0.28	0.16	3.29	7.85	0.89
1993	-0.3	-1.5	-0.8	0.0	-0.4	0.29	0.21	3.87	9.09	0.94
1994	39.7	-0.8	-2.1	-11.1	-3.3	0.30	0.32	4.47	9.83	1.00
Aver	10.6	3.8	3.1	-1.1	1.1	0.20	0.20	4.30	6.14	0.59

Source: (i) US Foreign Trade Highlights (1984, 1986 and 1994), US consular office, Hong Kong, (ii) International Marketing Statistics, Euromonitor and Statistical Year Book for Asia and the Pacific, United Nations, and (iii) World Trade Tables (1995), World Bank.

Table 5: Results of the Shift-Share Analysis (expressed in US\$) for the Period**1990 - 1994.**

China	AC	SE	DIFF	ISE	CE	IE
AP	81	300.654	-219.654	-102.421	-180.109	61.356
PP	-271	-457.129	186.129	210.032	-18.008	8.274
LLIM	4505	5614.652	-1109.652	-3003.186	4045.518	-2163.882
MLIM	15231	7128.317	8102.683	5192.231	1733.285	1262.516
Total	19546	12586.490	6959.506	2296.660	5580.690	-831.740
Indonesia						
AP	131	88.857	42.143	155.256	-40.979	-71.600
PP	-785	-135.102	-649.898	-576.924	-14.918	-63.705
LLIM	605	1659.385	-1054.385	-1620.795	15731.410	-15365.560
MLIM	1944	2106.742	-162.742	-286.101	150.092	-20.383
Total	1895	3719.880	-1824.882	-2328.560	15825.600	-15521.250
Malaysia						
AP	-80	119.003	-199.003	-52.471	-215.768	26.082
PP	-171	-180.937	-0.937	-18.465	3.827	-0.207
LLIM	4945	2222.349	2722.651	1042.811	1031.193	527.587
MLIM	1131	2821.477	-1690.477	-974.193	-528.859	267.694
Total	5825	4981.891	843.109	-2.318	290.394	821.156
Singapore						
AP	-29	224.437	-253.437	-175.110	-394.313	307.651
PP	-7	-341.245	334.245	249.017	315.352	-230.122
LLIM	3764	4191.318	-427.318	3996.373	-2262.280	-2157.058
MLIM	118	5321.263	-5203.263	-3613.203	-4939.982	3354.309
Total	3846	9395.773	-5549.773	457.076	-7281.223	1274.780
Thailand						
AP	740	109.798	740.000	155.648	201.191	285.205
PP	-49	-166.943	117.943	121.823	-1.944	1.418
LLIM	1915	2050.463	-135.463	-572.222	565.703	-157.871
MLIM	1557	2603.251	-1046.251	289.250	-1193.290	-132.588
TOTAL	4163	4596.569	-323.771	-5.501	-428.339	-3.835

**Table 6: Results of the Shift-Share Analysis (expressed in US\$) for the Period
1982 - 1986.**

China	AC	SE	DIFF	ISE	CE	IE
AP	61	114.982	-56.423	-22.996	-41.783	8.357
PP	75	-259.689	333.891	97.823	378.734	-142.667
LLIM	-47	535.824	-581.991	-234.201	-617.839	270.049
MLIM	2377	883.137	1492.577	1238.124	105.936	148.518
Total	2466	1274.254	1188.053	1078.750	-174.953	284.256
Indonesia						
AP	206	186.898	22.121	-7.476	30.830	-1.233
PP	-1507	-422.111	-1081.536	-504.475	-262.884	-314.178
LLIM	-45	870.955	-913.673	-813.276	-1516.001	1415.603
MLIM	512	1435.496	-903.569	-1083.659	734.765	-554.676
Total	-834	2071.238	-2876.658	-2408.885	-1013.289	545.516
Malaysia						
AP	13	81.242	-68.282	-3.250	-67.743	2.710
PP	11	-183.486	194.309	128.788	219.793	-154.272
LLIM	255	378.592	-122.694	473.867	-264.943	-331.618
MLIM	296	623.990	-328.997	-348.700	44.662	-24.958
Total	575	900.338	-325.664	250.705	-68.231	-508.138
Singapore						
AP	20	94.257	-75.883	-64.095	-36.839	25.050
PP	165	-212.881	355.365	195.574	1965.438	-1805.646
LLIM	2010	439.244	1573.291	666.138	360.474	546.679
MLIM	416	723.956	-314.891	-156.147	-202.398	43.654
Total	2611	1044.576	1537.883	641.470	2086.675	-1190.262
Thailand						
AP	217	39.709	179.658	93.713	25.579	60.365
PP	88	-89.683	89.683	89.683	31197.86	-31197.86
LLIM	234	185.047	49.167	-99.263	320.186	-171.755
MLIM	377	304.991	68.939	352.833	-131.623	-152.270
Total	916	440.063	387.447	436.967	31412.000	-31461.52

Table 7: World Competitiveness Ranking Among China, Hong Kong and ASEAN-4.

	Chin	HK	Mala	Thai	Indo	Sing
Domestic Strength	12	3	5	9	27	2
Internationalisation	27	3	21	22	32	2
Government	21	2	4	11	31	1
Finance	44	4	18	21	26	1
Infrastructure	45	17	20	40	36	12
Management	47	8	22	28	38	5
Science & Technol	26	23	33	31	43	10
People	40	19	25	26	44	1
Average	32.8	9.8	18.5	23.5	34.6	4.3
World Ranking	34th	3th	21st	26th	33th	1st

Source: World Competitiveness Report (1995), 15th Editions, World Economic Forum, USA.

Table 8: Growth Rates of Bilateral Trade between China and ASEAN-4: 1978-1994

	Sinagapore	Malaysia	Thailand	Indonesia
From ASEAN-4 to China				
1978-1981	7698	1215	957	391
1982-1985	168	27	17	78
1986-1989	528	352	293	183
1990-1994	258	270	323	112
From China to ASEAN-4				
1978-1981	139	98	213	189
1982-1985	30	58	81	-16
1986-1989	111	426	194	35
1990-1994	201	233	90	32

Note: The figures represent percentage growth in export values.

Source: Individual ASEAN-4 countries' trade statistical tables (1978-1994 issues),
Institute of Southeast Asian studies, Singapore.

Table 9: Changes in Export Share of ASEAN-4 on China's Import Market and Changes in ASEAN's Share of Imports from China: 1978-1994

	From China to ASEAN				From ASEAN to China			
	Indo	Mala	Sing	Thai	Indo	Mala	Sing	Thai
1978	0.502	0.052	0.390	0.056	0.728	0.051	0.035	0.185
1979	0.523	0.036	0.386	0.055	0.759	0.070	0.068	0.103
1980	0.565	0.041	0.337	0.057	0.647	0.045	0.235	0.072
1981	0.545	0.038	0.350	0.066	0.399	0.076	0.308	0.218
1982	0.554	0.044	0.344	0.058	0.384	0.164	0.244	0.207
1983	0.501	0.051	0.364	0.084	0.351	0.146	0.366	0.136
1984	0.472	0.057	0.366	0.104	0.374	0.144	0.373	0.109
1985	0.429	0.063	0.411	0.096	0.382	0.117	0.365	0.136
1986	0.431	0.044	0.382	0.144	0.306	0.114	0.429	0.151
1987	0.339	0.062	0.389	0.221	0.377	0.115	0.343	0.166
1988	0.303	0.098	0.394	0.205	0.334	0.136	0.358	0.171
1989	0.286	0.113	0.394	0.207	0.186	0.110	0.577	0.127
1990	0.320	0.119	0.375	0.187	0.246	0.126	0.502	0.126
1991	0.257	0.145	0.423	0.175	0.181	0.140	0.536	0.143
1992	0.226	0.165	0.445	0.163	0.180	0.134	0.542	0.143
1993	0.210	0.155	0.485	0.150	0.131	0.150	0.583	0.136
1994	0.184	0.172	0.489	0.155	0.147	0.198	0.505	0.150

Source: Individual ASEAN-4 countries' trade statistical tables (1978-1994 issues),
Institute of Southeast Asian studies, Singapore.