MAJOR TRADE TRENDS IN EAST ASIA

What are their Implications for Regional Cooperation and Growth?

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World Bank Policy Research Working Paper 3084, June 2003

Summary

This study's empirical findings have positive implications for further efforts to expand East Asian regional trade and cooperation initiatives. Since the mid-1980s, regional intra-trade has grown at a rate roughly double that of world trade, and at a rate far higher than the intra-trade of NAFTA or the European Union. Evidence based on intra-industry trade ratios, or statistics on international production sharing, show economic linkages and the interdependence of East Asian economies have considerably strengthened over the last two decades. On a global scale, East Asia (excluding Japan) now originates 19 percent of world trade which is approximately the same share as the NAFTA member countries.

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INTRODUCTION

During the last decade major changes occurred in global markets that have important implications for East Asian countries' export and growth prospects. The North American Free Trade Agreement (NAFTA) liberalized barriers to the intra-trade of Canada, Mexico, and the United States, while similar regional arrangements expanded in both Latin America and Europe. The Uruguay Round agreement significantly altered conditions under which international trade is conducted. Among the Round's achievements were an average 40 percent reduction in industrial countries' tariffs, an agreement on the phase-out of the Multifibre Accord (MFA), non-tariff barriers on agricultural products were converted to tariffs and lowered, "voluntary" export restraints were abolished, and some progress was made in the liberalization of barriers to trade in services. Major changes also occurred within East Asia including a remarkable increase in the relative importance of machinery and electronics products in intra-regional trade, and a rapid expansion of international production sharing as reflected in trade in parts and components.

While many of these developments have positive implications for East Asia, there are some potentially negative aspects. Regional trade arrangements (RTAs) like NAFTA, MERCOSUR, or the extended European Union give member countries preferential (discriminatory) access to each other's markets, which may displace East Asian and other nonmembers' exports. Similarly, the Uruguay Round's reduction of most-favored-nation (MFN) tariffs lowered, or eliminated, preferences some East Asian exporters received under some industrial countries' GSP programs. The phase-out of the MFA may have negative implications if East Asian countries are not fully competitive in what promises to be a drastically altered trading environment for textile and clothing products.

Recognizing that improved export opportunities can make a significant contribution to regional economic growth, this investigation analyzes the economic implications of major trends in East Asia's trade. A primary objective is to supplement recent analyses, both within and outside the World Bank, which examined prospects for strengthening and extending East Asian regional cooperation and preferential trade arrangements (Asian Development Bank 2002). This study proceeds as follows. First, the importance and growth in East Asian intra-trade is compared to that for other major country groups, the major origins and destinations of East Asian regional trade are identified, and the product composition of this exchange is analyzed. Next, measures such as the "revealed" comparative advantage (RCA) index, trade intensity and complementarity indices, measures of trade diversification and competitiveness are employed to help assess East Asia's export performance and prospects for further cooperative efforts such as regional production sharing, or joint efforts to upgrade the quality of exports. These analyses often focus on the economic implications of regional trade in parts and components which has greatly increased economic linkages and the interdependence of East Asian countries.

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* The authors are, respectively, a member of the World Bank's trade team and consultant to the World Bank on international trade issues. This paper was prepared as part of a larger World Bank initiative to analyze prospects for regional cooperation initiatives in East Asia. We would like to thank Milan Brahmbhatt and Kathie Krumm for comments and suggestions.

Trade Trends 1

Global Implications of East Asian Trade Changes

Key Point

From 1975 to 2001, East Asia's share of global exports expanded more than three-fold (to just under 19 percent), and doubled from 1985 to 2001. The region presently originates about the same share of global exports as NAFTA. Intra-regional exports, expressed as a share of world trade, experienced an even sharper expansion rising more than six-fold during 1975-2001.

A question of considerable interest is how has the importance of emerging East Asian countries' global or regional trade changed relative to world trade, or to the trade of other major countries.[1] If East Asian intra-trade expanded at a relatively faster pace than world trade this could have positive implications for initiatives to negotiate regional trade arrangements (RTAs), like MERCOSUR or the North American Free Trade Agreement, in East Asia. The potential importance of this point was underscored in a recent Asian Development Bank (2002, pp. 157-196) report that argued Asian RTAs could have important beneficial economic effects including increased levels of trade and welfare, as well as positive scale effects associated with increased market size. Also, regional trade arrangements continue to proliferate elsewhere. In the mid-1990s, approximately one-half of global trade in manufactured goods occurred within regional trade arrangements (Primo Braga and Yeats 1995), and the recent extensions of the European Union and other RTAs increased this share.

Table 1.1 provides summary statistics bearing on these points. Shown here are East Asian global exports for selected years over 1975 to 2001, along with corresponding information on the share of this exchange in world trade. For comparison, similar statistics are shown for several major comparator country groups, like the European Union (15), NAFTA, Latin America and the Caribbean, or South Asia. The memo item provides statistics on the value and global share of East Asian intra-trade, as well as on the region's trade with Japan, China, and all non-regional countries as a group.[2]

Two key points emerge from these statistics,

- The relative change in East Asian trade was far greater than that for any other comparator group. This is clearly the case whether comparisons are made over the full 1975-2001 interval, or for the more recent 1985-2001 period. From 1975 to 2001, East Asia's share of global trade expanded more than three-fold (to just under 19 percent), and doubled from 1985 to 2001. In contrast, the global trade shares of NAFTA rose by about one percentage point while the EU (15) was steadily declining in relative importance.

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[1] Following the lead of Kawai and Urata (2002) emerging East Asia (hereafter just referred to as East Asia) includes; Brunei, Cambodia, China, Hong Kong, Indonesia, Korea, Lao PDR, Malaysia, Mongolia, Philippines, Singapore, Taiwan (China), Thailand and Vietnam. Where Japan plays a pivotal role in regional trade, as in the exchange of parts and components, it may be included in some of the analyses that follow in order to better illustrate factors underlying East Asian trade trends.

[2] Statistics on East Asian countries' trade were tabulated from the reported imports of their trading partners. One reason for this approach is the transshipment of a high share of China's exports through Hong Kong. As a result, China often is unable to accurately identify the final destinations of its exports in its own trade statistics. However, evidence suggests importing countries are better equipped to identify goods of Chinese origin that are transshipped through Hong Kong, or some other entrepot center. See Appendix 1 for a discussion of this, and other related technical problems, in East Asian trade statistics.

- East Asia's intra-regional exports, expressed as a share of world trade, experienced an even greater expansion rising more than six-fold during 1975-2001. The 16 percent annual growth rate for this exchange far exceeded that for any other group listed in Table 1.1. These statistics clearly have positive implications for the formation of RTAs in East Asia since these countries have rapidly increased the relative importance of their mutual trade contacts.

Table 1. 1 The Relative Importance of East Asia and Other Regions in World Trade

	Total Exports ($billion)				Share of World Trade (%)			
Group	1975	1985	1995	2001	1975	1985	1995	2001
Australia/ New Zealand	14.7	32.6	70.1	84.6	1.8	1.6	1.4	1.3
East Asia[1]	44.5	186.2	839.0	1,194.4	5.4	9.4	16.3	18.7
ASEAN	22.0	72.0	307.8	403.8	2.7	3.6	6.0	6.3
European Union (15)	325.3	711.6	1,893.4	2,194.8	39.2	36.0	36.9	34.3
Japan	49.1	190.3	476.1	448.6	5.9	9.6	9.3	7.0
Latin America	45.3	115.8	245.3	382.1	5.5	5.9	4.8	6.0
Middle East	84.7	109.1	155.1	247.8	10.2	5.5	3.0	3.9
NAFTA	148.9	351.9	922.4	1,214.7	18.0	17.8	18.0	19.0
North Africa	13.4	29.4	33.9	49.3	1.6	1.5	0.7	0.8
Other Europe-Cent. Asia[2]	40.5	128.7	244.7	340.7	4.9	6.5	4.8	5.3
South Asia	6.2	16.5	52.0	70.3	0.7	0.8	1.0	1.1
Sub-Saharan Africa	28.9	52.8	74.7	101.2	3.5	2.7	1.5	1.6
MEMO ITEM								
East Asian Intra-Trade	8.0	44.1	314.5	418.0	1.0	2.2	6.1	6.5
East Asia-Japan Trade	11.3	35.3	118.7	144.9	1.4	1.8	2.3	2.3
East Asia- China Trade[3]	0.4	5.9	43.5	83.5	..	0.3	0.8	1.3
East Asia-Rest of World	36.5	142.1	524.5	776.4	4.4	7.2	10.2	12.1
NAFTA Intra-Trade	55.6	159.5	396.0	646.5	6.7	8.1	7.7	10.1
EU (15) Intra-Trade	200.2	416.9	1,168.5	1,296.6	24.1	21.1	22.7	20.2
MERCOSUR Intra-Trade	1.0	2.0	14.5	16.6	0.1	0.1	0.3	0.3
ASEAN Intra-Trade	2.5	11.3	64.6	74.2	0.3	0.6	1.3	1.2
WORLD EXPORTS	829.2	1,975.9	5,137.3	6,403.1	100	100	100	100

[1] East Asia is defined here as consisting of: Brunei, Cambodia, China, Republic of Korea, Hong Kong, Indonesia, Lao PDR, Malaysia, Mongolia, Philippines, Singapore, Taiwan (China), Thailand, and Vietnam.
[2] The totals for this group exclude Western Europe.
[3] The totals are based on 1978 Chinese trade data since 1975 statistics were not available from IMF records.

Source: International Monetary Fund Direction of Trade Statistics

Table 1.2 examines the data from a somewhat different perspective and focuses on the strongest relative *gainers,* and strongest relative *losers,* in world trade during the two longer-term periods, that is, 1975-2001 and 1985-2001. East Asia figures prominently among the former. In terms of both annual growth rates and global trade share changes, East Asia is involved in the three most buoyant directional trade flows with NAFTA intra-trade in a relatively distant fourth place. East Asian intra-trade, for

example, grew at an annual rate of 16 percent since 1975, which was about 6 percentage points higher than the intra-trade of NAFTA.[3] Sub-Saharan Africa and the Middle East registered the lowest annual growth rates for exports, and highest losses of global trade shares over 1975-2001. The Middle East poor performance is partially due to the OPEC price increases in the early 1970s, and the subsequent erosion of energy prices over the last two decades, while the marginalization of Africa is part of a long-term trend dating back to the 1950s.

Table 1.2 The Strongest Relative Gainers and Losers in Global Trade; 1975 to 2001

	Share of World Exports (%)					Annual Growth Rate (%)	
	Actual Value (%)			Share Change			
Directional Trade Flow	1975	1985	2001	1985 – 2001	1975 – 2001	1985 – 2001	1975 – 2001
Strong Relative Gainers							
East Asian Intra-Trade	1.0	2.2	6.5	4.3	5.5	15.1	16.4
East Asian Global Trade	5.4	9.4	18.7	9.3	13.3	12.3	13.5
East Asia – Rest of World	4.4	7.2	12.1	4.9	7.7	11.2	12.5
NAFTA Intra-Trade	6.7	8.1	10.1	2.0	3.4	9.1	9.9
Strong Relative Losers							
EU (15) Intra-Trade	24.1	21.1	20.2	-0.9	-3.9	7.4	7.5
Sub-Sahara Africa Global Trade	3.5	2.7	1.6	-1.1	-1.9	4.2	5.0
Middle East Global Trade	10.2	5.5	3.9	-1.6	-6.3	5.2	4.2
WORLD EXPORTS	100.0	100.0	100.0	--	--	7.6	8.2

Source: International Monetary Fund Direction of Trade Statistics.

[3] In the recent 1995-2001 period, East Asian exports to China almost doubled and experienced the fastest rate of growth of any trade flow reported in Table 1.1. In part, this was due to several counter-cyclical monetary and fiscal policies adopted by China during the period of the financial crisis that increased, or stabilized, demand for other East Asian countries' exports.

Trade Trends 2

What are the Geographic Destinations of East Asian Exports?

Key Point

Over 1985-2001, the share of East Asia's exports to the region rose from 24 to 35 percent with Indonesia, Taiwan (China), Korea, and the Philippines experiencing significantly higher directional trade changes. This shift was, in part, due to the fact that global import demand in East Asia was more buoyant than in any other major market.

An important question concerning East Asian countries' trade is whether significant changes in the direction of this exchange occurred and, if so, what factors were responsible.[4] Specifically, statistics in Table 1.1 show East Asian global exports expanded during 1985-2001at an annual rate almost 5 percentage points above that for world trade. Were shifts in the direction of East Asian trade toward newer (faster growing) geographic markets responsible for these above average growth rates? Second, has there been a *general* relative shift in East Asian exports toward the region, or do the high intra-regional trade growth statistics in Table 1.1 largely reflect the experience of a few bigger countries?

Table 2.1 examines 1985-2001 changes in the geographic direction of individual East Asian country's exports. The table reports the global value of this exchange in 1985, 1995 and 2001, and also shows the share destined for major markets like the European Union (15), North American Free Trade Agreement (NAFTA), or South Asia. To help analyze this information, Table 2.1 also presents similar statistics for the combined exports of all 14 East Asian countries. Finally, the table's memo item provides two summary measures relating to the regional trade changes. The first is the 1985-2001 change in the share of East Asia's exports destined for each major market, while the second is the annual growth rate of that market's global imports. Ideally, an East Asian country would want to see its exports shifting toward destinations that are experiencing above average import growth rates.

Table 2.1 indicates significant changes occurred in the general direction of East Asia's exports. Over 1985-2001, the share of exports going to other East Asian countries rose by over 11 percentage points (from 23.7 to 35 percent), while East Asia had the highest annual global import growth rate (11.6 percent). Although the relatively high import demand contributed to the strengthening of intra-regional trade, East Asia generally increased its import shares for most major traded products (see *Trade Trends 8* that follows). Among the larger East Asian exporters, China, Indonesia, Republic of Korea, Philippines, and Taiwan (China) experienced major competitive share gains in regional markets

Two additional developments relating to Asia should be noted. First, ASEAN appears to have played a relatively minor role in the expansion of East Asian intra-trade trade. This is reflected in the fact the share of all regional countries' exports to ASEAN increased by little more than a percentage point. Second, a sizeable decline (almost 7 percentage points) occurred in the share of East Asia's exports going to Japan. The latter's longer-term economic and financial problems were, no doubt, contributing factors.

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[4] On strategic grounds there are reasons why a country should be concerned about the direction of its trade. For example, prior to World War II the United States initiated studies to determine how an outbreak of hostilities might affect imports of strategic materials from geographically remote areas. More recent investigations stress the need for countries to diversify the origins and destinations of their trade to avoid unfavorable monopoly effects associated with excessive concentration (see, among others, Hufbauer and O'Neill 1966, or Yeats (1990)). Geographic diversification has also been advised as a means of mitigating effects of unfavorable economic developments within a single major market. Countries whose recent trade was strongly oriented toward Germany or Japan probably were negatively affected by the persistent depressed economic conditions in these markets.

Table 2. 1 The Geographic Destinations of East Asian Exports; 1985, 1995, 2000

East Asian Country	Year	Global Exports ($ Million)	Share of Total Exports Destined For (%)									
			East Asia*	Of which:		Japan	EU (15)	NAFTA	Australia/ New Zealand	South Asia	Sub-Sahara Africa	Rest of World
				China	ASEAN							
Brunei	1985	2,864	32.2	0.0	20.7	66.6	1.2	0.1	0.0	0.0	0.0	0.0
	1995	2,573	37.0	0.0	20.4	52.2	8.2	1.7	0.7	0.0	0.1	0.2
	2001	3,632	32.8	4.1	16.3	46.7	1.5	11.7	7.0	0.1	0.0	0.2
Cambodia	1985	8	44.8	7.8	37.0	2.6	0.0	3.9	0.0	0.1	0.0	48.5
	1995	393	70.1	1.5	63.1	1.9	14.5	1.6	0.1	7.7	0.1	4.0
	2001	1,719	10.6	2.0	6.8	3.8	24.1	60.1	0.2	0.0	0.3	0.9
China	1985	31,356	34.7	0.0	10.5	20.8	10.0	14.7	1.2	1.4	1.2	15.9
	1995	232,623	39.0	0.0	4.5	15.4	13.9	22.7	1.6	0.9	0.5	6.0
	2001	415,879	30.7	0.0	5.0	13.9	15.3	29.5	1.6	0.9	1.1	6.9
Hong Kong	1985	24,071	27.6	19.8	4.6	3.2	18.1	40.4	2.5	0.9	0.6	6.8
	1995	55,742	35.9	15.4	15.7	4.9	24.1	21.5	1.8	2.1	1.7	8.1
	2001	59,682	35.2	15.8	14.2	2.4	26.3	19.2	1.5	4.0	1.6	9.8
Indonesia	1985	19,684	9.9	1.7	2.0	51.8	7.5	25.5	1.5	0.6	0.0	3.1
	1995	47,885	25.1	4.3	5.9	29.7	16.9	18.0	2.6	1.4	0.4	5.9
	2001	63,149	27.2	6.2	7.6	23.6	15.6	19.2	3.7	2.9	1.3	6.7
Korea	1985	25,207	10.2	0.0	5.2	16.4	11.5	47.7	1.7	1.8	0.6	10.1
	1995	117,907	34.2	8.7	13.8	14.7	12.7	24.2	1.8	1.6	1.5	9.4
	2001	163,645	34.1	14.3	10.0	10.5	12.0	26.7	1.8	1.7	2.0	11.2
Laos	1985	22	76.6	43.8	30.0	5.5	5.1	3.2	4.7	0.3	0.7	3.9
	1995	345	55.1	1.9	47.7	8.6	29.6	3.9	0.0	0.0	0.0	2.7
	2001	364	60.3	2.0	56.9	1.9	32.7	1.7	0.3	0.1	0.0	3.0
Malaysia	1985	17,947	38.1	1.1	26.5	24.2	13.1	14.1	1.6	4.1	0.5	4.2
	1995	86,288	43.6	2.4	30.6	12.2	13.1	22.8	1.8	2.4	0.3	3.8
	2001	111,429	42.0	5.6	24.4	11.5	12.9	23.9	2.4	2.3	0.5	4.6
Mongolia	1985	94	4.1	2.1	1.9	8.1	15.0	4.0	0.0	0.1	0.8	68.0
	1995	380	29.2	26.5	0.0	23.8	10.1	6.7	0.0	0.1	0.0	30.2
	2001	489	49.6	49.0	0.1	2.2	8.1	31.2	0.0	0.3	0.2	8.5

Table 2.1 Continued.

East Asian Country	Year	Global Exports ($ Million)	Share of Total Exports Destined For (%)									
			East Asia*	Of which:		Japan	EU (15)	NAFTA	Australia/ New Zealand	South Asia	Sub-Sahara Africa	Rest of World
				China	ASEAN							
Philippines	1985	6,112	17.5	1.6	8.4	20.5	16.5	39.6	1.9	0.5	0.0	3.4
	1995	19,780	23.5	1.4	11.4	17.7	15.5	39.6	1.1	0.2	0.0	2.4
	2001	42,870	34.4	4.5	13.4	15.0	16.1	31.2	0.8	0.2	0.1	2.2
Singapore	1985	17,199	35.1	1.4	22.1	9.3	10.8	26.8	5.0	4.7	0.5	7.7
	1995	88,629	44.0	3.8	23.0	7.7	14.8	22.9	2.4	2.3	0.9	5.0
	2001	93,268	44.8	5.5	22.4	5.8	14.7	18.6	2.7	5.1	1.2	7.1
Taiwan, China	1985	33,610	14.9	0.0	5.9	10.2	10.2	55.9	2.9	0.5	0.5	5.0
	1995	122,940	39.9	12.0	12.2	11.7	13.5	27.0	2.0	0.4	0.3	5.1
	2001	151,981	41.1	18.0	11.1	9.3	14.7	27.1	1.3	0.9	0.2	5.3
Thailand	1985	7,787	25.4	3.4	14.4	13.3	22.4	21.1	1.9	2.5	3.9	9.5
	1995	54,837	32.0	2.9	19.7	18.5	16.6	23.4	1.7	1.1	1.4	5.3
	2001	72,746	33.5	6.5	17.0	14.2	15.7	24.0	2.4	1.5	1.7	7.0
Vietnam	1985	407	44.9	0.0	20.3	16.1	5.8	0.4	2.0	1.7	1.0	28.0
	1995	6,222	30.8	5.3	15.2	27.6	24.5	4.4	3.9	0.3	0.7	7.8
	2001	14,894	29.2	6.8	15.3	17.5	26.8	8.8	8.2	0.5	1.1	7.8
All Above Countries	1985	186,156	23.7	3.2	10.2	19.0	12.0	33.0	2.2	1.7	0.7	7.9
	1995	839,045	37.5	5.2	13.7	14.1	14.8	23.4	1.8	1.3	0.7	6.0
	2001	1,194,401	35.0	7.0	11.5	12.1	15.3	25.9	2.0	1.7	1.1	7.1
MEMO ITEM												
East Asian Countries Export Share Change	1985-2001	--	11.3	3.8	1.3	-6.9	3.3	-7.1	-0.2	0.0	0.4	-0.8
Major Market Import Growth Rate (%)		--	11.6	10.2	12.1	6.4	8.1	8.3	6.8	7.1	4.9	6.9

* Brunei, Cambodia, China, Republic of Korea, Hong Kong, Indonesia, Lao PDR, Malaysia, Mongolia, Philippines, Singapore, Taiwan (China), Thailand, Vietnam

Source: IMF Direction of Trade statistics.

One surprising observation is decline in the share of several East Asian countries (Philippines, Taiwan, Hong Kong, and Korea) exports going to NAFTA, which had a relatively high growth rate (8.3 percent annually) for global imports. Previous empirical analyses projected NAFTA preferential tariffs, which discriminate against non-member countries, would cause some diversion (mainly by Mexico) of East Asian exports to North America, and Table 2.1 suggests this occurred (Safadi and Yeats, 1996).

Trade Trends 3

Does Size Matter?

Key Point

The five largest regional exporters account for 80 percent of East Asian intra-trade. At the other extreme, the five smallest regional traders, namely, Brunei, Cambodia, Lao PDR, Mongolia and Vietnam have a combined regional export share under 2 percent. If size is measured by gross domestic product somewhat greater inequalities are observed as China alone accounts for about 43 percent of regional GDP, as opposed to its 30 percent share of intra-regional trade.

If countries that are engaged in regional trade differ markedly in their economic size this potentially could have negative implications for perceptions concerning the benefits of this exchange. In cases, changes in the macroeconomic, fiscal, or monetary policies of a large country have had major adverse effects on smaller RTA members. As an example, Brazil is the dominant member of the original Latin American MERCOSUR agreement (other original members include Argentina, Paraguay and Uruguay) with a GDP two and one-half times larger than that of the three smaller members combined, and a population almost four times greater. Brazil's major devaluation of the Real in the late 1990s resulted in significant export losses for Argentina, whose own currency was then tied to the United States dollar. This chain of events contributed to Argentina's present economic and financial problems.

Some analysts have also argued that significant differences in the size of intra-regional trade flows can potentially have negative effects for some partner countries if resources are drawn disproportionately to areas where production for export is relatively high (see Jabar 1971, or Healey 1977). The unequal sharing of benefits due to disparities in regional trade shares may have contributed to the collapse of the Latin Americas Free Trade Area (LAFTA) and original Andean Pact agreement (Viatsos 1978). In the case of the latter, one country (Venezuela) originated more than 60 percent of all members' exports. More recently, Michaely (1994) demonstrated the lack of similarities between member countries major imports and exports also played a role in the failure of these agreements. How important are relative size differences in East Asian regional trade shares, or in the share of regional GDP originating in each country?

Table 3.1 shows the value and share of regional exports that originated in each East Asian country in 1985, 1995 or 2001, along with its current share of regional gross domestic product. As indicated, the five largest regional exporters now account for 80 percent of intra-trade, although China is the dominant supplier originating almost one-third of this exchange. At the other end of the spectrum, the five smallest regional exporters, namely, Brunei, Cambodia, Lao PDR, Mongolia and Vietnam have a combined trade share under 2 percent. In addition, the data suggest the relative size differences have been increasing. Over 1985-2001 the share of the current five largest countries in regional trade rose by almost 10 percentage points, due largely to China and the Republic of Korea.

If size is measured by the origins of regional gross domestic product a somewhat different picture emerges. China alone accounts for 43 percent of regional GDP (it originates about 30 percent of intra-regional trade) as opposed to about one-tenth of a percent for Cambodia, Laos, and Mongolia. Aside from China the greatest disparities in the "size" measures occur for Singapore and Malaysia where their regional trade shares are roughly three times high than their GDP shares.

Finally, there is the problem of how to properly account for the proper size of China in any East Asian regional arrangement. As indicated in the memo item, greater China, that is, China plus Hong Kong plus Taiwan would originate about one-half of all regional exports, and absorb about 55 percent of regional imports (import data not shown in Table 3.1). Currently, China and Hong Kong generate about 50 percent of regional GDP and this share would rise to about 65 percent if Taiwan (China) were included. For comparison, at the time of the original EU formation Germany, the largest country, produced about 30 percent of the member's gross domestic product. Greater China, like Brazil in MERCOSUR, clearly is of major importance in East Asian regional intra-trade.

Table 3. 1 The Share of Intra-Regional Trade Accounted for by Individual East Asian Exporters: 1985, 1995 and 2001

Exporter	Intra-Regional Export Value* ($million)			Share of Intra-Regional Exports (%)*			2000 Share of Regional GDP
	1985	1995	2001	1985	1995	2001	
Brunei	922	951	1,192	2.1	0.3	0.3	0.4
Cambodia	3	276	182	--	0.1	--	0.1
China	10,867	90,799	127,796	24.7	28.9	30.6	43.1
Hong Kong	6,637	20,016	20,981	15.1	6.4	5.0	7.5
Indonesia	1,953	12,008	17,155	4.4	3.8	4.1	4.2
Korea	2,559	40,346	55,748	5.8	12.8	13.3	14.4
Lao PDR	17	190	220	--	0.1	0.1	0.1
Malaysia	6,844	37,642	46,759	15.5	12.0	11.2	3.3
Mongolia	4	111	242	0.0	0.0	0.1	0.1
Philippines	1,071	4,645	14,736	2.4	1.5	3.5	2.9
Singapore	6,032	38,979	41,806	13.7	12.4	10.0	3.8
Taiwan, China	4,994	49,069	62,477	11.3	15.6	14.9	13.9
Thailand	1,982	17,548	24,359	4.5	5.6	5.8	5.0
Vietnam	182	1,916	4,354	0.4	0.6	1.0	1.2
All Above Countries	44,067	314,496	418,007	100.0	100.0	100.0	100.0
MEMO ITEM							50.6
China and Hong Kong	17,504	110,815	148,777	39.8	35.3	35.6	64.5
China, Hong Kong and Taiwan	22,498	159,884	211,254	51.1	50.9	50.5	21.0
ASEAN	19,006	114,155	150,763	43.1	36.3	36.1	

* Brunei, Cambodia, China, Republic of Korea, Hong Kong, Indonesia, Lao PDR, Malaysia, Mongolia, Philippines, Singapore, Taiwan (China), Thailand, Vietnam

Source: IMF Direction of Trade data.

Trade Trends 4

Regional Implications of China's Emergence

Key Point

Over 1995-2001, East Asia's exports to China grew at an average annual rate of 11.5 percent, which was far above the corresponding 3.8 percentage growth rate for world trade. China's internal contra-cyclical policies, and its maintenance of a stable exchange rate during this period, are generally viewed as important factors helping to contain the effects of the Asian financial crisis. Furthermore, the profile of China's imports and exports is changing in directions that facilitate the international segmentation of production processes. As a result, the interdependence of China and the East Asian countries has been rapidly increasing.

Since the mid-1980s China has become an increasingly important factor in both world and East Asian regional markets. In 1985, China accounted for about 1.6 percent of global exports as opposed to about 6.5 percent in 2001. Viewed somewhat differently, in 1985 China's global exports were about 40 percent lower than the combined exports of all Sub-Saharan African countries. In 2001, just 16 years later, China's exports were more than four times higher. China's emergence has had a major positive impact on the trade of other East Asian countries. For example, over 1995-2001 East Asia's exports to China grew at an average annual rate of 11.5 percent, which was far above the corresponding 3.8 percentage growth rate for world trade. China's internal contra-cyclical policies, and its maintenance of a stable exchange rate during this period, are generally viewed as important factors helping to contain the effects of the Asian financial crisis. At present, China's regional trade is more that double that of Taiwan (China) which is the second largest East Asian exporter (see Table 3.1).

A point that has received less attention, however, is that major changes also occurred in the structure of China's trade with East Asia that also have important implications for the region. The share of machinery and transport equipment products in China's regional exports rose almost seven fold (to 38 percent) since 1985, while sizeable declines occurred in the trade shares for foodstuffs, agricultural materials, and mineral fuels. There is evidence that the magnitude of ties between China and the regional countries are rapidly growing in relative importance. For example, analyses based on the use of so called "trade intensity" indices show that trade between China and individual East Asian countries is considerably greater than what should be expected based their proximity and relative size in world trade (see *Trade Trends 8* that follows).

As an illustration of the changing nature of China's trade with East Asia, Table 4.1 lists China's 30 largest four-digit imports from other East Asian countries in 2001 and also shows their value and share in 1987 and 1995.[5] The three largest products, which account for approximately 15 percent of total regional imports, consist of parts and components for further assembly. Often these components are produced in relatively high wage countries, like Singapore or the Republic of Korea, who then capitalize on China's relatively low wage costs for product assembly – which is often a labor intensive process. The growth of some component product imports has been remarkable. For example, from 1995 to 2001 imports of office machinery parts grew approximately six fold, while imports of electronic microcircuits are now nine times their corresponding level in 1995. As a result of this internationalization of product processes the interdependence of China and other East Asian countries has been greatly strengthened.

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[5] Although data on China's total imports and exports are available from the IMF Direction of Trade Statistics, only UN COMTRADE records provide a detailed breakdown of the products traded in terms of the Standard International Trade Classification system China did not report trade statistics to the UN prior to 1987 so this is the first year for which product line trade data are available for analysis.

Table 4.1 The 30 Largest Products in China's Imports from East Asia; 1987, 1995 and 2001

SITC	Product	Export Value ($000)			Export Share (%)		
		1987	1995	2001	1987	1995	2001
7599	Parts of office machines	50,722	490,818	2,869,804	0.94	1.88	6.45
7764	Electronic microcircuits	10,199	228,983	2,021,807	0.19	0.88	4.54
7649	Parts of telecom equipment	473,013	1,235,248	1,570,519	8.75	4.74	3.53
5138	Poly-carbonic acids	890	230,246	1,084,298	0.02	0.88	2.44
5831	Polyethylene	42,910	548,252	997,861	0.79	2.10	2.24
5833	Polystyrene	68,824	535,690	806,538	1.27	2.06	1.81
7284	Special industry machines	73,015	460,893	716,848	1.35	1.77	1.61
3330	Petroleum oils	0	803,865	628,421	0.00	3.09	1.41
5112	Cyclic hydrocarbons	6,252	408,371	626,479	0.12	1.57	1.41
7768	Piezo-electric crystals	7,925	70,075	622,133	0.15	0.27	1.40
7762	Electrical valves and tubes	177	13,024	581,159	0.00	0.05	1.31
6552	Knitted fabrics	100,251	460,805	569,087	1.85	1.77	1.28
7761	Television picture tubes	2,857	146,215	549,693	0.05	0.56	1.24
5834	Polyvinyl chloride	56,122	212,458	548,773	1.04	0.82	1.23
6746	Iron sheets and plates	4	180,986	540,908	0.00	0.69	1.22
8451	Jerseys and pullovers	56,820	191,990	530,948	1.05	0.74	1.19
5121	Acyclic alcohols	20,104	90,731	517,723	0.37	0.35	1.16
6573	Coated textile fabrics	29,992	247,752	450,836	0.55	0.95	1.01
6114	Bovine leather	27,685	465,378	443,100	0.51	1.79	1.00
5832	Polypropylene	33,466	405,059	440,034	0.62	1.56	0.99
3413	Petroleum gases	136	158,981	430,925	0.00	0.61	0.97
7524	Digital storage units	17	41,937	422,290	0.00	0.16	0.95
7788	Other electrical machinery	25,693	150,333	420,781	0.48	0.58	0.95
2320	Natural rubber	378,006	369,856	415,131	6.99	1.42	0.93
6727	Iron or steel coils	0	116,099	410,476	0.00	0.45	0.92
4242	Palm oil	5,963	687,280	408,704	0.11	2.64	0.92
8471	Clothing accessories	50,182	109,219	405,531	0.93	0.42	0.91
6412	Printing paper	295	268,817	394,777	0.01	1.03	0.89
6522	Cotton fabrics	227,577	392,338	380,991	4.21	1.51	0.86
6531	Synthetic fabrics	30,499	377,074	380,585	0.56	1.45	0.86
0 to 9	All above products	1,779,594	10,098,773	21,187,159	32.92	38.77	47.62
	All goods	5,406,025	26,046,467	44,488,304	100.00	100.00	100.00

Source: UN COMTRADE statistics

While parts and components also appear in the list of China's major regional exports (often these products are manufactured in association with Hong Kong – see *Trade Trends 18*), Table 4.2 suggest East Asian countries often draw on China as a supplier of goods normally produced using labor intensive manufacturing processes. The textile, clothing and footwear products listed in the table account for about 14 percent of China's regional exports. This share increases to over 20 percent if other items, like toys and footwear, which are normally produced by labor intensive processes, are included. Although the exact dimensions of this activity cannot be determined, World Bank (1994) consultations with Chinese government officials using thread, fabrics, or other unassembled or partly assembled materials produced abroad. China actively encourage these types of operations through the use of duty drawback schemes and other trade incentives on intermediate good imports that will be further processed and then exported. As such, both China's imports and exports reflect rapidly growing interdependence with other Asian countries due to the international "splitting up" of production processes.

Table 4.2 The 30 Largest Products in China's Exports to East Asia; 1987, 1995 and 2001

SITC	Product	Export Value ($000)			Export Share (%)		
		1987	1995	2001	1987	1995	2001
8942	Children s toys.	747,991	4,997,380	5,804,360	4.16	5.54	4.67
7599	Parts of office machinery	44,387	1,539,151	5,613,303	0.25	1.71	4.52
8510	Footwear	265,788	6,080,400	4,832,699	1.48	6.74	3.89
7649	Parts of telecom equipment	159,007	1,722,096	4,454,386	0.88	1.91	3.58
8451	Jerseys and pullovers	464,827	1,861,786	3,610,732	2.59	2.06	2.91
8310	Travel goods	563,662	3,140,776	3,130,025	3.14	3.48	2.52
7712	Electric power machinery	30,873	942,769	2,517,265	0.17	1.04	2.03
7643	Radiotelephonic equipment	3,949	674,338	2,427,842	0.02	0.75	1.95
8459	Knit outer garments	367,769	1,031,914	2,021,568	2.05	1.14	1.63
7638	Sound recorders	42,345	1,022,828	1,957,036	0.24	1.13	1.57
8439	Other outer garments	246,762	1,272,787	1,846,140	1.37	1.41	1.49
8462	Under garments	198,525	1,499,694	1,836,566	1.10	1.66	1.48
8939	Miscellaneous articles	107,399	1,170,145	1,798,534	0.60	1.30	1.45
7525	Peripheral control units	5,366	215,958	1,749,821	0.03	0.24	1.41
7788	Other electrical machinery	51,935	617,227	1,674,432	0.29	0.68	1.35
7641	Telephonic line	60,177	838,522	1,665,002	0.33	0.93	1.34
7721	Switches and relays	39,395	689,593	1,565,098	0.22	0.76	1.26
7764	Electronic microcircuits	1,918	222,354	1,540,239	0.01	0.25	1.24
7524	Digital storage units	0	439,188	1,520,902	0.00	0.49	1.22
6552	Knitted fabrics	136,737	705,440	1,455,088	0.76	0.78	1.17
6522	Cotton fabrics	515,919	1,763,450	1,420,636	2.87	1.95	1.14
7162	Electric motors	29,141	924,022	1,415,277	0.16	1.02	1.14
3222	Other coal	84,722	554,337	1,389,743	0.47	0.61	1.12
7758	Electro-thermal appliances.	109,531	1,088,780	1,297,473	0.61	1.21	1.04
7731	Insulated electrical wire	31,174	597,212	1,292,963	0.17	0.66	1.04
8851	Watches and movements	221,653	1,462,017	1,258,668	1.23	1.62	1.01
7722	Printed circuits and parts	11,073	233,719	1,228,034	0.06	0.26	0.99
8811	Photographic cameras	33,758	622,677	1,156,399	0.19	0.69	0.93
7757	Domestic appliances	84,288	976,719	1,103,904	0.47	1.08	0.89
8423	Trousers	235,975	858,065	1,071,445	1.31	0.95	0.86
	All above products	4,896,049	39,765,344	65,655,581	27.24	44.06	52.83
0 to 9	All goods	17,975,100	90,243,269	124,282,677	100.00	100.00	100.00

Source: United Nations COMTRADE records. Prior to 1987 China did not report trade statistics to the United Nations.

Trade Trends 5

East Asian Regional Intra-Trade

(Who is Dependent – Who is Not?)

Key Point

Overall, East Asian average intra-trade shares for both exports and imports increased significantly during 1985-2001, thus, indicating increased dependency on regional trade. Seven of the 14 East Asian countries now draw on regional suppliers for 50 percent, or more, of their total imports, while only Lao PDR directs more than one-half its exports to the region. Increased dependency is reflected in all countries' regional import and export shares, although China's increasing reliance on non-regional markets for its exports constitutes an important exception. Available evidence does not indicate smaller countries are more dependent on regional markets for trade.

Several published studies show larger countries often are able to export a broader range of products that, in turn, helps them extend the geographic directions of their trade.[6] If they have a larger trade base larger, or wealthier, countries may be better able to develop required logistical infrastructure to maintain commercial relations with a greater number of trading partners. If this is the case it might be presumed that the smaller East Asian countries may be more dependent on relatively near regional markets. As such, an important question is what variation exists in individual country's dependency on regional markets, and what factors account for these differences.

The top one-half of Table 5.1 provides information on individual East Asian country's trade dependency by reporting global export values and the share of this exchange destined for regional markets. The lower one-half of the table provides corresponding information on imports. In each case, the share of the country in regional GDP (a measure of relative size) is shown for an initial assessment of the relationship between size and regional trade dependency. Two points are evident from these statistics,

- East Asian average shares for both regional exports and imports increased by 11 and 15 percentage points, respectively, over 1985-2001, thus indicating increased dependency on regional trade. Increased dependency is reflected in all 14 countries regional import shares, although the relative importance of non-regional markets increased for China's exports. Some of the shares, however, appear to be quite volatile. For example, from 1995 to 2001 the share of Cambodia's exports destined for regional markets fell by 60 percentage points to about 10 percent. Over the same, relatively short, period a 20 percentage point increase occurred in Mongolia's regional export share.

- Sizeable differences exist in the individual East Asian country's trade dependency ratios in the case of both imports and exports. However, the relative variation is considerably larger for imports, as reflected in a coefficient of variation of 42.9 percent, as opposed to 30.8 percent for exports. Laos PDR and Cambodia currently source about 90 percent of their total imports from regional countries, while 60 percent of the formers exports go to other East Asian countries. However, there is no indication that these variations are associated with country size. Statistical tests indicate the dependency ratios are not

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[6] Khalaf (1974) examined the relationship between country size and trade concentration and determined that small countries' exports were generally less diversified. Tuong and Yeats (1977) extended these findings and showed smaller countries often were able to maintain relatively fewer trade contacts. In the 1960s and 1970s, these investigations were motivated by the proliferation of new small states, particularly in Africa, and the feeling that there may be some critical size below which countries were not economically viable. More recently, Ng and Yeats (2002) determined that a relatively strong relationship still existed between the size of Sub-Saharan African countries and the diversity of their exports.

significantly correlated with the relative size of each country's global exports or imports, or the share of the country in regional gross domestic product. In spite of previous evidence that size can influence the direction of a country's trade, it does not appear to be an important factor in East Asia.

Table 5. 1 The Share of Intra-Regional Trade in East Asian Imports and Exports; 1985, 1995 and 2001

	Global Trade Value ($Million)			Share of Intra-Regional Trade in Imports or Exports (%)		
East Asian Trader*	1985	1995	2001	1985	1995	2001
EXPORTS						
Brunei Darussalam (0.4)	2,864	2,573	3,632	32.2	37.0	32.8
Cambodia (0.1)	7	393	1,719	52.2	70.1	10.6
China (43.1)	30,928	232,487	414,884	35.1	39.1	30.8
Hong Kong, China (7.5)	24,108	56,163	59,649	27.5	35.6	35.2
Indonesia (4.2)	19,661	47,987	63,132	9.9	25.0	27.2
Korea (14.4)	25,240	118,360	163,645	10.1	34.1	34.1
Lao P. D. Rep. (0.1)	22	345	364	75.2	55.1	60.3
Malaysia (3.3)	17,982	86,557	111,422	38.1	43.5	42.0
Mongolia (0.1)	81	380	489	4.7	29.2	49.6
Philippines (2.9)	6,110	19,802	42,870	17.5	23.5	34.4
Singapore (3.8)	17,208	88,932	93,178	35.1	43.8	44.9
Taiwan, China (13.9)	33,797	123,903	151,942	14.8	39.6	41.1
Thailand (5.0)	7,771	54,975	72,624	25.5	31.9	33.5
Vietnam (1.2)	377	6,189	14,851	48.4	31.0	29.3
All Above Exporters	186,156	839,044	1,194,400	23.7	37.5	35.0
IMPORTS						
Brunei Darussalam (0.4)	663	3,090	1,202	55.2	62.3	70.8
Cambodia (0.1)	28	1,430	1,962	68.9	84.1	89.4
China (43.1)	38,189	145,981	222,108	23.0	52.1	49.8
Hong Kong, China (7.5)	29,469	169,508	173,798	46.8	54.6	60.0
Indonesia (4.2)	7,778	36,079	31,526	13.8	25.8	37.3
Korea (14.4)	21,380	119,208	131,076	13.4	18.7	25.8
Lao P. D. Rep. (0.1)	53	593	651	64.5	81.2	90.7
Malaysia (3.3)	11,742	76,021	73,251	44.4	45.2	51.6
Mongolia (0.1)	87	489	596	7.5	24.7	39.1
Philippines (2.9)	5,743	29,236	39,596	34.1	33.6	37.1
Singapore (3.8)	25,560	114,164	111,074	39.2	42.2	43.5
Taiwan, China (13.9)	18,169	94,962	100,776	12.7	22.3	31.4
Thailand (5.0)	7,972	65,690	55,671	33.4	31.6	36.2
Vietnam (1.2)	576	9,942	15,028	33.4	68.1	64.9
All Above Importers	167,409	866,393	958,314	29.4	39.8	44.5

* Statistics in parentheses show the 2000 share of each economy in regional gross domestic product. This has been included as a measure of market size to help determine if larger economies are generally less dependent on regional trade.

Source: IMF Direction of Trade Data

If size is not a factor, what explains the variation in regional trade shares observed in Table 5.1. Almost certainly considerations relating to comparative advantage have an influence. Some countries comparative advantage may, more strongly, direct trade toward non-regional market to better exploit differences in natural resource endowments or differences in worker wage costs or productivity. Government imposed trade barriers may also be important. For example, Safadi and Yeats (1993) determined that Asian trade barriers often escalate sharply with commodity processing. This appeared to be an important barrier to increased regional trade in processed natural resource based products. In addition, there is a growing appreciation of the importance of the influence of international transport costs on the direction of trade. The World Bank (2003), for example, cites evidence that on some liner routes transport and insurance costs may double the fob cost of products exported from Vietnam, Laos and Cambodia.

Trade Trends 6

Changing Geographic Patterns of Regional Trade Dependency

Key Point

The relative importance of China as a destination for regional exports significantly increased since the mid-1980s, and this trend appears to have sharply accelerated since 1995. In part, China's maintenance of a stable exchange rate, in the face of major devaluations in other East Asian currencies, appears to have contributed to its recent increased importance as a regional market.

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The conclusion that East Asian countries became increasingly interdependent in trade raises questions concerning the factors responsible. Was a diversification of products exported a factor promoting regional trade, or did increased opportunities for intra-industry trade play a role? Do the changes reflect an increasing complementarity of regional exports and imports, were the gains due to increased competitiveness of East Asian exporters, or were growing opportunities for international production sharing a factor. While these points will be addressed in sections that follow, the focus here is on the intra-regional geographic pattern of this increased dependency. Specifically, was the overall increase in the importance of trade due to a relatively few countries, or was it generally broad based across the region?

For answers, a 1985, 1995 and 2001 bilateral regional matrix of export shares for each East Asian country's exports was first constructed (see Appendix Table A6.1). Next, differences in the 1985-2001 and 1995-2001 shares were calculated, and the largest positive and negative changes identified. The intention here was to try and determine how the direction of regional trade was changing, both in the longer term and over the period of the East Asian financial crisis.

Information on the longer-term 1985-2001 East Asian trade share changes is summarized in Table 6.1. As an example, the table shows China's largest positive 1985 to 2001 export share increase (a gain of over 10 percentage points) occurred in trade with Korea, while the second largest gain (4.6 points) was in trade with Taiwan (China). In contrast, the share of China's regional exports destined for Singapore fell by 15 percentage points. The largest of all bilateral regional trade share gains was recorded for Mongolia's exports to China (up 46 percentage points), while the largest decline (down almost 54 percentage points) was for Laos PDR exports to China. Similarly, Table 6.2 provides similar statistics for the recent 1995-2001 period.

The statistics in Table 6.1 confirm the longer-term increase in China's relative importance as a destination for regional exports during 1985-2001, but the data in Table 6.2 strongly suggest China's this swing toward China accelerated over 1995-2001. For example, 11 of the 13 countries listed in Table 6.2 record their largest, or second largest regional trade share increase for exports to China. In this six year

Table 6.1 Major Changes in East Asian Regional Trade Dependency: 1985-2001.

	Export Markets Increasing In Relative Importance				Largest Declining Market Share	
	Largest Market Share Increase		Second Largest Market Share Increase			
Exporter	Importer	% Point Change	Importer	% Point Change	Importer	% Point Change
Brunei	Korea	13.7	China	12.4	Singapore	-11.4
Cambodia	Thailand	6.8	Hong Kong	6.5	Vietnam	-23.1
China	Korea	10.4	Taiwan, China	4.6	Singapore	-15.3
Hong Kong	Malaysia	5.9	Singapore	5.9	China	-26.9
Indonesia	Malaysia	6.0	China	5.8	Korea	-8.1
Korea	China	42.0	Taiwan, China	4.7	Hong Kong, China	-25.2
Lao PDR	Thailand	33.5	Vietnam	31.3	China	-53.8
Malaysia	China	10.4	Hong Kong, China	8.3	Singapore	-11.6
Mongolia	China	46.2	Korea	1.0	Vietnam	-47.4
Philippines	Taiwan, China	12.4	China	4.2	Malaysia	-9.0
Singapore	China	8.3	Vietnam	5.1	Malaysia	-10.1
Taiwan, China	China	43.8	Vietnam	3.0	Hong Kong, China	-31.5
Thailand	China	6.0	Indonesia	3.8	Malaysia	-10.0
Vietnam	China	23.2	Taiwan, China	9.6	Hong Kong, China	-48.7

Source: IMF Direction of Trade Data.

period, the regional share of Brunei, Cambodia, Korean, Taiwan (China), and Thailand's exports to China rose by 10 percentage points, or more, with the increase for Cambodia and Korea exceeding 16 points. However, in cases these recent changes were clearly part of a longer-term trend. For example, Table 6.1 shows that over 1985-2001 the share of Korea's exports destined for China rose by 42 percentage points. Roughly two-fifths of this increase occurred within the 1995-2001 sub-interval.

Apart from the longer-term trends, what factors account for the recent acceleration in the importance of China in regional trade. In part, one important factor was China's economic policies during the period of the Asian financial crisis. China is widely seen as having contributed to stability in 1997-98 by maintaining a fixed exchange rate in the face of major devaluations of other East Asian currencies. The combination of a strong currency and strong growth in China, set against weakening currencies in other East Asian countries, clearly contributed to the re-orientation of trade regional toward Chinese markets.

Table 6.2 Major Changes in East Asian Regional Trade Dependency: 1995-2001.

	Export Markets Increasing In Relative Importance				Largest Declining Market Share	
	Largest Market Share Increase		Second Largest Market Share Increase			
Exporter	Importer	% Point Change	Importer	% Point Change	Importer	% Point Change
Brunei	China	12.4	Thailand	2.1	Singapore	-8.3
Cambodia	China	17.0	Singapore	14.7	Thailand	-51.5
China	Korea	2.2	Taiwan, China	1.2	Hong Kong, China	-8.3
Hong Kong	Indonesia	3.0	Hong Kong, China	1.7	Singapore	-7.2
Indonesia	China	5.6	Malaysia	3.0	Hong Kong, China	-4.9
Korea	China	16.5	Taiwan, China	1.3	Hong Kong, China	-7.1
Lao PDR	Vietnam	8.8	Thailand	3.9	Taiwan, China	-7.6
Malaysia	China	7.8	Korea	2.1	Singapore	-8.1
Mongolia	China	8.1	Thailand	0.1	Korea	-7.7
Philippines	Taiwan, China	8.2	China	7.3	Singapore	-5.2
Singapore	China	3.6	Indonesia	2.9	Thailand	-3.9
Taiwan, China	China	13.7	Indonesia	2.6	Hong Kong, China	-11.9
Thailand	China	10.1	Indonesia	2.0	Singapore	-15.4
Vietnam	China	5.9	Thailand	5.3	Taiwan, China	-4.5

Appendix Table A6.1 The Origins and Destinations of East Asian Intra-Trade in 1985, 1995 and 2001

Origin of Regional Exports	Year	Regional Exports ($ Mill.)	Share of Regional Exports Destined For (%)										
			China	Hong Kong	Indonesia	Rep. of Korea	Malaysia	Philippines	Singapore	Taiwan (China)	Thailand	Vietnam	Others*
Brunei	1985	922	0.0	0.1	0.1	24.2	0.1	1.6	26.6	11.4	35.9	0.0	.
	1995	951	0.0	0.1	0.0	39.5	0.4	0.8	23.5	5.3	30.4	0.0	.
	2001	1,192	12.4	0.1	1.4	37.9	0.4	0.0	15.2	0.0	32.5	0.0	.
Cambodia	1985	3	17.5	0.0	0.0	.	10.8	0.0	33.8	0.0	0.0	37.9	.
	1995	276	2.1	4.5	1.6	0.0	5.3	0.0	15.3	3.5	58.3	8.5	1.0
	2001	182	19.1	6.5	0.4	3.9	10.4	1.8	30.0	5.8	6.8	14.8	0.6
China	1985	10,867	--	69.6	2.3	0.0	2.3	2.7	20.9	.	2.0	0.0	0.1
	1995	90,799	--	76.8	1.6	8.2	2.9	0.7	4.5	3.4	2.3	0.4	0.3
	2001	127,796	--	68.5	2.4	10.4	3.0	0.7	5.6	4.6	2.9	1.6	0.2
Hong Kong	1985	6,637	71.8	--	0.8	6.7	3.1	3.2	7.4	4.8	1.6	0.4	0.1
	1995	20,016	43.0	--	1.4	4.2	8.4	6.9	20.5	9.2	3.7	2.1	0.7
	2001	20,981	44.9	--	4.4	5.9	9.0	6.0	13.3	8.8	3.9	2.8	1.0
Indonesia	1985	1,953	16.9	7.7	--	34.2	7.1	9.7	.	21.2	3.1	0.0	.
	1995	12,008	17.1	13.6	--	27.7	10.1	5.2	.	17.9	5.6	1.6	1.2
	2001	17,155	22.7	8.7	--	26.1	13.1	4.4	.	14.7	8.0	2.2	0.3
Korea	1985	2,559	0.0	41.6	8.0	--	10.8	8.4	16.5	7.3	7.3	0.1	.
	1995	40,346	25.5	23.5	6.1	--	7.9	3.5	13.4	10.7	6.1	3.1	0.2
	2001	55,748	42.0	16.4	6.5	--	5.3	3.5	6.9	12.0	3.8	3.4	0.3
Laos	1985	17	57.2	3.6	0.0	0.0	0.0	0.0	10.5	0.0	7.1	21.7	.
	1995	190	3.4	0.5	0.0	0.0	0.0	0.0	5.6	9.5	36.7	44.2	.
	2001	220	3.4	0.1	0.5	0.2	0.1	0.0	0.2	1.9	40.6	53.0	.
Malaysia	1985	6,844	2.9	2.5	0.8	18.0	.	5.7	54.6	7.0	8.0	0.0	0.4
	1995	37,642	5.5	9.9	6.9	6.7	.	1.7	51.1	7.8	8.6	0.5	1.3
	2001	46,759	13.3	10.8	3.7	8.8	1.1	2.0	43.0	9.0	6.6	1.1	1.7
Mongolia	1985	4	52.6	0.0	.	.	0.0	.	.	.	.	47.4	.
	1995	111	90.7	0.5	0.0	8.7	0.1	0.0	0.0	.	0.0	0.0	.
	2001	242	98.8	0.1	0.0	1.0	0.0	0.0	0.0	.	0.1	0.0	.
Philippines	1985	1,071	9.9	19.5	2.1	14.1	21.5	.	18.5	9.7	5.6	0.0	.
	1995	4,645	5.9	18.6	1.7	13.1	9.9	.	23.7	13.9	12.5	0.5	0.2
	2001	14,736	13.2	13.4	1.0	12.3	12.5	.	17.3	22.1	7.7	0.5	.

Appendix Table A6.1 Continued

Origin of Regional Exports	Year	Regional Exports ($ Mill.)	Share of Regional Exports Destined For (%)										
			China	Hong Kong	Indonesia	Rep. of Korea	Malaysia	Philippines	Singapore	Taiwan (China)	Thailand	Vietnam	Others*
Singapore	1985	6,032	4.0	24.0	13.9	4.4	32.3	2.1	--	4.6	11.4	0.4	2.9
	1995	38,979	8.7	25.9	6.1	5.6	24.7	3.3	--	7.6	10.7	3.7	3.8
	2001	41,806	12.3	22.4	9.0	7.2	22.2	4.3	--	8.1	6.8	5.5	2.2
Taiwan, China	1985	4,994	.	53.7	5.8	6.7	6.5	3.7	17.5	--	5.8	0.0	0.3
	1995	49,069	30.1	34.1	0.0	5.2	8.1	3.1	10.4	--	7.0	1.8	0.2
	2001	62,477	43.8	22.2	2.6	6.9	6.7	2.6	7.9	--	4.2	3.0	0.1
Thailand	1985	1,982	13.3	14.9	2.4	7.7	22.0	2.8	27.5	7.4	--	0.0	2.0
	1995	17,548	9.2	15.5	4.2	5.3	11.6	2.4	36.6	8.5	--	2.5	4.1
	2001	24,359	19.3	14.4	6.2	6.5	12.0	3.7	21.2	9.0	--	3.6	4.2
Vietnam	1985	182	0.0	54.7	3.3	0.0	7.4	0.0	34.1	0.0	0.3	--	0.1
	1995	1,916	17.3	9.1	8.2	10.1	6.5	2.2	23.4	14.1	2.2	--	6.7
	2001	4,354	23.2	6.0	6.9	8.9	7.3	6.4	19.5	9.6	7.5	--	4.6
All Above	1985	44,067	24.7	15.1	4.4	5.8	15.5	2.4	13.7	11.3	4.5	0.4	2.1
	1995	314,496	28.9	6.4	3.8	12.8	12.0	1.5	12.4	15.6	5.6	0.6	0.5
	2001	418,007	30.6	5.0	4.1	13.3	11.2	3.5	10.0	14.9	5.8	1.0	0.5

* Includes Brunei, Cambodia, Lao PDR and Mongolia

Source: Partner country import statistics drawn from IMF Direction of Trade data

Trade Trends 7

How "Intense" is East Asian Intra-Regional Trade?

Key Point

Even after the influence of their relatively close proximity is accounted for East Asian intra-trade must be generally classified as highly "intense." Also, the intensity of trade within the region increased markedly over both the full 1985-2001, and the shorter 1995-2001 period. For example, in 1985 only 40 percent of all East Asian bilateral trade flows were greater than expected, based on the countries' shares in world trade, as opposed to 61 percent in 2001. Trade relations between most East Asian countries have been growing sharply in terms of their intensity and importance!

Several statistical indices can provide useful insights concerning aspects of East Asian intra- trade. One such measure -- the so called "trade intensity" or TI index – has been used to determine whether the value of trade between two countries is greater, or smaller, than should be expected based on their relative importance in world trade. For example, IMF Direction of Trade statistics report that approximately 46 percent of Indonesia's 2001exports went to other East Asian countries. Is this above, or below, what should be expected on the basis of the partners' relative size in global trade? Is China's year 2001 trade with other regional countries, about 32 percent of total exports, higher or lower than should be expected? Another question of importance is whether the intensity of trade between East Asian countries has been increasing over time. If so, what is the magnitude of the change?

In previous applications the trade intensity index has been defined as;

$$(7.1) \qquad T_{ij} = [x_{ij}/X_{it}] \div [x_{wj}/X_{wt}],$$

where x_{ij} and x_{wj} are the values of i's exports and world exports to j, X_{it} is i's total exports, and X_{wt} are total world exports. As such, the index reflects the ratio of the share of country i's exports going to country j, relative to the share of world trade destined for country j (see Frankel 1997, Anderson 1983, or Drysdale and Garnaut 1982 for illustrative applications).[7] An index of more (less) than unity has been interpreted as indicating a bilateral trade flow is larger (smaller) than expected given the partner country's importance in world trade. However, a clear limitation of the standard trade intensity index is that it fails to account for distances between individual countries. With all other things equal, countries that are near to each other should be expected to have more "intense" trade relations than those that are geographically distant. This point has long been recognized, and validated, in so called "gravity models" of international trade (see Linnemann 1966, Tinbergen 1962 and Pulliainen 1963), but the influence of distance has yet to be properly accounted for in previous analyses employing the trade intensity index.

In recognition of this point, a modified application of the standard TI index, which accounts for geographic distance, is used for analysis of East Asian countries' trade. This approach first employs a regression equation to determine how trade intensities between countries normally vary with distance. The regression was estimated using bilateral trade statistics from a randomly drawn sample of both regional and non-regional countries and took the form,

$$(7.2) \qquad \underset{}{\text{Log}\,(T_{ij})} = \underset{(6.72)}{0.6245} - \underset{(9.97)}{0.00015\,(\text{distance})}, \qquad R^2 = .672$$

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[7] Several investigations have jointly computed trade intensity indices using both import and export statistics. These data could produce somewhat different results if a country's trade (that is, exports versus imports) was seriously out of balance. Also, some modified versions of equation 7.1 have subtracted country j's imports from the world trade total (X_{wt}) to account for the fact that a country cannot trade with itself. Given the relatively small size of most East Asian countries this "adjustment" would not have produced dissimilar results to those shown in Table 7.1.

where t values (which are all statistically significant at the 99 percent confidence level) are shown in parentheses.[8] In the above, distances were expressed in miles between the capitals of exporting and importing countries with the exceptions of the United States and Canada. Here, if trade involved a South or East Asian country, distance was measured by the number of miles to San Francisco or Vancouver.

Next, the regression equation was used to project the "expected" trade intensity (T_{ij}*) given the geographic distance between two countries. The ratio of the actual to expected trade intensities was then calculated,

(7.3) $R_{ij} = T_{ij} \div T_{ij}$*

If this ratio exceeds unity the bilateral trade intensity between the two countries is higher than expected given the distance that separates them. Ratios below unity reflect a lower than expected trade intensity. Finally, the actual value of the expected distance adjusted trade intensity index can be derived from,

(7.4) T_{ij}* $= T_{ij} \div R_{ij}$

If the value of the traditional trade intensity (equation 7.1) index fails to exceed T_{ij}* the intensity of bilateral trade must be considered as lower than expected *even if the former exceeds unity*.

The top one-half of Table 7.1 reports values for the expected distance adjusted trade intensity indices between East Asian countries in 2001, while the lower half shows values for the traditional index. In the case of the latter, situations where the traditional index exceeds unity, but still falls below the critical value of the distance adjusted index, are marked with an asterisk. The intention here is to quickly identify situations where the traditional index would inappropriately lead to the conclusion that trade between two East Asian countries was more intense than expected. Table 7.2 provides information on traditional trade intensity indices for 1985 and 1995 and indicates whether or not they exceeded their distance adjusted expected values.[9]

Two points are evident from these comparisons,

- First, any analysis of the intensity of trade between East Asian countries must account for the influence of the distance. Average expected distance adjusted TI indices for East Asia ranged from a high of 2.89 for Cambodia to a low of 2.22 for Korea. These values far exceed unity which was the "cut off" used in traditional trade intensity analyses. In 2001, there were 15 bilateral trade flows where the standard TI index exceeded unity, but which fell short of the expected distance adjusted index. In these cases, the traditional approach would have misclassified the intensity of trade as higher than expected although the reverse was true.

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[8] To be included in the sample countries had to be classified by the World Bank (2001) as being either middle or high income countries. Low income countries were excluded since a disproportionately high number are located in Africa and appear to have abnormally high transport costs that could distort the normal relation between distance and trade (Amjadi and Yeats 1995). Even more important is the fact that many of the low income countries fail to report timely trade data so the statistics in IMF DOT may often be unreliable estimated trade data. The mileage statistics used in the regression are "great circle" estimates of distance that account for features like the curvature of the earth between two geographic points. These estimates were taken from a US Department of Agriculture web page that can be found at www.wcrl.ars.usda.gov/cec/java/lat-long.html. Tests involving a linear regression equation were distinctly inferior to equation 7.2 and could only "explain" about one-third the total variation in the data.

[9] Some extremely high TI index values reported in Table 7.2, like that shown for Cambodia's trade with Vietnam, result from the partner's very small share of global imports, and the fact that bilateral trade relations were still distorted by unusual social, economic, or governmental problems,

Table 7. 1 East Asian Distance Adjusted and Traditional Trade Intensity Ratios in 2001

Exporter	Cambodia	China	Hong Kong	Indonesia	Korea	Malaysia	Philippines	Singapore	Taiwan, China	Thailand	Vietnam	Japan
	Expected Distance Adjusted Trade Intensity Indices											
Cambodia	--	2.05	3.02	2.76	1.91	3.40	2.82	3.29	2.52	3.76	3.35	1.63
China	2.05	--	2.76	1.36	3.43	1.66	2.29	1.61	2.91	2.07	2.55	2.69
Hong Kong	3.02	2.76	--	2.10	2.69	2.46	3.31	2.42	3.53	2.90	3.49	2.27
Indonesia	2.76	1.36	2.10	--	1.35	3.27	2.32	3.48	1.85	2.56	2.20	1.21
Korea	1.91	3.43	2.69	1.35	--	1.57	2.40	1.54	3.07	1.89	2.34	3.29
Malaysia	3.40	1.66	2.46	3.27	1.57	--	2.48	3.94	2.10	3.27	2.72	1.34
Philippines	2.82	2.29	3.31	2.32	2.40	2.48	--	2.52	3.27	2.62	2.89	2.36
Singapore	3.29	1.61	2.42	3.48	1.54	3.94	2.52	--	2.10	3.10	2.63	1.34
Taiwan, China	2.52	2.91	3.53	1.85	3.07	2.10	3.27	2.10	--	2.45	2.95	2.68
Thailand	3.76	2.07	2.90	2.56	1.89	3.27	2.62	3.10	2.45	--	3.41	1.57
Vietnam	3.35	2.55	3.49	2.20	2.34	2.72	2.89	2.63	2.95	3.41	--	1.91
Average	2.89	2.27	2.87	2.33	2.22	2.68	2.69	2.66	2.67	2.80	2.85	2.23
	Traditional Trade Intensity Indices											
Cambodia	--	1.55*	0.34	0.16	0.76	2.36*	1.14*	4.27	1.29*	2.48*	9.41	0.59
China	1.01*	--	10.22	2.88	5.92	1.96	1.41*	2.33	2.99	3.10	2.86	5.88
Hong Kong	9.34	12.11	--	5.95	3.80	6.78	12.95	6.28	6.53	4.79	5.95	2.79
Indonesia	0.75	0.10	1.14*	--	13.08	7.58	7.39	3.14*	8.41	7.48	3.54	6.08
Korea	1.45*	10.96	2.70	8.45	--	3.86	7.31	3.14	8.63	4.48	6.97	11.57
Malaysia	0.82	4.27	2.19*	5.91	6.83	--	5.11	24.24	7.96	9.56	2.80	5.83
Philippines	0.28	0.14	2.23*	1.30*	7.83	9.17	--	8.01	15.97	9.10	0.96	12.45
Singapore	20.44	4.23	4.87	15.51	5.96	21.31	11.81	--	7.61	10.60	14.88	4.90
Taiwan, China	2.44*	13.80	4.43	4.09	5.22	5.90	6.48	4.36	--	5.92	7.49	12.66
Thailand	33.05	4.98	2.34*	7.93	4.04	8.61	7.58	9.55	6.32	--	7.23	10.18
Vietnam	35.27	5.22	0.85	7.79	4.80	4.58	11.57	7.69	5.94	7.62	--	2.64

* Although the traditional trade intensity index exceeds unity in this case it falls below the expected distance adjusted index for the two trading partners. As such, the intensity to trade is lower than expected given the geographic distance between the two trading partners.

Source: Based on data from International Monetary Fund, Direction of Trade (DOT) Statistics

Table 7.2 East Asian Traditional Trade Intensity Ratios in 1985 and 1995

	Trading Partner											
Exporter	Cambodia	China	Hong Kong	Indonesia	Korea	Malaysia	Philippines	Singapore	Taiwan China	Thailand	Vietnam	Japan
	1985 Traditional Trade Intensity Indices											
Cambodia	--	8.16	0.00	0.00	0.00	16.37	0.00	19.16	0.00	0.00	1,719.58	0.78
China	1.15*	--	17.74	0.89	0.00	1.11*	4.26	5.79	0.05	0.92	0.00	3.47
Hong Kong	0.00	17.00	--	2.21	1.17*	1.21*	3.82	2.16*	0.13	1.52*	9.82	0.66
Indonesia	0.00	0.30	1.27*	--	2.28	0.68	3.96	6.70	0.08	0.95	1.39*	7.19
Korea	0.00	0.00	3.50	1.27*	--	2.43	2.95	1.24*	0.01	1.03*	0.00	2.33*
Malaysia	4.49	0.68	0.91	0.84	3.80	--	8.85	14.88	0.00	7.45	0.34	3.82
Philippines	0.00	1.15*	2.74*	0.78	1.05*	6.16	--	4.15	0.01	3.92	1.49*	2.95
Singapore	38.60	0.95	4.32	7.23	0.80	25.39	3.54	--	0.75	9.06	29.92	1.46
Taiwan, China	0.00	2.02*	0.01	0.00	0.00	0.05	0.00	0.00	--	0.08	0.00	0.00
Thailand	0.00	2.49	2.74	1.19*	1.21*	8.16	2.76	6.09	0.01	--	0.00	2.08
Vietnam	309.55	0.00	4.67	0.06	1.45*	0.00	0.00	4.02	0.00	0.13	--	0.73
	1995 Traditional Trade Intensity Indices											
Cambodia	--	0.00	0.01	0.21	0.00	2.41*	0.00	0.00	0.00	2.14*	3.17*	0.04
China	1.65*	--	11.71	3.82	8.26	1.84	4.24	3.16	1.25*	4.07	2.90	2.97
Hong Kong	1.07*	25.57	--	2.34	2.98	1.90*	7.10	3.83*	2.05*	3.22	2.20*	0.95
Indonesia	7.51	3.07	1.76*	--	12.37	4.91	7.67	8.33	1.55*	5.28	2.92	4.37
Korea	0.00	5.62	4.11	9.05	--	5.04	7.31	7.18	6.69	6.70	6.47	2.12*
Malaysia	5.01	1.96	2.59	5.04	5.04	--	5.42	27.77	5.81	13.46	2.18*	1.94
Philippines	0.08	0.92	2.29*	2.79	4.70	3.86	--	7.69	19.05	15.51	4.26	2.45
Singapore	20.15	1.79	4.15	5.77	5.06	40.96	10.01	--	6.91	19.98	9.07	1.21*
Taiwan, China	0.01	4.75	4.99	0.19	5.31	4.99	5.25	3.85	--	3.39	0.44	3.11
Thailand	84.51	2.22	2.38*	5.08	3.10	7.83	4.50	15.53	2.21*	--	5.55	2.84
Vietnam	309.55	4.34	2.79*	10.27	0.00	4.56	12.45	10.30	3.62	2.54*	--	4.56

* Although the traditional trade intensity index exceeds unity in this case it falls below the expected distance adjusted index for the two trading partners. As such, the intensity to trade is lower than expected given the geographic distance between the two trading partners.

Source: Based on data from International Monetary Fund, Direction of Trade (DOT) Statistics

. • Second, in spite of this qualification, the statistics indicate East Asian intra-trade must be generally classified as highly "intense." This conclusion follows from the fact that TI indices for 85 (61 percent) of the possible 140 bilateral trade flows among regional countries exceed their critical distance adjusted expected values, often by a considerable margin. Also, the evidence strongly suggests that the intensity of trade between East Asian countries has been increasing markedly. For example, in 1985 only 40 percent of the distance adjusted TI indices exceeded their critical values as opposed to 61 percent in 2001. The general trend toward more intense trade continued in the recent 1995-2001 period (China is an exception - see Table 7.2). In 1995, for example, the TI indices for 78 bilateral trade flows (excluding Japan) exceeded their critical values as opposed to 85 in 2001. Also, in 2001 the median value for all East Asian trade intensity rose to 5.1 from 4.3 in 1995. *Trade relations between East Asian countries have been growing sharply in terms of their intensity and importance!*

Trade Trends 8

Have East Asian Trade Profiles Become More Complementary?

Key Point

A trade "complementarity" index shows growing similarities between the types of goods East Asia exports, and the goods imported, was a potent factor promoting the expansion of intra-trade. The current East Asian values for this index are very similar to those for countries, like the original EU (6) members at the time of the formation of the European Economic Community.

One possible explanation for the impressive expansion of East Asian intra-trade, which is reflected in the previous analyses, is that regional countries' export and import profiles became more "complementary" over time. That is, in the 1970s and early 1980s, the potential for intra-trade may have been constrained by the fact that many East Asian countries could not competitively *export* the types of goods that constituted the region's major *imports*. An important question is whether the region's export and import profiles became more similar over time and, therefore, facilitated the growth in intra-trade.

The so called "trade complementarity index" can show how well the export profile of one country, or group of countries, matches the import profiles of others. Furthermore, changes in the index over time can help determine whether their trade profiles are becoming more, or less, compatible. The index of trade complementarity between two countries k and j (C_{kj}) is defined as,

$$(8.1) \qquad C_{ij} = 100 - \sum(|m_{ik} - x_{ij}| \div 2)$$

where x_{ij} is the share of good i in the exports of country j, and m_{ik} is the share of good i in the imports of country k. The index is zero when no good exported by one country is imported by the other, and 100 when the export-import shares exactly match. As such, it is assumed that higher index values indicate more favorable prospects for a successful trade arrangement between countries.[10] Michaely (1994) used the

[10] Several caveats should be noted. First, use of the index presumes that a country can expand production and trade of its exports on a relatively constant cost basis. Second, considerations must be given to relevant factors like economic geography. High complementarity indices may be misleading if the countries are geographically distant, or have other natural barriers that make trade unprofitable. Third, relative size differences can be very important. If exporter i can only supply a very small share of country j's import needs this would be a negative factor, even if their trade complementarity indices were quite high. Finally, the index assumes that countries assign equal priorities for trade expansion to all goods. If there are different priorities for (say) manufactures as opposed to raw materials this complicates the use of the index.

index to assess prospects for Latin American trade arrangements, while Yeats (1998) employed the measure to analyze the compatibility of Sub-Saharan African countries' intra-trade.

Table 8.1 reports 1985, 1995 and 2001 complementarity indices for trade between individual East Asian countries. Although indices for several smaller counties, like Brunei, Cambodia, Laos PDR, and Mongolia are low and essentially static, dramatic increases occur in the indices for most other countries. In fact, the latter rose by about 16 points over its value (51.2) in the mid-1980s. The trade complementarity indices for five countries, namely, Hong Kong, Malaysia, Philippines, Thailand and Taiwan rose by more than 50 percent, while Indonesia's indices more than doubled. Overall, the evidence presented in Table 8.1 shows growing similarities between the goods East Asia exports, and the goods other regional countries import, was a potent factor promoting the expansion of intra-trade.

An interesting, although somewhat dissimilar, pattern emerges for trade with the non-regional partners. The indices for trade with the EU (15) registered only a slight increase (under 4 points) since the mid-1980s, while the increase for NAFTA trade was less than 8 points. The indices for trade with Japan, however, registered about the same magnitude of change as those for East Asian intra-trade. These data strongly suggest that the trade profiles of the regional countries changed in a way that allowed them to capitalize on opportunities in other Asian markets. This should not be surprising, however, since statistics compiled and analyzed by UNCTAD (1990, pp. 234-237) show a relatively strong interrelation exists between changes in national income and changes in the structure of exports.[11] In general, as income levels rise the structure of a country's exports change to more closely parallel the structure of world trade. As a result of its rising income levels, East Asia's exports more closely matched regional imports, that is, trade became more complementary.

An interesting question concerns similarities between the statistics shown in Table 8.1 with indices for countries that previously formed regional trade arrangements. . Yeats (1998) provides relevant information by reporting complementarity indices for "successful" and "failed" regional arrangements computed using trade data from the year in which the agreements were implemented. The indices ranged from values of 7 to 22 for previously failed arrangements (in the sense that the agreements were eventually dissolved) like LAFTA and the original Andean Pact, and from values of 53 to 64 for the EU(6) and NAFTA.

Finally, the increase in East Asia's trade complementarity indices no doubt were an important factor fueling the rapid expansion of intra-regional trade. In 2001, trade among the emerging East Asian countries was approximately $418 billion. If Japan were included the value would be about $563 billion. This is approximately $30 billion higher than the current intra-trade of the six original founders (Belgium-Luxembourg, Netherlands, France, Germany, and Italy) of the European Union, and about $70 billion below NAFTA intra-trade. In contrast, intra-trade of MERCOSUR members is under $20 billion.

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[11] These conclusions were based on the use of a trade structure (TS) index that took the form,

$$(8.1) \qquad TS_j = [\Sigma \, | h_{ij} - h_i | \,] \div 2,$$

where h_{ij} is the share of commodity i in the exports of j, and h_i is the share of i in total world exports. Lower values of the index indicate a country's export structure more closely matches that of world trade. For example, the UNCTAD (1990) document reported a mid-1980s TS index value of 0.429 for Japan, 0.605 for Singapore, and 0.909 for Lao PDR.

Table 8. 1 Complementarity Indices for East Asian Trade

Trader	Regional Exports ($ million)			Trade Complementarity Index		
	1985	1995	2001	1985	1995	2001
REGIONAL TRADE						
Brunei	922	951	1,192	5.0	8.1	7.6
Cambodia	3	276	182	10.2	8.2	6.7
China	10,867	90,799	127,796	33.4	44.3	47.0
Hong Kong, China	6,637	20,016	20,981	32.0	53.6	54.9
Indonesia	1,953	12,008	17,155	16.7	30.9	40.2
Korea	2,559	40,346	55,748	47.3	64.9	67.7
Lao, PDR	17	190	220	7.7	8.5	8.0
Malaysia	6,844	37,642	46,759	29.9	50.1	56.4
Mongolia	4	111	242	6.5	8.7	7.6
Philippines	1,071	4,645	14,736	28.1	43.8	47.2
Singapore	6,032	38,979	41,806	47.5	53.0	61.3
Taiwan, China	4,994	49,069	62,477	43.4	62.2	68.5
Thailand	1,982	17,548	24,359	29.3	48.5	57.3
Vietnam	182	1,916	4,354	13.2	16.2	23.5
All Above Countries	44,067	314,496	418,007	51.2	65.2	67.3
NON-REGIONAL TRADE						
East Asia – Japan	35,280	118,717	144,884	51.9	60.1	65.4
East Asia – NAFTA	61,368	196,118	309,066	53.8	63.0	61.4
East Asia – EU (15)	22,352	124,015	182,182	56.4	59.2	59.8

Source: Computations based on UN COMTRADE data

Trade Trends 9

Competitive Factors and the Change in Regional Exports

Key Point

An empirical procedure is used to isolate the effects of demand, diversification and competitiveness changes on East Asia's regional exports. The results show that a markedly improved ability to compete played a major role in the expansion of East Asian intra-trade since the mid-1980s. Separate tests for the 1995-2001 period indicate East Asian regional market shares continued to grow in spite of the effects of the financial crisis. Similar analyses involving exports to the EU(15), NAFTA and Japan shows East Asia's improved competitiveness also occurred in major global markets.

The previous analyses showed East Asian regional trade expanded at a relatively rapid pace since the mid-1980s. Factors relating to both supply and demand influenced these trade changes, and an important question concerns the extent to which an improvement in competitiveness contributed to this favorable performance. This question can be addressed by decomposing East Asian export growth into three factors, two of which relate to demand changes and changes in the ability to compete.[12] The influence of demand for a specific product can be measured by the change in the total (global) value of regional

[12] A detailed description and early application of this procedure can be found in GATT (1966). The analysis also constituted a large part of Irving Kravis' (1970) classic analysis of the influence of trade on the 20th century growth of developing countries.

imports of the item. In calculating the influence of this factor, one assumes that a given country (like Thailand) maintains its regional trade share for the commodity. Specifically, if $D_{o,j}$ and $D_{i,j}$ represent regional trade in product j, at time period o and t respectively, the change in a specific country's exports attributed solely to demand $\Delta E_{d,i}$ is:

$$(9.1) \qquad \Delta E_{d,i} = \sum(s_{o,j}) \times (D_{t,j} - D_{o,j})$$

where $s_{o,j}$ is the share of country i in regional imports of product j (defined at the four-digit level of the Revision 2 SITC) from all countries in the base period o, and the summation is over all goods traded. Therefore, the above equation shows the change in country i's exports that would have occurred if only changes in demand took place.

Second, the change in the competitive position of country i is measured by the difference between the exports that would have occurred if the country's market share had not changed, and those regional exports that were in fact realized. This competitive factor ($\Delta E_{c,i}$) is:

$$(9.2) \qquad \Delta E_{c,i} = \sum(s_{t,j} - s_{o,j})(D_{t,j})$$

where $s_{t,j}$ is the share of the country in regional imports of the product in period t, and the summation is over all goods imported. Any differences between changes in a country's total exports and the sum of these two "demand" and "competitive" factors are due to *product diversification.*[13]

Table 9.1 summarizes the results when these equations was applied to statistics on all four-digit SITC products exported by the East Asian countries to regional markets in 1985, 1995 and 2001. The table shows the value of exports in each year along with changes due to the supply and demand factors. For example, China's regional exports totaled $90.8 billion in 1995 and $127.8 billion in 2001. The 1995-2001 demand change factor generated a potential increase in annual exports worth $2.9 billion. However, China's improved ability to compete, as reflected in its higher regional market shares (particularly for products like telecommunications and office machinery components), resulted in a further increase of $30.8 billion. The sum of the supply and demand induced changes ($33.652 billion) falls about $3.345 billion short of the total 1995-2001 change in China's exports. As noted, this difference reflects China's diversification into new product lines that were not exported in 1995.

Several important positive points are evident from the statistics in Table 9.1. First, in both the full 1985-2001, and shorter 1995-2001 periods, East Asian countries registered strong competitive gains in regional trade. Over the recent interval, which covered the period of the financial crisis, competitive regional export gains (about $51.802 billion) exceeded gains associated with increased demand by approximately $13 billion. Second, although China accounted for about one-half of the 1985-2001 competitive gains, only Brunei (whose major regional export is petroleum) experienced losses due to erosion of its market shares. Third, on a percentage basis, market share changes more than doubled the exports of the Philippines and Vietnam – an expansion that far exceeded the 34 percent increase associated

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[13] An illustrative example may help explain this approach. Assume country i exports one product j and has a 20 percent share of the regional markets with exports $20 million in 1995, and a 25 percent share with exports of $37.5 million in 2001. During this period regional demand for j rose from $100 to $150 million. The change in i's exports attributed solely to changes in demand would be:

$$\Delta E_{d,i} = .20(\$150 - \$100) = \$10 \text{ million}$$

while the change due to the competitive factor is:

$$\Delta E_{c,i} = (.25 - .20) \times \$150 = \$7.5 \text{ million}$$

This example assumes that the country experiences no diversification in its exports.

with China's improved competitive ability. Overall, the data show that East Asian countries experienced a marked improvement in their competitive position in regional markets.[14]

For East Asia as a whole the diversification into new product lines added about $30.8 billion to regional trade over 1985-2001 which represents about 7 percent of current exports. Measured as a percentage of 2001 exports the diversification factor was strongest in Hong Kong (24 percent), although new products account for 11 to 13 percent of Singapore, Malaysia and Thailand's current exports. An analysis of the underlying statistics shows that certain ores and minerals products account for the negative diversification values in non-regional markets. In other words, East Asia became internationally uncompetitive for products like tin and lead ores and stopped exporting these items.

While the evidence indicates East Asia greatly improved its ability to compete in regional markets, an important question concerns its performance elsewhere. Specifically, could the results for regional markets have been biased by special factors like, for example, geographic proximity. For answers, the previous analysis, which was based on trade in individual four-digit SITC products, was repeated for trade with the European Union (15), NAFTA, and Japan. The results are reported in the lower one-half of Table 9.1.

In all three major markets the East Asian countries registered strong competitive trade gains during both time periods tested. Over 1995-2001, the competitive market share gains were between $34 to $36 billion in NAFTA and the EU (15). In the latter, the competitive gains exceeded those associated with higher demand by about $13 billion. A likely cause of the depressed European demand was prolonged sluggish economic conditions, particularly in Germany. In Japan, both the demand and competitive gains were smaller, averaging about $13 billion. Overall the data document the improved ability of East Asian countries to compete in both regional and global markets.

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[14] The actual change in total 1985-2001 intra-regional trade exceeded the sum of changes reported for the demand and competitive factors by approximately $30.8 billion. As indicated, this value represents the increase in regional trade associated with diversification into new product lines. For useful analyses of the factors responsible for the improvement in East Asia's competitiveness see Yusuf and Evenett (2002) or Crafts (1998)

Table 9. 1 The Impact of Competition and Demand Changes on East Asian Intra-Regional Trade

	Exports ($000)			Factors Underlying the 1995-2001 Export Change ($ million)*			Factors Underlying the 1985-2001 Export Change ($ million)*		
Trader	1985	1995	2001	Demand Factor	Competitive Factor	Diversification	Demand Factor	Competitive Factor	Diversification
REGIONAL TRADE									
Brunei Darussalam	922	951	1,192	923	-650	-32	2,073	-1,796	-7
Cambodia	3	276	182	-10	-85	1	2	150	27
China	10,867	90,799	127,796	2,856	30,796	3,345	43,052	69,649	4,228
Hong Kong	6,637	20,016	20,981	3,601	-3,419	783	38,480	-29,183	5,047
Indonesia	1,953	12,008	17,155	2,575	2,093	479	4,516	9,473	1,213
Korea	2,559	40,346	55,748	2,243	10,441	2,718	13,070	36,365	3,754
Lao P.D. Republic	17	190	220	-7	4	33	18	71	114
Malaysia	6,844	37,642	46,759	8,087	1,105	-75	23,367	11,417	5,131
Mongolia	4	111	242	22	111	-2	53	185	0
Philippines	1,071	4,645	14,736	1,930	8,157	4	12,979	536	150
Singapore	6,032	38,979	41,806	9,209	-6,629	249	25,678	5,594	4,502
Taiwan, China	4,994	49,069	62,477	3,930	5,965	3,513	28,293	25,918	3,272
Thailand	1,982	17,548	24,359	3,398	1,694	1,719	9,172	10,156	3,049
Vietnam	182	1,916	4,354	60	2,218	160	484	3,396	292
All Above Countries	44,067	314,496	418,007	38,817	51,801	12,893	201,237	141,931	30,772
NON-REGIONAL TRADE									
East Asia – Japan	35,280	118,717	144,884	13,419	12,743	5	64,707	45,289	-392
East Asia – NAFTA	61,368	196,118	309,066	79,093	34,373	-518	155,262	92,136	300
East Asia – EU (15)	22,352	124,015	182,182	23,049	35,808	-690	61,232	97,759	839

* The demand factor isolates the effects of the increase or decrease in regional demand for other East Asian countries' exports. This factor shows the increase or decrease in exports that would have occurred had there been no change in the country's market shares from the 1990 or 1995 base period. The competitive factor shows the change in exports, *over or under that associated with demand changes,* due to changes in a country's import market shares. Any difference between the change in the total exports and the sum of these two factors is due to product diversification.

Source: Computations based on UN COMTRADE statistics.

Trade Trends 10

Who Lost in East Asian Markets!!!

Key Point

East Asian exporters made broad based competitive gains in local markets against all major non-regional suppliers during 1985-2001. On average, East Asia increased its regional import share by about 18 percentage points for the 30 largest products in intra-trade (which implies trade gains of approximately $78 billion). NAFTA and Japan experienced the largest competitive losses in East Asian markets as their import shares fell by seven to eight percentage points, respectively.

Trade Trends 9 showed that competitive gains often were responsible for significant increases in East Asian countries intra-trade, but the underlying disaggregate statistics revealed instances where regional trade shares appeared to static (as in the case of some textile and clothing products), or even declined in the case of energy products. This raises the question as to whether any non-regional countries, or groups of countries, expanded their share of regional imports. Conversely, what non-regional countries suffered the greatest displacement due to competitive gains made by East Asian exporters. For example, were (say) NAFTA or the European Union's regional import shares eroded to the same degree, or were there important differences in how they fared against East Asian competitors.

Table 10.1 provides information on East Asian 1985-2001 market share changes for six major countries or country groups, namely, NAFTA, the European Union (15), all countries in Latin America and the Caribbean, South Asia, Japan, and Australia and New Zealand combined. These import share changes are reported for the 30 largest four-digit products East Asian countries export to the region. Altogether, these items account for just over one-half of total intra-regional trade (see *Trade Trends 12* which follows). To assist in the evaluation of this information the table also shows regional market share changes for the East Asian countries combined.

Three significant points emerge from these statistics. First, the East Asian countries made broad based competitive gains against all of the major non-regional suppliers. On average, East Asia increased its regional import share by about 18 percent (which implies annual trade gains of approximately $78 billion). In six of the thirty product groups, East Asian regional import shares increase by more than fifty percentage points (the product descriptions of these items are highlighted in boldface), while in thirteen of the groups the increase exceeded twenty five percentage points. The only exception to the general pattern of increases occurs for the two energy products where regional market shares declined.

Second, the NAFTA countries saw the greatest erosion of their regional import shares which fell by an average of about 8 percentage points. This implies annual trade losses of about $36 billion. The relatively strong US dollar, particularly in the last half of the 1990's, almost certainly was a contributory factor. NAFTA countries may also have diverted some exports from Asia to North America in order to capitalize on the newly established preferential tariffs. The average market share for Japanese exports fell by 7.4 points on average. However, four products, namely, radiotelephonic equipment, telephonic electrical line, sound recorders, and copper alloys had their market shares reduced by more than 30 percentage points.

Third, the most important East Asian competitive share trade gains occurred within the broad machinery and transport equipment (SITC 7) group. Market share increases for seven four-digit SITC office machinery and equipment (SITC 77) products generated increased annual earnings of about $26 billion, while competitive gains for four telecommunications equipment (SITC 76) products increased export earnings by approximately $18 billion. East Asia virtually eliminated regional competition for digital control storage units (SITC 752.4) and radiotelephonic and radiotelegraphic equipment (SITC 764.3) where their market shares rose by more than 60 percentage points.

Table 10.1 1985-2001 Major Product Competitive Change Effects for Non-Regional Countries in East Asian Markets.

Major Export Product (SITC)*	2001 East Asian Global Imports ($million)	1985-2001 East Asian Market Share Changes (percentage points)						
		East Asia	NAFTA	EU(15)	LAC	South Asia	Japan	Australia/ New Zealand
Electronic microcircuits (776.4)	89,707	14.0	-3.6	3.3	0.4	-0.1	-13.0	0.0
Parts of office machinery (759.9)	37,547	36.8	-35.7	-1.1	1.4	-0.2	-4.2	-0.2
Parts of telecommunications equipment (764.9)	23,658	20.7	-3.1	3.3	0.3	0.0	-25.6	0.2
Radiotelegraphic and telephonic equipment (764.3)	13,047	61.2	-25.0	6.1	0.0	0.0	-44.8	0.0
Digital central storage units (752.4)	11,786	68.7	-32.5	-1.1	-17.1	0.1	-22.1	0.0
Petroleum oils (333.0)	60,469	-21.0	-0.1	0.2	-3.5	-0.2	0.0	2.5
Diodes and transistors (776.3)	11,984	23.5	-16.8	-8.6	0.3	0.1	-1.4	0.0
Children's toy and games (894.2)	7,010	19.1	-5.3	-3.3	0.0	0.0	-9.6	-0.1
Other electrical machinery (778.8)	14,509	22.7	-3.8	-6.2	0.6	-0.2	-15.9	0.0
Piezo-electric crystals (776.8)	25,111	9.6	-24.6	6.6	0.3	0.0	4.2	0.0
Electronic Peripheral control units (752.5)	7,694	60.1	-36.8	-7.1	-3.2	-0.5	-14.5	-0.9
Footwear (851.0)	5,613	34.0	-1.1	-20.7	0.0	0.0	-7.2	0.0
Other electrical power machinery (771.2)	7,584	29.3	-8.0	-0.8	-0.4	0.5	-23.7	0.2
Electrical switches and relays (772.1)	14,148	19.7	-8.7	0.0	0.3	0.0	-11.4	-0.2
Printed circuits and parts thereof (772.2)	6,738	39.4	-42.0	-4.5	0.4	0.0	4.3	-0.1
Jerseys and pullovers (845.1)	4,420	4.8	-0.1	-4.1	0.1	0.9	-2.1	0.6
Polystyrene (583.3)	5,104	62.1	-8.5	-14.5	-3.1	0.3	-6.1	-1.1
Petroleum gases (341.3)	8,509	16.4	0.4	0.3	0.0	0.0	0.1	-1.9
Knitted fabrics (655.2)	4,577	5.1	0.9	0.4	0.0	0.2	-10.3	0.2
Woven fabrics (653.1)	4,482	17.5	-0.5	0.0	0.0	0.4	-18.4	0.0
Miscellaneous art materials (893.9)	6,221	16.1	-3.3	-7.5	0.2	0.1	-4.8	-0.3
Travel goods and handbags (831.0)	4,093	7.0	-0.3	-2.8	0.0	-0.2	-3.8	-0.1
Electric motors and generators (716.2)	5,135	53.6	-25.4	-3.7	0.0	0.0	-30.4	0.2
Specialized machinery and appliances (728.4)	18,808	6.3	-3.2	-3.3	0.0	0.1	0.0	-0.1
Woven cotton fabrics (652.2)	4,266	17.4	-1.2	-0.4	0.0	-0.8	-19.6	0.0
Insulated electrical wire and cable (773.1)	4,854	41.1	-4.5	-12.3	0.2	0.0	-27.9	0.5
Telephonic electrical line (764.1)	8,689	27.3	20.3	-12.4	1.1	0.0	-36.8	-0.1
Other sound recorders (763.8)	4,323	55.6	0.2	0.3	0.1	0.0	-38.7	0.0
Copper and copper alloys (682.2)	4,792	34.1	-3.1	-4.2	-0.6	0.1	-30.4	0.1
Gas oils (334.3)	3,395	-16.9	-3.7	0.1	0.0	0.0	3.8	-0.4
ALL ABOVE PRODUCTS	428,272	18.1	-8.5	-1.7	-0.8	--	-7.4	--

East Asian import market shares rose by 50 percentage points or more for products whose description are highlighted in boldface. To be included in this list a product had to be among the 30 largest four-digit SITC items in intra-regional trade.

Source: Computations based on UN COMTRADE statistics.

Table 10.2 1995-2001 Major Product Competitive Change Effects for Non-Regional Countries in East Asian Markets.

Major Export Product (SITC)*	2001 East Asian Global Imports ($million)	1995-2001 East Asian Market Share Changes (percentage points)						
		East Asia	NAFTA	EU(15)	LAC	South Asia	Japan	Australia/ New Zealand
Electronic microcircuits (776.4)	89,707	10.9	-3.8	1.0	0.5	0.0	-10.2	0.0
Parts of office machinery (759.9)	37,547	5.1	-7.4	0.0	1.4	0.7	-2.7	-0.5
Parts of telecommunications equipment (764.9)	23,658	-3.0	1.0	8.1	0.2	0.0	-9.8	0.1
Radiotelegraphic and telephonic equipment (764.3)	13,047	44.2	-31.9	-11.8	0.0	0.0	-1.7	-0.4
Digital central storage units (752.4)	11,786	7.5	-4.2	1.2	0.3	0.1	-8.3	-0.2
Petroleum oils (333.0)	60,469	-5.8	0.1	0.1	-0.4	0.2	0.0	2.1
Diodes and transistors (776.3)	11,984	9.0	-0.1	-1.9	-0.2	0.1	-10.3	0.0
Children's toy and games (894.2)	7,010	7.3	-6.2	-1.1	0.0	-0.1	-0.9	0.3
Other electrical machinery (778.8)	14,509	6.7	-0.7	-0.9	0.5	0.0	-7.6	0.0
Piezo-electric crystals (776.8)	25,111	7.8	-2.9	4.0	0.2	0.0	-12.5	0.0
Electronic Peripheral control units (752.5)	7,694	28.9	-14.6	-6.4	-0.1	-0.1	-10.4	-0.7
Footwear (851.0)	5,613	1.2	-0.4	-0.8	0.2	0.0	-0.5	0.0
Other electrical power machinery (771.2)	7,584	5.9	-0.4	1.0	0.0	0.2	-9.7	-0.2
Electrical switches and relays (772.1)	14,148	6.5	0.4	-0.7	0.3	0.0	-7.5	-0.2
Printed circuits and parts thereof (772.2)	6,738	4.0	-3.6	1.4	0.3	0.0	-4.4	0.0
Jerseys and pullovers (845.1)	4,420	2.1	-0.1	-2.4	0.1	0.6	0.0	0.5
Polystyrene (583.3)	5,104	18.7	-6.6	-2.3	-0.1	0.3	-10.2	-0.2
Petroleum gases (341.3)	8,509	-11.7	-0.2	0.2	0.0	0.0	0.0	1.5
Knitted fabrics (655.2)	4,577	-1.2	0.5	0.9	0.0	0.0	-1.9	0.1
Woven fabrics (653.1)	4,482	-5.5	0.1	0.3	0.0	0.2	4.1	0.0
Miscellaneous art materials (893.9)	6,221	-0.4	0.7	-0.3	0.1	0.0	-0.2	-0.2
Travel goods and handbags (831.0)	4,093	-0.5	-0.1	0.3	0.0	0.1	-0.1	0.0
Electric motors and generators (716.2)	5,135	20.2	-8.7	-4.5	0.0	0.0	-12.8	-0.1
Specialized machinery and appliances (728.4)	18,808	2.9	1.5	-5.7	0.0	0.1	1.0	-0.2
Woven cotton fabrics (652.2)	4,266	-3.3	-1.5	0.5	0.0	-0.6	5.0	0.0
Insulated electrical wire and cable (773.1)	4,854	9.5	-2.4	-3.0	0.1	0.0	-6.0	0.3
Telephonic electrical line (764.1)	8,689	3.3	15.7	-8.7	1.1	0.0	-11.1	-1.1
Other sound recorders (763.8)	4,323	6.5	0.4	0.2	0.0	0.0	-8.3	0.0
Copper and copper alloys (682.2)	4,792	11.1	-2.8	1.0	-0.3	0.1	-9.7	-2.0
Gas oils (334.3)	3,395	2.1	-5.6	-1.9	-0.2	0.0	-3.4	-0.1
ALL ABOVE PRODUCTS	428,272	4.2	-2.4	-1.0	0.3	0.1	-7.1	0.2

Source: Computations based on UN COMTRADE statistics.

Finally, a question of interest concerns the pattern of market share changes during the 1995-2001 period that covers the Asian financial crisis. As indicated in Table 10.2, East Asian countries generally continued to improve their competitive position with their average market share increasing by just over 4 percentage points.[15] However, what is different from the full 1985-2001 period is the fact that East Asian exporters market shares declined for 8 of the 30 products. Aside from energy products, the eroded shares appear to be concentrated in products that are often manufactured using labor intensive production processes, that is, items like travel goods, and knit or woven fabrics.

Trade Trends 11

Changes in the Product Composition of East Asian Intra-Trade

Key Point

Since 1985 the product composition of East Asian intra-trade changed dramatically as the share of machinery and transport equipment rose by over 26 percentage points. At present, these goods account for almost one half of all goods traded within the region. A similar pattern is observed in non-regional trade as the share of machinery and transport equipment rose from 18 to 46 percent from 1985 to 2001. In both regional and non-regional markets, mineral fuels and crude materials exports registered the largest decline in relative importance.

Several important policy questions relate to the broad product composition of individual East Asian country's regional exports. Are the export profiles basically similar, or do important differences exist. Differences in the composition of exports could be a positive factor if it allowed the exploitation of trade based on comparative advantage. However, it should be noted that countries that previously formed "successful" regional trade arrangements, like the European Union, imilar export profiles.[16] This may be due, in part, to the importance of opportunities to exploit intra-industry trade, or to engage in mutually beneficial production sharing. Second, does the evidence indicate that most East Asian export profiles are static, or are important changes taking place. If the *export* profiles are changing, are they evolving in similar, or dissimilar, directions? Third, it has long been recognized that primary commodities, and most other raw materials, have unfavorable long-term trade prospects. If some East Asian countries' exports contain a relatively high share of these goods this could have negative implications for longer-term trade prospects.[17]

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[15] If one sums the positive and negative market share changes for the "all products group" in Table 10.2 the latter exceeds the positive changes by almost 5 percentage points. This difference is largely accounted for by market share gains made by energy exporters in Africa and the Middle East. These regions have not been included in the table.

[16] At the time of the original EU (6) formation the share of manufactured goods in member countries' exports ranged from highs of nearly 80 percent for Italy and Germany to the mid-50s for the Netherlands. Similarly, the corresponding shares for the original EFTA countries averaged well over 60 percent. The share of manufactures in Canada's exports was about 60 percent, as opposed to a corresponding share of 75 percent for the United States, when negotiations on the Canadian-American Free Trade Agreement were concluded.

[17] This proposition traces it origins to the writing of Raul Prebisch, former chairman of the UN Economic Commission for Latin America and Hans Singer of the United Nations. A major contributing factor to the adverse long term prospects for primary commodities is the low income elasticity of demand for many of these items. Hogendorn (1987, chapter 12) provides a useful survey of the relevant issues. Recent evidence (Ng and Yeats, 2002) shows an extensive deterioration in the terms-of-trade for commodities occurred over the last two decades, and this is projected to continue into the foreseeable future.

Table 11.1 provides summary statistics on the composition of each East Asian country's regional exports in 1985, 1995 and 2001 by showing the share of trade accounted for by broad product groups like foodstuffs, agricultural raw materials, ores and metals, or manufactures. In addition, the table provides similar trade statistics for all regional countries combined. The question as to whether export opportunities within the region differ substantially from those found elsewhere is also considered. For answers, the table's "memo item" shows the shares of these product groups in total exports to all non-regional markets.

Perhaps the most striking point to emerge from Table 11.1 concerns the major increase in the relative importance of machinery and transportation equipment in intra-trade. These goods share in Malaysian and Thailand's exports rose more than four-fold since the mid-1980s, while their export share for China, the Philippines, Singapore, and Thailand rose by 30 percentage points or more.[18] Significant increases in the share of machinery and transport equipment occurred for almost all of the East Asian countries, with the exceptions of Brunei, Laos, and Mongolia. At the opposite extreme, the importance of mineral fuels registered the largest relative decline. In 1985, fuels accounted for about one-fifth of East Asian intra-trade as opposed about 7 percent today.

Which countries regional exports differ significantly from the East Asian average? In terms of manufactured goods (that is, the combined trade of chemicals, transport and machinery, and the "other" manufactures group) Brunei, Lao PDR, and Mongolia exports contain less than one-half the average share of these goods in all East Asian regional exports. Brunei's exports are concentrated in mineral fuels whose export share (82.5 percent) is more than 20 times higher than the regional average. Similarly, Lao PDR exports are highly concentrated in agricultural raw materials (85 percent of total exports) while Mongolia's exports, which largely consist of copper ores, have an abnormally high concentration (77 percent) in ores, minerals and metals. Appendix Table A4 identifies the largest four-digit regional products exported by each East Asian country.

As far as these product groups are concerned, the changes in the composition of East Asia's exports to regional markets closely parallels that in trade with other countries. The overall share of machinery and transport equipment in regional exports increased by about 27 percentage points (from 21 to 47.9 percent), which was one percentage point less than the increase in non-regional markets (see the memo item). Furthermore, in both regional and non-regional trade mineral fuels experienced the greatest relative decline in importance, followed by foodstuffs and agricultural raw materials.

Table 11.2 examines the regional countries' export profiles from a somewhat different perspective. Shown here are the total values of East Asian exports in 1985, 1995 and 2001 to; (i) other regional countries, (ii) Japan, and (iii) all other countries combined. The lower portion of the table shows the share of these exports accounted for by each one-digit SITC product group. These data reveal strong similarities in the composition of exports to these different destinations. In each case, the rank order of the three largest product groups is the same, that is, machinery and transport equipment, followed by miscellaneous manufactures, and manufactures classified by material.[19] In addition, these three categories of goods account for about 70 percent, or more, of the total exports to each destination. Table 11.2 also reveals strong similarities in trade trends. In each case, exports of machinery and transport equipment registered the largest 1985-2001 trade share increase, while mineral fuels and crude materials experienced the largest relative declines.

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[18] The rapid expansion of Chinese and several other East Asian countries exports of these products was made possible by participation in the international segmentation of production processes. China specializes in assembling imported parts and components. According to Lemoine and Unal-Kesenci (2002) in 1999 85 percent of China's exports of electrical machinery, and 80 percent of its exports of precision instruments were the result of international assembly operations.

[19] *Trade Trends 12* provides additional information on the largest four-digit SITC products East Asia exports to these three destinations. Even at these relatively low levels of detail strong similarities exist in the composition of exports.

Table 11.1 The Export Structure of East Asian Intra-Trade by Major Product Categories: 1985, 1995 and 2001

Exporter	Year	Exports to East Asia ($million)	Share of Product Group in Total Exports to East Asia (%)							
			Foods and Feeds	Agricultural Materials	Mineral Fuels	Ores, Minerals & Metals	Chemicals	Machinery & Transport	Other Manufactures	Misc. Goods
Brunei	1985	921	0.1	0.1	98.3	0.1	0.2	0.4	0.1	0.5
	1995	952	0.1	0.1	93.0	0.4	0.0	1.3	3.6	0.5
	2001	1,213	0.1	0.1	82.5	0.3	0.0	3.5	12.3	0.5
Cambodia	1985	2	18.7	47.2	0.0	0.0	0.3	0.0	0.0	0.1
	1995	249	3.9	88.4	0.0	0.2	0.3	0.7	5.9	0.2
	2001	154	9.1	21.2	0.0	2.1	0.2	6.6	49.5	1.3
China	1985	10,818	15.1	5.0	21.6	2.2	4.0	5.6	33.8	10.9
	1995	90,243	4.0	1.5	2.2	6.1	3.8	25.8	28.3	27.1
	2001	124,283	3.4	0.6	3.2	3.2	3.1	37.9	25.3	22.6
Hong Kong	1985	10,279	2.1	1.5	1.0	1.3	3.6	39.5	34.0	15.3
	1995	19,460	3.2	1.3	0.6	2.7	5.2	45.9	24.2	14.2
	2001	19,597	1.6	0.6	0.9	3.5	6.4	49.7	21.8	13.0
Indonesia	1985	2,221	7.6	13.4	44.4	2.0	5.6	1.0	25.2	0.2
	1995	11,673	4.2	8.8	31.8	6.7	8.2	4.4	28.5	2.5
	2001	16,812	4.1	10.8	32.1	6.6	9.5	14.0	16.7	1.8
Korea	1985	2,573	2.1	2.4	3.6	11.8	12.5	28.3	30.0	6.2
	1995	39,707	1.1	2.2	2.5	8.1	14.5	39.5	25.0	3.4
	2001	52,511	0.6	1.5	7.1	8.8	16.0	45.9	16.1	3.3
Laos	1985	14	12.9	83.2	0.0	0.9	0.0	1.5	0.7	0.4
	1995	106	7.9	76.4	0.2	2.9	3.8	0.4	4.1	0.8
	2001	102	2.1	77.4	1.7	5.1	0.2	2.8	3.1	0.7
Malaysia	1985	6,939	15.5	20.8	37.5	1.3	1.3	15.5	5.8	1.3
	1995	35,159	7.6	7.3	7.7	2.8	3.9	53.7	10.5	5.3
	2001	44,724	4.3	2.3	9.4	2.0	5.3	64.5	7.0	4.5
Mongolia	1985	5	0.0	83.1	0.0	2.5	0.0	0.0	13.7	0.7
	1995	109	3.4	39.5	0.0	55.2	0.7	0.1	1.1	0.1
	2001	243	1.0	7.7	0.7	77.6	0.0	0.1	13.1	0.0

Table11.1. Continued

Exporter	Year	Exports to East Asia ($million.)	Share of Product Group in Total Exports to East Asia (%)							
			Foods and Feeds	Agricultural Materials	Mineral Fuels	Ores, Minerals & Metals	Chemicals	Machinery & Transport	Other Manufactures	Misc. Goods
Philippines	1985	1,120	12.7	3.9	10.1	10.0	11.4	40.1	6.4	2.1
	1995	4,596	8.8	1.8	3.6	11.1	3.0	60.8	4.4	3.5
	2001	14,727	3.0	0.3	1.3	3.0	1.6	84.1	2.2	2.3
Singapore	1985	6,273	2.5	1.5	46.7	2.6	9.4	25.5	4.3	3.4
	1995	36,403	1.8	0.6	20.9	2.4	8.2	53.7	4.0	4.8
	2001	38,076	1.1	0.3	15.6	1.5	11.7	59.3	3.5	5.3
Taiwan, China	1985	5,525	3.6	3.7	2.6	7.0	7.1	26.9	36.7	9.7
	1995	49,927	1.1	2.2	0.4	6.1	14.9	41.0	26.7	6.5
	2001	59,992	0.7	1.3	1.1	8.3	13.8	53.3	15.9	5.3
Thailand	1985	2,091	50.6	11.5	0.4	5.3	4.0	12.2	11.8	3.0
	1995	16,396	17.1	5.7	1.0	2.4	6.0	49.6	11.9	4.8
	2001	22,020	10.5	5.4	5.7	2.9	11.7	50.1	9.2	3.2
Vietnam	1985	183	77.6	16.0	0.3	2.3	0.5	0.1	1.1	0.1
	1995	1,787	43.8	10.5	18.1	2.8	1.6	3.8	11.8	5.6
	2001	4,062	17.3	3.6	42.4	1.6	2.6	15.2	10.4	5.7
All Above Countries	1985	48,965	9.9	6.4	20.9	3.2	5.2	21.0	23.5	7.9
	1995	306,767	4.2	2.9	6.2	5.2	7.8	38.6	21.0	12.0
	2001	398,516	3.0	1.7	7.1	4.5	8.3	47.9	16.1	10.3
MEMO ITEM										
East Asian Non-Regional Exports	1985	128,907	9.2	4.9	19.4	4.1	2.0	17.9	23.4	15.1
	1995	501,687	6.0	2.5	4.0	2.8	3.1	40.6	21.2	17.6
	2001	719,116	3.8	1.2	3.8	3.0	3.3	45.9	19.4	18.5

Note: The product groups are classified by SITC products in Revision 2 as Foods and Feeds (0+1+22+4); Agricultural raw materials (2-22-27-28); Mineral Fuels (3); Ores And metals (27+28+67+68); Chemicals (5); Machinery and Transport (7); Other Manufactures (6-67-68+84); and Miscellaneous manufactured goods (SITC 8-84).

Source: Computations based on UN COMTRADE statistics.

Table 11.2 The Composition of East Asian Exports to Regional and Non-Regional Markets in 1985, 1995 and 2001

East Asian Exports (SITC No.)	East Asia			Japan			All Other Countries		
	1985	1995	2001	1985	1995	2001	1985	1995	2001
	East Asian Exports ($ million)								
ALL GOODS	48,965	306,767	398,516	35,007	118,841	145,003	99,339	382,846	574,780
	Share of East Asian Exports (in %)								
ALL GOODS (0 to 9)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Food and live animals (0)	8.6	3.4	2.7	12.1	13.1	8.8	6.3	3.3	2.6
Beverages and tobacco (1)	0.5	0.5	0.3	0.1	0.1	0.1	0.3	0.1	0.1
Crude materials, inedible (2)	8.1	3.7	2.4	11.4	6.6	3.6	4.5	2.5	1.4
Mineral fuels and lubricants (3)	23.0	6.2	7.1	50.9	12.9	12.6	7.4	1.2	1.6
Animal and vegetable oils (4)	1.9	0.8	0.4	0.5	0.4	0.2	2.3	1.3	0.5
Chemicals and related products (5)	5.0	7.8	8.3	2.4	3.1	3.6	2.0	3.1	3.2
Manufactured goods (6)	18.2	20.8	15.1	8.7	13.4	10.1	14.9	11.4	11.0
Machinery and transport equipment (7)	18.1	38.6	47.9	3.5	24.9	35.4	24.4	45.5	48.5
Miscellaneous manufactured articles (8)	10.6	16.7	15.2	8.6	23.8	23.4	36.6	30.4	29.8
Commodities and transactions, nes (9)	5.8	1.6	0.6	1.9	1.8	2.1	1.1	1.0	1.4

Source: UN COMTRADE Statistics

Trade Trends 12

What Products Dominate East Asian Intra-Trade?

Key Point

East Asian intra-trade is dominated by 30 four-digit SITC products that accounted for just over one half of this exchange in 2001. Within this group, electronic products are of major importance, as are several SITC categories used to record trade in components of various manufactured goods. The latter reflects the rapid expansion in East Asian production sharing operations in which various stages of a manufacturing process are undertaken at different geographic locations. Very strong similarities are observed in the lists of largest products exported to regional and non-regional markets.

There are reasons why countries may want to identify relatively important products in their intra-trade, and also determine how the composition of these goods was changing. First, this information could help focus attention on priority sectors for liberalization of government imposed trade barriers in future trade negotiations. Second, if goods that are increasing in importance generally have common characteristics like labor, capital or natural resource intensity in production, this could help focus regional efforts to reduce any transport, or other infra-structure constraints, these types of goods encounter. Third, analyses of intra-trade should attempt to identify any major potentially "sensitive" products which might adversely affect bilateral trade relations. For example, the Canadian-American Free Trade Agreement (CAFTA) experienced major disputes over issues involving purportedly subsidized Canadian lumber exports.

Given the potential importance of these issues, Table 12.1 reports the value and share of the 30 largest four-digit SITC (Revision 2) products in 2001 intra-regional trade. Similar 1985 statistics for these products are shown, along with 1985-2001 average annual growth rates. The table also identifies the largest exporter and shows its current share of total trade in the good. Appendix Table A4 shows the largest regional export products of each individual East Asian country while Appendix Tables A5 and A6 shows East Asia's largest exports to Japan and all other destinations.

Four important points emerge from these statistics. First, the 30 largest products accounted for just over 50 percent of regional trade in 2001, up sharply from their 35 percent 1985 share. The fact that the SITC system identifies close to 800 individual products at this level (four-digit) of detail accents the relative importance of these thirty items in regional trade. Second, some of the 1985-2001 value and share changes are remarkable! The share of electronic microcircuits rose by over 10 percentage points (to 12.4 percent). Similarly, the share of "parts of office machinery" (SITC 759.9) increased by over 5 percentage points. The fact that 15 of the 30 largest products are classified in SITC groups 75, 76, and 77 (office machinery, telecommunications equipment, and electrical machinery (nes) testifies as to the major importance of electronics in East Asian intra-trade.

Third, a number of the major products are SITC groups that consist solely of parts and components (that is, groups like SITC 759.9 "parts of office machinery", or SITC 764.9 "parts of telecommunications equipment"). This reflects the rapidly growing importance of international production sharing in East Asia. (see *Trade Trends 17 to 19* that follow). Finally, no agricultural products appear in the list. This point is potentially important since the rural population is normally the most disadvantaged sector of society in developing countries, and a major expansion of agricultural exports could significantly improve living conditions.[20] A more detailed analysis of intra-trade in agricultural products could provide useful information on this important question.

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[20] Available evidence suggests that changes in the structure of East Asian trade barriers could make a significant contribution towards alleviating conditions of rural poverty. Safadi and Yeats (1993) analyzed statistics on tariff escalation in East Asian countries and concluded this problem was far more serious than in OECD markets. Reduction of tariff escalation in Asia would have a two-fold positive impact on rural

Table 12.1 raises an interesting question, that is, does the composition of exports to regional markets differ substantially from East Asia's exports to other countries? This might be the case if (say) significant differences occur in regional and non-regional trade barriers, or if transport costs were an important negative constraint to penetration of relatively remote markets in North America or Europe. For answers, Table 12.2 identifies East Asia's 30 largest exports to Japan, and to all other non-regional markets combined (that is, global exports less exports to Japan, less exports to other East Asian countries). To help in assessing this information, items that appear on the list of the largest regional exports (Table 12.1) are highlighted in boldface.

Strong similarities are observed in the profile of exports to these three destinations. Electronic microcircuits (SITC 776.4) are the largest single product in each case, and the seven largest products exported to both Japan and the "rest of the world" appears on the list of the largest goods in regional trade. Approximately 60 percent of the largest products in regional trade are among the largest products exported to other destinations. The profile of East Asia exports is such that it allows the region to capitalize on opportunities in both regional and non-regional markets.

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poverty. First, it would increase the level of demand for primary commodities due to increased opportunities for local processing. Second, it appears likely that some of the increased processing would be conducted where the commodities were produced and have a *job creation* effect.

Table 12. 1 East Asia's Largest Four-Digit SITC Intra-Regional Export in 2001

Commodity (SITC No.)	Major Supplier (share)	Regional Trade ($ million)		Share of Total (%)		Growth Rate (%)
		1985	2001	1985	2001	
Electronic microcircuits (776.4)	Malaysia (23)	1,106.5	48,975.0	2.26	12.43	26.7
Parts of office machinery (759.9)	China (25)	294.0	22,365.9	0.60	5.67	31.1
Parts of telecommunications equipment (764.9)	China (45)	644.7	9,840.7	1.32	2.50	18.6
Radiotelegraphic and telephonic equipment (764.3)	Korea (32)	6.6	8,334.0	0.01	2.11	56.3
Digital central storage units (752.4)	Singapore (23)	0.1	8,184.7	--	2.08	98.9
Petroleum oils (333.0)	Indonesia (30)	5,903.6	6,287.2	12.06	1.60	0.4
Diodes and transistors (776.3)	Malaysia (20)	283.5	6,208.9	0.58	1.58	21.3
Children's toy and games (894.2)	China (95)	947.8	6,127.8	1.94	1.55	12.4
Other electrical machinery (778.8)	China (28)	199.4	6,050.9	0.41	1.54	23.8
Piezo-electric crystals (776.8)	Taiwan (24)	329.2	5,500.8	0.67	1.40	19.2
Peripheral control units (752.5)	China (33)	85.4	5,344.5	0.17	1.36	29.5
Footwear (851.0)	China (93)	188.1	5,190.0	0.38	1.32	23.0
Other electrical power machinery (771.2)	China (56)	128.7	4,511.4	0.26	1.14	24.9
Electrical switches and relays (772.1)	China (35)	177.2	4,481.2	0.36	1.14	22.4
Printed circuits and parts thereof (772.2)	Taiwan (28)	133.1	4,474.5	0.27	1.14	24.6
Jerseys and pullovers (845.1)	China (88)	238.3	4,063.9	0.49	1.03	19.4
Polystyrene (583.3)	Taiwan (44)	131.7	4,012.0	0.27	1.02	23.8
Petroleum gases (341.3)	Indonesia (47)	101.8	3,883.1	0.21	0.99	25.6
Knitted fabrics (655.2)	China (38)	139.0	3,867.3	0.28	0.98	23.1
Woven fabrics (653.1)	Taiwan (45)	835.2	3,321.0	1.71	0.84	9.0
Miscellaneous art materials (893.9)	China (54)	206.7	3,304.5	0.42	0.84	18.9
Travel goods and handbags (831.0)	China (95)	271.9	3,293.6	0.56	0.84	16.9
Electric motors and generators (716.2)	China (46)	47.9	3,104.9	0.10	0.79	29.8
Specialized machinery and appliances (728.4)	Taiwan (42)	441.4	2,987.6	0.90	0.76	12.7
Woven cotton fabrics (652.2)	China (48)	2,370.6	2,898.6	4.84	0.74	1.3
Insulated electrical wire and cable (773.1)	China (45)	133.2	2,852.8	0.27	0.72	21.1
Telephonic electrical line (764.1)	China (61)	37.2	2,740.4	0.08	0.70	30.8
Other sound recorders (763.8)	China (72)	71.1	2,725.3	0.15	0.69	25.6
Copper and copper alloys (682.2)	Taiwan (38)	93.9	2,554.4	0.19	0.65	22.9
Gas oils (334.3)	Singapore (50)	1,609.4	2,519.1	3.29	0.64	2.8
ALL ABOVE PRODUCTS		17,159,068	200,017,751	35.05	50.79	16.9

Source: Computations based on UN COMTRADE statistics.

Table 12.2 East Asia's Thirty Largest Four-Digit SITC Exports to Japan and All Other Non-Regional Countries in 2001

EXPORTS TO JAPAN				EXPORTS TO ALL OTHER NON-REGIONAL COUNTRIES			
SITC	Product Description*	Value ($000)	Share (%)	SITC	Product Description*	Value ($000)	Share (%)
	TOTAL EXPORTS	145,002,541	100.00		TOTAL TRADE	572,884,033	100.00
776.4	**Electronic microcircuits**	8,834,146	6.09	**776.4**	**Electronic microcircuits**	33,851,396	5.91
341.3	**Petroleum gases**	8,618,857	5.94	**759.9**	**Parts of office machinery**	30,882,450	5.39
759.9	**Parts of office machinery**	5,064,704	3.49	**894.2**	**Children s toys and games**	22,689,247	3.96
333.0	**Petroleum oils**	3,385,009	2.33	**752.4**	**Digital central storage units**	21,150,427	3.69
845.1	**Jerseys and pullovers**	3,043,494	2.10	**752.5**	**Peripheral units & adapters**	21,033,579	3.67
764.9	**Parts of telecom equipment**	2,967,883	2.05	**851.0**	**Footwear**	20,054,966	3.50
752.5	**Peripheral units including adapters**	2,805,570	1.93	**764.3**	**Radiotelephonic equipment**	12,944,357	2.26
752.4	**Digital central storage units**	2,784,993	1.92	781.0	Passenger motor cars	12,461,436	2.18
334.1	Motor spirit and other light oils	2,457,621	1.69	**763.8**	**Other sound recorders**	10,267,198	1.79
851.0	**Footwear**	2,272,008	1.57	752.2	Complete digital data processing machines	10,163,693	1.77
752.3	Complete digital processing equipment	2,204,222	1.52	**845.1**	**Jerseys and pullovers**	9,778,780	1.71
036.0	Crustaceans	2,187,799	1.51	**764.1**	**Electric telephonic & telegraphic line**	8,491,822	1.48
843.9	Other textile outer garments	2,060,961	1.42	**831.0**	**Travel goods and handbags**	8,010,007	1.40
763.8	**Other sound recorders**	1,904,222	1.31	821.9	Other furniture and parts	7,934,572	1.39
761.1	Color television receivers	1,874,914	1.29	843.9	Other outer garments of textile fabric	7,790,250	1.36
846.2	Under garments of cotton	1,789,840	1.23	**764.9**	**Parts of telecom equipment**	7,163,547	1.25
894.2	**Children s toys and games**	1,764,205	1.22	**893.9**	**Miscellaneous articles**	6,647,579	1.16
752.2	Complete digital data processing machines	1,725,974	1.19	**778.8**	**Other electrical machinery**	5,773,110	1.01
773.1	**Insulated electrical wire**	1,686,788	1.16	845.9	Other knit outer garments	5,667,265	0.99
634.2	Plywood sheets	1,592,357	1.10	**771.2**	**Other electric power machinery**	5,435,563	0.95
831.0	**Travel goods and handbags**	1,575,179	1.09	812.4	Lighting fixtures and fittings	5,058,851	0.88
821.9	Other furniture and parts	1,544,285	1.07	775.8	Electro-thermal appliances	4,968,078	0.87
322.2	Other coal	1,422,334	0.98	762.8	Other radio-broadcast receivers	4,800,235	0.84
771.2	**Other electric power machinery**	1,416,974	0.98	752.8	Off-line data processing equipment	4,521,606	0.79
778.8	**Other electrical equipment**	1,314,368	0.91	821.1	Chairs and other seats	4,473,660	0.78
764.1	**Electrical and telephonic line**	1,310,827	0.90	**772.1**	**Electrical switches and relays**	4,203,768	0.73
845.9	Other knit outer garments	1,303,814	0.90	**333.0**	**Petroleum oils**	3,951,801	0.69
034.2	Frozen fish (excluding fillets)	1,235,742	0.85	846.2	Under garments of cotton	3,840,324	0.67
772.1	**Electrical switches and relays**	1,216,875	0.84	761.1	Color television receivers	3,695,114	0.65
037.1	Fish, prepared	1,153,974	0.80	**772.2**	**Printed Circuits and Parts**	3,546,071	0.62

* Products whose SITC numbers and descriptions are reported in boldface also occur among the 30 largest regional exports (see Table 11.1).

Trade Trends 13

Have East Asian Markets Facilitated Export Diversification?

Key Point

Summary measures of export concentration suggest very little general diversification of exports occurred over 1985-2001 in East Asian intra-trade. However, there are instances involving Korea, the Philippines and Taiwan (China) where exports became more concentrated. The underlying statistics show the trend toward increased concentration of exports in these cases was largely due to a remarkable export expansion for electronic products, or for office machinery parts and components. This greatly increased the importance of these products relative to other exports.

Does the available evidence suggest regional trade promoted the *diversification* of East Asian exports? This could be the case if regional markets were an initial base for the launch of new exports, which subsequently were traded elsewhere once positive scale and other "learning" effects were achieved. The question is important since it is generally assumed that the greater the level of diversification the better the prospects a country's regionally or global exports. If only a limited range of tradable goods exist, RTA members may have to rely on third countries for a high share of their imports, and this could reduce perceived benefits from the regional trade scheme. Important negative effects from a high concentration of exports may exist. For example, some studies show countries with highly concentrated exports may experience relatively unstable export earnings, a factor that makes economic planning difficult.[21]

In analyses of the magnitude and effects of trade concentration, three empirical indices often have been employed. These include,

- A count of the number of products exported. Two related problems are how to distinguish between established and marginal exports, and at what level of aggregation should products be defined. UNCTAD adopted an approach that seems sensible and differentiates goods at the four-digit level of the SITC. To be included in the count, a product had to account for at least one-half of one percent of total exports.

- A second index is the share of a country's total exports accounted for by the largest products. Previous studies based this measure on the three, or ten, largest products. The higher the shares of these products the higher is the level of export concentration.

- The so called "Hirschmann" index has been used as a measure of trade concentration (see UNCTAD, various issues). This index ranges between 0 and 1, with lower values indicating less concentrated trade structures. The Hirschmann index is defined as;

$$(13.1) \qquad H_j = \sqrt{(\Sigma(x_i/X)^2}$$

where x_i is the value of exports of commodity i (normally defined at the four-digit SITC level) and X is the total value of country j's exports.

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[21] For an earlier related analysis see MacBean (1966), while Labys and Montague (1990) and the World Bank (2001b) stress the need for many developing countries to diversify their exports. For recent evidence on the negative impact of unstable export earnings, and the need for diversification, in Sub-Saharan Africa see Ng and Yeats (2002).

Table 13.1 presents 1985, 1995 and 2001 results when these concentration indices were calculated for; (i) each individual country's regional trade, (ii) the total intra-trade of all East Asian country's combined, and (iii) for East Asia's global exports. There are instances, involving Cambodia, Hong Kong,

Table 13.1 Changes in Concentration Indices for East Asian Intra-Trade

Exporter	Year	No. of Products Exported	Concentration Index	Products Share in Exports (%)	
				Three Largest	Ten Largest
Brunei	1985	1	0.98	98.9	99.4
	1995	5	0.78	92.4	95.5
	2001	7	0.70	85.7	96.6
Cambodia	1985	4	0.37	53.9	58.0
	1995	8	0.54	86.5	93.9
	2001	31	0.26	37.5	64.3
China	1985	37	0.18	22.1	36.8
	1995	51	0.12	15.8	28.7
	2001	45	0.12	13.1	29.3
Hong Kong, China	1985	24	0.26	39.0	58.9
	1995	39	0.15	19.7	36.1
	2001	45	0.16	21.0	37.3
Indonesia	1985	20	0.46	64.3	80.7
	1995	30	0.23	37.3	56.6
	2001	37	0.19	27.8	45.5
Korea	1985	46	0.16	19.7	35.5
	1995	43	0.19	24.5	38.7
	2001	45	0.16	20.9	35.2
Laos	1985	9	0.75	90.6	96.6
	1995	16	0.45	62.9	91.9
	2001	18	0.53	73.2	87.9
Malaysia	1985	20	0.37	51.8	72.8
	1995	39	0.18	23.0	43.7
	2001	31	0.29	40.2	55.6
Mongolia	1985	9	0.63	81.8	98.5
	1995	19	0.37	49.2	83.9
	2001	15	0.73	79.0	92.8
Philippines	1985	32	0.29	37.9	59.4
	1995	27	0.30	45.1	65.0
	2001	19	0.49	64.0	78.3
Singapore	1985	32	0.24	35.4	54.4
	1995	36	0.17	23.0	41.2
	2001	39	0.23	30.1	48.6
Taiwan, China	1985	47	0.12	14.5	29.3
	1995	43	0.12	13.3	31.7
	2001	40	0.21	27.1	41.5

Table 13.1 Continued

Country	Year	No. of Products Exported	Concentration Index	Products Share in Exports (%)	
				Three Largest	Ten Largest
Thailand	1985	27	0.22	32.5	53.9
	1995	35	0.19	26.8	46.8
	2001	37	0.18	27.0	41.9
Vietnam	1985	25	0.36	53.8	76.3
	1995	36	0.25	38.3	57.9
	2001	28	0.42	48.7	62.8
All Above Countries	1985	36	0.15	20.2	34.6
	1995	45	0.11	13.7	24.5
	2001	41	0.16	20.6	32.4
MEMO ITEM					
East Asian Global	1985	45	0.11	13.4	28.0
Exports	1995	46	0.14	17.0	34.3
	2001	43	0.13	15.3	34.1

Source: UN COMTRADE Statistics.

Indonesia, Laos, Mongolia and Thailand where an important diversification of exports occurred.[22] For example, over 1985-2001 the number of Cambodia's regional export products rose more than ten fold (from 3 to 31), while the share of Indonesia's three largest exports fell from 64 to 28 percent. However, there are several instances involving the Philippines, Taiwan (China) and Korea where the Hirschmann, and other indices, reflect an increased concentration of exports. What factors were responsible for these divergent trends?

For an initial appraisal, these three countries current largest export products were identified. The value and export share of these items was tabulated and compared with similar information for 1985 (see Table 13.2). Two points emerge from these comparisons. First, a remarkable relative increase occurred in the importance of exports of electronic goods and components which did, in fact, cause the overall structure of exports to become more concentrated. For example, the share of electronic microcircuits (SITC 776.6) in Taiwan's exports rose from 1.2 to almost 19 percent over 1985 to 2001. A similar increase occurred in the relative importance of this product in Korean and the Philippines exports. Second, increased electronic or machinery component exports figure prominently in the trade of all three countries (a point that underscores the growing importance of international production sharing in the region (see *Trade Trends 17-19*). In short, the statistics in Table 13.2 indicating increasingly concentrated trade structures for these countries can largely be explained by the rapid expansion of these types of specialized products which grew at rates far in excess of those for other established exports.

[22] The 1985-2001 export share of the three largest products fell by 10 percentage points or more in the case of Brunei, Cambodia, Hong Kong, Indonesia, Laos and Malaysia. Hong Kong and Indonesia recorded the largest reductions in their 10 product export shares, that is, 22 and 35 percentage points, respectively. For Indonesia the reduction was largely due to a decline in the relative importance of petroleum exports.

Finally, in answer to the question posed in *Trade Trends 6* the available evidence does not support the proposition that regional markets fostered a general diversification of exports. From 1995 to 2001 the share of the three largest products in regional trade rose by 7 percentage points to approximately the same level as in 1985. Similar changes occurred in the concentration index and the export product count. These developments do not appear to be related to the financial crisis, but are seemingly due to intense East Asian demand for several specific electronics products.

Table 13.2 Why Some East Asian Exporters Did Not Diversify! Evidence from Korea, the Philippines, and Taiwan, (China)

	Value of Regional Exports ($million)			Share of Regional Trade (%)		
Exporter/Product/SITC No.	1985	1995	2001	1985	1995	2001
KOREA						
ALL GOODS	2,573	39,707	52,511	100.0	100.0	100.0
Electronic microcircuits (776.4)	119	6,237	6,223	4.6	15.7	11.9
Radiotelephonic gear (764.3)	--	75	3,151	--	0.2	6.0
Electronic peripheral units (752.5)	1	171	1,619	0.1	0.4	3.1
Parts of telecommunications (764.9)	34	876	1,293	1.3	2.2	2.5
PHILIPPINES						
ALL GOODS	1,120	4,596	14,727	100.0	100.0	100.0
Electronic microcircuits (776.4)	294	1,100	6,898	26.2	23.9	46.8
Parts of office machinery (759.9)	23	576	1,358	2.0	12.5	9.2
Digital storage units (752.4)	0	201	1,170	0.0	4.4	7.9
Diodes and transistors (776.3)	7	223	575	0.6	4.8	3.9
TAIWAN, (CHINA)						
ALL GOODS	5,525	49,927	59,992	100.0	100.0	100.0
Electronic microcircuits (776.4)	66	3,060	11,136	1.2	6.1	18.6
Parts of office machinery (759.8)	43	1,312	3,390	0.8	2.6	5.7
Polystyrene (583.3)	49	1,781	1,757	0.9	3.6	2.9

Source: UN COMTRADE statistics.

Trade Trends 14

Are There "Dynamic" East Asian Exports

Key Point

Manufactured goods that are high skill and highly technology intensive in production comprise a large share of East Asia's fastest growing products in regional trade. Electrical machinery accounts for about one-fifth (by value) of this exchange. East Asia is in the enviable position of having many of its fastest growing regional exports included on a list of its largest export products.

Although they presently may not constitute a large share of East Asian exports, there are reasons why one should attempt to identify "dynamic" (that is, fast growing) exports. Even though their current trade may be small, if their above-average growth continues for an extended period, these items eventually could become an importance source of export earnings. Second, if the dynamic products have common production characteristics, this could convey important information. For example, if they are (say) highly labor- or resource-intensive, both the reasons for their growth and whether similar export opportunities exist in related goods could have important implications. Third, there is an obvious interest in identifying

dynamic products to focus attention on the removal of any trade barriers they face in possible regional trade arrangement negotiations. Fourth, correlations show a relatively strong relationship exists between the growth rates for specific manufactures in the 1980s and 1990s (Yeats 1999). As such, the identification of current dynamic products may provide useful information concerning their future growth prospects.

Table 14.1 lists the fastest-growing four-digit (Rev. 2) export products in regional trade over the recent 1995-2001 period. It shows the value of exports in each year, each item's percentage increase, and (where possible) whether or not the item is normally produced by labor- or capital- or skill intensive manufacturing procedures. These classifications are based on an UNCTAD (Mayer *et. al.* 2002, p. 27) analysis that attempted to identify the fastest growing products in world trade. To guard against the results being biased by items with a very low initial trade base, products were excluded if they failed to account for at least one-half of one percent of total 1995 intra-regional exports. Product descriptions are highlighted in boldface if the item was also classified as one of the regions largest exports (see Table 12.1). Finally, the largest regional exporter(s) of each item is identified and its trade share is shown.

Three important points emerge from the information presented in Table 14.1,

- High technology and high skill intensities are frequent characteristics of East Asia's fastest growing exports. Almost one-half of the products listed are classified as high skill, high capital and high scale intensive manufactures, while 22 percent are medium intensive in the use of these factors. In contrast, only three of the products, all of which are articles of clothing, are normally manufactured using labor-intensive processes.

- Electrical machinery (SITC 77) accounts for the largest number of products listed in the table (8 of the four-digit items), and about one-fifth ($83 billion) of the total value of dynamic product exports. The export value of these goods doubled over 1995-2001. Within this group, intra-regional trade in electronic microcircuits (SITC 776.4) was approximately $50 billion. Office machinery and equipment (SITC 75) is the second largest group with regional trade of about $36 billion.

- East Asia is in the enviable position of having many of its largest regional exports (identified in boldface) included in the "dynamic" or fast growing product group. Approximately 56 percent of the dynamic products, which accounted for $137 billion of intra-regional trade, also appear in the region's largest product list (see Table 12.1).

Trade Trends 15

Has Intra-Industry Trade Facilitated the Expansion of East Asian Exports?

Key Point

A growing level of intra-industry trade can improve a country's prospects for development and growth, expand the range of products available to consumers, and also increase its interdependence in the global economy. Available evidence shows that East Asian intra-industry trade has been steadily growing in relative importance. These trends are evident in trade both within the region, and in trade with major global markets.

Some analyses of factors promoting regional trade and growth conclude a growing level of inter-industry trade (IIT) can play an important positive role (see Grubel and Lloyd 1975, Greenway *et. al*. 1994, Feenstra 1998, or Hoekman and Djankov 1996). There are several reasons for this assumption. First, intra-industry exchange produces gains from international trade, over and above those from comparative advantage, because it allows countries to take advantage of larger markets. By engaging in IIT, a country can often simultaneously reduce the number of similar goods it produces, while the variety of goods available to consumers is increased. By manufacturing fewer varieties, a country can produce each on a larger scale, often with higher productivity and lower cost.

Table 14. 1 East Asian Countries "Dynamic" Four-Digit SITC Revision 2 Intra-Regional Export Products

Commodity (SITC No.)	Major 2001 Supplier(s) and Share (%)	Regional Trade Value ($ 000)		2001 Export Share (%)	Percentage Increase (%)
		1995	2001		
Radiotelegraphic & telephonic equipment (764.3)*	Korea (38), China (29)	1,181,223	8,333,994	2.11	605.5
Peripheral electronic units (752.5)*	China (33), Korea (30)	1,474,474	5,344,467	1.36	262.5
Digital central storage units (752.4)*	Singapore (23), China (19)	3,324,042	8,194,712	2.08	146.5
Piezo-electric crystals (776.8)*	Taiwan (24), Singapore (20)	2,362,571	5,500,780	1.4	132.8
Electronic microcircuits (776.4)*	Malaysia (23), Taiwan (23)	22,762,712	48,975,040	12.43	115.2
Other coal (322.2)	China (58), Indonesia (41)	1,132,592	2,404,728	0.61	112.3
Parts of office machinery (759.9)*	China (34), Malaysia (33)	10,608,952	22,365,857	5.67	110.8
Printed circuits and parts (772.2)**	Taiwan (28), China (27)	2,136,143	4,474,498	1.14	109.5
Jerseys and, pullovers (845.1)****	China (89)	2,043,761	4,063,947	1.03	98.8
Diodes and transistors (776.3)*	Malaysia (25), Taiwan (20)	3,280,603	6,208,868	1.58	89.3
Petroleum gases (341.3)	Indonesia (47), Malaysia (32)	2,075,375	3,883,072	0.99	87.1
Fuel oils (334.4)	Singapore (48)	1,065,655	1,960,483	0.5	84.0
Other outer garments (845.9)****	China (84)	1,377,805	2,420,411	0.61	75.7
Other electric power machinery (771.2)**	China (56)	2,682,822	4,511,373	1.14	68.2
Iron sheets & plates (674.6)***	Taiwan (48), Korea (40)	1,334,516	2,237,419	0.57	67.7
Other electrical machinery (778.8)**	China (28), Taiwan (19)	3,635,115	6,050,890	1.54	66.5
Electrical switches and relays (772.1)**	China (36), Taiwan (16)	2,825,977	4,481,204	1.14	58.6
Telephonic equipment (764.1)*	China (61), Taiwan (12)	1,755,083	2,740,412	0.7	56.1
Polyethylene (583.1)*	Korea (37), Singapore (21)	1,305,583	2,037,600	0.52	56.1
Kerosene and other medium oils (334.2)	Singapore (46)	1,123,867	1,666,733	0.42	48.3
Cameras and camera parts (881.1)*	China (59)	1,333,829	1,967,849	0.5	47.5
Other outer garments (843.9)****	China (87)	1,441,471	2,125,397	0.54	47.4
Polypropylene (583.2)*	Korea (36), Taiwan (24)	1,136,868	1,665,179	0.42	46.5
Electric motors & generators (716.2)**	China (46), Thailand (17)	2,153,960	3,104,906	0.79	44.1
Other polymerization material (583.9)*	Taiwan (30), Korea (26)	1,364,979	1,944,928	0.49	42.5
Insulated wire and cable (773.1)**	China (45), Taiwan (15)	2,026,478	2,852,770	0.72	40.8
Cyclic hydrocarbons (511.2)*	Korea (58), Singapore (17)	1,399,254	1,968,195	0.5	40.7
All goods		303,521,831	394,140,708	100	29.9

* Classified by UNCTAD (2002, p. 27) as a high skill, technology-, capital and scale intensive manufactured good.
** Classified as a medium skill, medium capital and scale intensive manufactured good.
*** Classified as a low skill, low capital and scale intensive manufactured good.
**** Classified as a labor intensive manufactured good.

Note: Products whose description is highlighted are also classified as one of the region's largest exports.

Several summary measures provide useful insights as to the extent that IIT is taking place or is changing. One such measure is the IIT ratio. This index ranges between zero and one, with larger values indicating greater trade between firms in the same industry. Higher IIT ratios suggest that gains from specialization in differentiated products are being exploited, and that the participating country is increasing its interdependence with regional or global markets.[23]

Table 15.1 presents 1985 and 2001 East Asian regional intra-trade ratios for all manufactured goods as well as several fabricated product sub-groups. To help visualize the pattern of changes, situations where the IIT index rose by a factor of 0.100, or more, are marked with an asterisk. An analysis of IIT indices in other published studies suggests this magnitude of change constitutes a relatively strong increase in intra-industry trade. These statistics show that overall intra-industry trade generally strengthened for most regional countries Brunei, Cambodia, and Laos are exceptions as little or no "base" for this activity seemingly has been established. Also, somewhat different patterns occur between the product groups. For example, the 1985-2001 IIT indices for manufactures rose for all but two of the East Asian countries, and 9 of the 14 East Asian countries registered an increase in excess of 0.100.[24] The regional intra-industry trade ratios for Indonesia and Taiwan more than doubled to relatively high (approximately 0.500) values.[25] However, the trend toward increased intra-industry trade appears weaker within the chemical products sector where the indices declined for 5 of the 14 regional countries.

Are the intra-industry trade trends within East Asia unusual, or do they basically reflect the region's experience in global markets. Table 15.1 provides relevant information by showing 1985, 1995 and 2001 IIT indices for East Asia's trade with Japan, NAFTA, and the European Union (15). Strong similarities are evident in East Asia's IIT trends for both intra- and inter-regional trade. The 1985-2001 intra-industry ratios for trade in all manufacture goods with Japan more than doubled (from 0.199 to 0.462), while significant increases are also reported for the European Union (15) and NAFTA. Even during the recent 1995-2001 period, that covered the financial crisis, the IIT ratios generally tended to increase. In short, the statistics provide strong evidence as to East Asia's continuing successful expansion into both regional and global markets.

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[23] The IIT index is defined as,

$$(15.1) \qquad IIT = 1 - [\sum\sum\sum |X_{ijk} - M_{ijk}| \div (X_{ijk} + M_{ijk})]$$

Where X_{ijk} represents exports from industry i by country j to country k, and M_{ijk} represents corresponding import values. Industries are defined at the three-digit level of the SITC system and the analysis is confined to manufactured goods, that is, items classified in SITC groups 5 through 8 less nonferrous metals

[24] Assembly operations for foreign produced parts and components are one reason for the increase in some IIT ratios. Machinery parts and components are normally classified in the same SITC category as their final stage product so the import of components for assembly, and the export of the final (assembled) stage good, is reflected in the IIT ratios. Lemoine and Unal-Kasenci (2002) report that over 90 percent of China's exports and imports of high technology goods occur in the same product sectors due to assembly operations.

[25] Kierzkowski (2001, p. 239) provides statistics on intra-industry trade ratios for 45 countries who trade with the European Union. This information should help assess implications of the statistics in Table 15.1. In general, many of the East Asian IIT indices appear relatively high. For example, Kierzkowski calculates an index of 0.274 and 0.432 for Greece and Portugal's (both EU members) trade with the European Union, while the indices for Poland and Hungary are 0.437 and 0.509, respectively.

Table 15.1 Intra-Industry Trade Ratios for Individual East Asian Regional Trade in 1985, 1995 and 2001

	Chemicals			Machinery & Transport			Other Manufactures			All Manufactures		
Country	1985	1995	2001	1985	1995	2001	1985	1995	2001	1985	1995	2001
Brunei Darussalam	0.041	0.011	0.016	0.080	0.045	0.016	0.091	0.040	0.115	0.080	0.040	0.075
Cambodia	0.004	0.023	0.005	0.000	0.010	0.064	0.000	0.044	0.060	0.001	0.023	0.056
China	0.214	0.423*	0.382*	0.522	0.385	0.458	0.285	0.225	0.282	0.322	0.287	0.365
Hong Kong	0.368	0.238	0.304	0.544	0.458	0.337	0.336	0.303	0.314	0.422	0.359	0.326
Indonesia	0.303	0.653*	0.672*	0.112	0.343*	0.571*	0.226	0.341*	0.366*	0.223	0.397*	0.509*
Korea	0.324	0.320	0.314	0.313	0.384	0.606*	0.228	0.427*	0.399*	0.271	0.393*	0.498*
Lao P. D. Rep.	0.000	0.260*	0.010	0.004	0.006	0.033	0.003	0.033	0.029	0.002	0.043	0.029
Malaysia	0.359	0.617*	0.743*	0.709	0.742	0.749	0.444	0.564*	0.681*	0.588	0.693*	0.738*
Mongolia	--	0.109*	0.003	--	0.006	0.005	--	0.050	0.226*	--	0.045	0.140*
Philippines	0.507	0.240	0.305	0.446	0.563*	0.525	0.212	0.212	0.334*	0.379	0.418	0.484*
Singapore	0.344	0.526*	0.392	0.838	0.804	0.810	0.430	0.503	0.607*	0.638	0.728	0.746*
Taiwan, China	0.343	0.288	0.344	0.282	0.545*	0.646*	0.150	0.292*	0.305*	0.213	0.411*	0.519*
Thailand	0.284	0.455*	0.467*	0.530	0.719*	0.775*	0.508	0.550	0.579	0.473	0.645*	0.692*
Vietnam	0.009	0.060	0.142	0.114	0.078	0.241*	0.033	0.172*	0.211*	0.027	0.119	0.211*
Average of Above	0.221	0.302	0.292	0.321	0.362	0.416	0.210	0.268	0.322*	0.260	0.329	0.384*
MEMO ITEM												
IIT for Trade with:												
Japan	0.362	0.343	0.473*	0.104	0.354*	0.534*	0.277	0.327	0.342	0.199	0.344*	0.462*
NAFTA	0.337	0.344	0.594*	0.483	0.482	0.429	0.100	0.209*	0.164	0.275	0.374	0.337
EU (15)	0.290	0.503*	0.577*	0.328	0.401	0.516*	0.287	0.396*	0.362	0.305	0.407*	0.465*

* The regional intra-industry trade index increased by 0.100 or more over the 1985 level.

Source: Computations based on UN COMTRADE statistics.

Trade Trends 16

Have East Asian Countries "Re-Orientated" Their Exports?

Key Point

According to the Asian Development Bank, recent evidence pertaining to MERCOSUR shows that a regional trade arrangement can distort the composition and direction of member countries' trade in ways that incorporate major economic inefficiencies. Although East Asian RTAs (like ASEAN) are weaker a re-orientation of trade may be occurring. However, an analysis of regional trade changes shows these negative trends are not occurring within East Asia even though the relative importance of intra-trade has grown very rapidly. Rather, East Asia's global and regional exports appear to be evolving in ways that are fully consistent with these countries' comparative advantage.

Any assessment of the effects of an established regional trade arrangement should consider how it influenced the direction and composition of trade. If substantial trade diversion occurred this could have important negative implications for third countries whose exports have been displaced. Second, the effects on the product composition of trade can be equally important. If an RTA stimulates intra-trade in products in which members do not have a comparative advantage serious economic losses and inefficiencies may occur. The Asian Development Bank (2002, p. 187) cites evidence showing MERCOSUR had such negative economic effects through the "re-orientation" of member countries trade toward each other,

"Inter-block trade in MERCOSUR increased at the expense of trade with non-member countries and caused significant trade diversion. This stemmed from the groups "discriminatory" tariffs against nonmembers which are four to six times higher than those in other major preferential trade arrangements. The trade block appears to reinforce the inward orientation of MERCOSUR economies enabling inefficient domestic producers to expand markets within the block remaining uncompetitive on the wider international scene. The decline in MERCOSUR trade (both within and outside of the bloc) in the late 1990s reflects the impact of accumulated inefficiencies sustained through relatively high discriminatory protection. The MERCOSUR case highlights the importance of examining broader economic policies – rather than just looking at trade flows – when analyzing the impact of preferential trade arrangements."

These observations raise an important issue. Have East Asian countries been re-orienting their own trade toward each other. If they have, has the re-orientation been along lines consistent with comparative advantage or is it likely that important inefficiencies are involved? For example, in the case of MERCOSUR high discriminatory tariffs promoted intra-trade in highly capital intensive manufactures that could not be exported competitively to third markets. East Asia generally does not apply high discriminatory tariffs, but there are still several reasons why questions concerning the re-orientation of regional trade should be addressed;

- The Asian Development Bank (2002, p. 185) cites evidence showing that, "since Lao PDR, Myanmar and Vietnam joined the ASEAN preferential trade arrangement between 1995 and 1998, a sharp increase in their within-block trade occurred." Similar shifts in the direction of trade may have occurred for other ASEAN countries. This re-orientation of trade may have been further encouraged by several trade facilitation and trade agreements such as the ASEAN Industrial Cooperation Scheme (which provides preferential tariffs for ASEAN owned enterprises), or the ASEAN Customs Vision 2020 agreement that attempts to streamline and simplify customs clearance procedures.

- Preferential trade arrangements in non-regional markets may have caused East Asian countries to re-direct their trade toward each other. For example, over the last decade NAFTA and MERCOSUR were formed, and the EU agreement was strengthened and expanded. These developments could have worsened relative market access conditions for East Asian exporters in North America and Europe, and caused some trade to be diverted to regional markets (Asian Development Bank 2002, p. 188).

- Exporters may have been motivated to re-orient exports toward the region by special trade facilitation arrangements, like the China-ASEAN framework agreement, which includes provisions for

future preferential tariffs, that streamlines and simplifies procedures for international trade. The incentive to re-orient trade could be significant if the framework agreements were viewed as precursors of formal preferential trade arrangements. The establishment and operation of special economic growth zone may also have caused a re-orientation of exports as local entrepreneurs attempt to capitalize on opportunities in these areas.

An empirical measure is available that can provide useful insights concerning changes in the nature and composition of goods traded regionally. This measure, referred to as the regional "orientation" index for country i and good j , is defined as,

$$(16.1) \qquad RO_{ir} = \frac{\text{(share of j in country i's exports to the region)}}{\text{(share of j in country i's non-regional exports)}}$$

The interpretation of this measure is somewhat similar to that for the standard RCA index. If the index exceeds unity the country has a higher than expected propensity to export product j to regional markets. If RO_{ir} is below unity the propensity to export j is lower than expected. Changes in the index over time are of particular interest since increases (decreases) indicate a growing (declining) regional orientation of trade in a specific product. See Yeats (1998) for a previous application of the regional orientation index.

Table 16.1 reports individual East Asian country's 1985 and 2001 regional orientation indices for broad product groups like foodstuffs, chemicals and mineral fuels, as well as similar information for the combined exports of these countries. To help identify any underlying trends, the last line of the table shows the 1985-2001 overall change in each of the product group's indices.[26]

The major impression conveyed by Table 16.1 is that, with one exception (ores and metals), no major unexpected re-orientation occurred in the *broad composition* of goods destined for regional markets, even though the overall relative importance of intra-trade has increased dramatically (see Table 2.1).[27] Stated differently, East Asia's exports for these major product groups expanded at approximately the same pace in both regional and global markets. This point is reflected in the virtually unchanged RO index for machinery and transport manufactures (an index of 1.004 in 1985 versus 1.021 in 2001) as well as the relatively static indices for the other broad product groups.

A specific example may help the pattern of results reported in Table 16.1. *Trade Trends 14* determined that machinery and transport products were among the largest and most dynamic (that is, fastest growing) products in regional trade. Was the dynamism the result of diversion of exports from global to regional markets? No! As previously noted in *Trade Trends 11* "Since 1985 the product composition of East Asian intra-trade changed dramatically as the share of machinery and transport equipment rose by over 26 percentage points. At present these goods account for approximately one half of all goods traded within the region. A similar pattern is observed in non-regional trade as the share of machinery and transport equipment rose from 18 to 46 percent." East Asia's trade performance shows it is fully competitive for these types of goods in both regional and global markets. As such, the evidence

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[26] Clearly, factors influencing global trading conditions could also have a major influence on the RO index apart from closer economic ties within East Asia. For example, the Uruguay Round agreement significantly liberalized barriers to trade in some products like steel, textiles and clothing that may have enhanced export opportunities in global, as opposed to regional markets. Some estimates indicate the Round, when fully implemented, could increase the volume of developing countries' exports by 13 to 36 percent.

[27] The regional orientation index for ores and metals increased by a value of 1.258 over 1985-2001 which is the largest change reported in the table. Analysis of the underlying statistics shows the index change was almost totally accounted for by the redirection of Mongolian, Indonesian and Taiwan's exports of copper alloys and ores toward regional markets. The rapid expansion of regional electronic products, whose production is intensive in the use of copper, clearly contributed to this directional change in trade.

Table 16.1 East Asian Regional Orientation Indices for Intra-Trade of Broad Product Groups; 1985 and 2001

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		Regional Orientation Indices for Major Product Groups									
Exporter	Year	Food & Feeds	Beverages & Tobacco	Agricultural Raw Materials	Ores & Metals	Mineral Fuels	Animal & Vegetable Oil	Chemicals	Manufactures Classified by Materials	Machinery & Transport Equipment	Misc. Manufactures
Brunei	1985	0.003	0.000	0.017	0.034	5.191	0.000	0.035	0.005	0.019	0.030
	2001	0.009	0.010	0.065	0.154	21.511	0.000	0.013	0.629	0.076	0.029
Cambodia	1985	3.472	0.000	14.219	0.000	0.000	0.000	0.183	0.000	0.002	0.011
	2001	2.927	1.708	19.159	1.145	0.001	0.000	0.050	2.736	0.154	0.075
China	1985	1.868	2.912	1.014	0.576	1.144	0.092	1.834	1.359	0.295	0.718
	2001	0.835	4.365	0.526	1.581	0.835	0.155	0.945	1.286	0.815	1.204
Hong Kong, China	1985	0.299	5.877	0.645	1.007	0.087	0.186	1.992	0.863	2.339	1.039
	2001	0.179	2.332	0.542	1.811	0.250	0.097	1.977	1.140	1.100	0.715
Indonesia	1985	0.984	0.179	2.489	0.777	2.684	0.513	2.720	0.707	0.031	0.014
	2001	1.424	3.713	9.072	3.364	8.397	3.588	2.873	0.852	0.303	0.098
Korea, Rep	1985	0.305	1.387	0.504	3.094	0.192	0.016	5.879	1.228	1.508	0.414
	2001	0.165	0.745	1.236	4.412	1.845	0.039	4.848	0.821	0.990	0.179
Lao, PDR	1985	6.356	0.000	9.525	0.000	0.000	0.000	0.000	0.006	0.010	0.011
	2001	1.831	0.038	65.356	2.605	0.442	0.005	0.067	0.158	0.062	0.039
Malaysia	1985	0.705	0.552	4.019	0.338	2.024	5.350	0.597	0.227	0.825	0.085
	2001	0.560	5.110	1.930	1.009	2.443	4.580	1.604	0.357	1.386	0.240
Mongolia	1985	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.934	0.000	4.996
	2001	0.242	0.007	6.347	38.860	0.171	0.008	0.003	0.662	0.001	0.001
Philippines	1985	1.558	1.542	0.878	3.048	0.572	0.764	3.329	0.226	2.246	0.148
	2001	0.794	1.283	0.242	1.539	0.335	1.251	0.473	0.114	1.832	0.123
Singapore	1985	0.272	1.215	0.312	0.754	2.510	0.459	4.480	0.182	1.375	0.240
	2001	0.241	3.274	0.264	0.761	4.099	0.242	3.575	0.178	1.291	0.285

Table 16. 1 Continued

Exporter	Year	Regional Orientation Indices for Major Product Groups: Food & Feeds	Beverages & Tobacco	Agricultural Raw Materials	Ores & Metals	Mineral Fuels	Animal & Vegetable Oil	Chemicals	Manufactures Classified by Materials	Machinery & Transport Equipment	Misc. Manufactures
Taiwan, China	1985	0.647	0.443	0.648	1.960	0.152	0.014	3.080	1.437	1.434	0.688
	2001	0.208	0.466	1.086	4.148	0.280	0.056	4.173	0.805	1.145	0.283
Thailand	1985	6.228	2.649	1.793	1.517	0.023	0.265	1.774	0.500	0.676	0.211
	2001	2.709	1.830	4.473	1.470	1.486	0.609	3.537	0.467	1.083	0.173
Vietnam	1985	9.354	0.032	3.205	0.600	0.014	1.693	0.227	0.043	0.008	0.007
	2001	4.497	1.171	3.005	0.789	11.028	0.450	0.776	0.531	0.327	0.305
All above countries	1985	1.192	1.945	1.389	1.031	1.286	1.058	2.446	0.820	1.005	0.467
	2001	0.695	2.851	1.455	2.289	1.848	0.840	2.521	0.819	1.033	0.553
MEMO ITEM											
Net Change: 1985-2001		-0.497	0.906	0.066	1.258	0.562	-0.218	0.075	-0.001	0.028	0.086

Note: The product groups are classified by SITC products in Revision 2 as Foods and Feeds (0+1+22+4); Agricultural raw materials (2-22-27-28); Mineral Fuels (3); Ores and metals (27+28+67+68); Chemicals (5); Machinery and Transport (7); Other Manufactures (6-67-68+84); and Miscellaneous manufactured goods (SITC 8-84).

indicates East Asia's regional exports expanded along lines consistent with comparative advantage without any significant policy induced distortions.

Trade Trends 17

How Big is East Asian Production Sharing?

Key Point

Trade in parts and components has grown steadily in East Asia and now accounts for about $66 billion, or over one-fifth of all intra-trade in manufactured goods. Regional trade in parts of office machinery and telecommunications equipment now total about $43 billion. The magnitude of production sharing in East Asia would clearly be a positive factor facilitating regional cooperation and increased interdependence.

A growing body of evidence has documented the remarkable increase in international production sharing as reflected in far above average growth rates for trade in components or partially assembled manufactured goods.[28] Production sharing often involves the development of specialized (often) labor intensive activities within vertically integrated international manufacturing activities. As an example, electronic semi-conductors, valves, tuners and other components are now assembled for multinational firms in places like Malaysia or the Philippines. Parts of wearing apparel and leather goods are assembled in Jamaica and the Dominical Republic for re-export to the US market – one estimate by the World Bank puts the value of assembly exports from the Caribbean at over $3 billion. Among the many industries where major parts of a production process were internationalized include television and radio receivers, sewing machines, calculators, office equipment, electrical machinery, power and machine tools, typewriters, cameras and watches (USITC 1994).

In its original form, the Standard International Trade Classification (SITC) system did a less than adequate job of distinguishing between trade in final goods as opposed to parts and components. At its lowest (five-digit) level the SITC Revision 1 identified about 800 individual products – only 10 of which consisted of "parts" of manufactured goods that normally would undergo further assembly. However, in the late 1970s and early 1980s many countries adopted the more detailed SITC Revision 2 system which expanded the number of product groups composed solely of parts and components. The coverage of these groups was most extensive within the machinery and transport equipment sector (SITC 7) where about 60 individual three, four, and five-digit product classifications that consist solely of components of manufactured equipment intended for further assembly.[29] This data source greatly facilitated empirical analyses relating to production sharing. The recently introduced Harmonized System (HS) trade data classification scheme further expanded the coverage of statistics on trade in parts and components.

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[28] Production sharing is the internationalization of a manufacturing process in which several countries participate in different stages of a specific good's fabrication. The process is of considerable economic importance since it allows stages of production to be located where they can be undertaken most efficiently. Ng and Yeats (1999, p. 13) East Asian intra-trade in goods normally used in production sharing grew at an annual rate of 21 percent from the mid-1980s to mid-1990s. This was approximately 7 percentage points higher than East Asia's intra-trade in all goods.

[29] This analysis is based exclusively on product groups defined by the UN as consisting solely of parts and components. This almost certainly causes estimates of East Asian production sharing to be downward biased. Some other traded SITC 7 products, like television picture tubes, or threads and fibers in SITC 6, likely experience further assembly operations, but it is not possible to accurately determine what is their true end use.

Table 17.1 The 2001 Value and Share of East Asian Regional Trade in Parts and Components (values in $ 000)

Component Part Description (SITC Number)*	Regional Trade	
	Value	Share (%)
Steam boilers and auxiliary plants (711.9)	50,718	0.08
Aircraft internal combustion engines (713.19)	32,184	0.05
Outboard Motors (713.31)	2,619	0.00
Outboard motors, nes (713.32)	80,057	0.12
Internal combustion engines, nes (713.9)	317,289	0.48
Engines and motors, nes (714.9)	170,469	0.26
Rotating electric motors (716.9)	488,209	0.74
Water turbines and motors (718.89)	4,815	0.01
Cultivating equipment (721.19)	9,939	0.02
Harvesting machinery (721.29)	6,965	0.01
Dairy machinery (721.39)	762	0.00
Wine making machinery (721.98)	1,450	0.00
Agricultural machinery, nes (721.99)	11,551	0.02
Construction machinery (723.9)	540,244	0.82
Spinning machinery (724.49)	40,587	0.06
Looms and knitting machinery (724.69)	69,144	0.11
Textile machinery, nes (724.79)	83,248	0.13
Paper making machinery (725.9)	24,573	0.04
Bookbinding machinery (726.89)	850	0.00
Printing and typesetting machinery (726.9)	119,388	0.18
Grain milling machinery (727.19)	7,255	0.01
Food processing machinery (727.29)	14,939	0.02
Machines for special industries (728.19)	63,660	0.10
Mineral working machinery (728.39)	31,084	0.05
Machines for special industries, nes (728.49)	602,013	0.92
Machine tools for metal working (736.9)	175,356	0.27
Foundry equipment (737.19)	15,248	0.02
Rolling mill parts (737.29)	26,549	0.04
Refrigerating equipment (741.49)	117,514	0.18
Pumps for liquids (742.9)	75,179	0.11
Centrifuges and filters (743.9)	287,150	0.44
Fork lift trucks (744.19)	18,878	0.03
Lifting and loading machines (744.9)	447,655	0.68
Power hand tools (745.19)	30,445	0.05
Packing machinery (745.23)	22,085	0.03
Non-Electric machinery (749.99)	162,630	0.25
Office and adding machinery (759)	24,604,494	37.48
Telecommunications equipment (764)	18,198,727	27.72
Electric power machinery (771.29)	750,139	1.14
Switchgear (772)	8,477,535	12.91
Domestic electrical equipment (775.79)	49,726	0.08
Electro-thermal appliances (775.89)	208,005	0.32
Electronic components, nes (776.89)	4,374,729	6.66
Electronic accumulators (778.19)	73,358	0.11
Electric lamps and bulbs (778.29)	30,756	0.05
Electrical machinery, nes (778.89)	370,171	0.56
Motor vehicles and accessories (784)	1,542,921	2.35
Carriages and cycles (785.39)	854,227	1.30
Trailers and non-motor vehicles (786.89)	60,100	0.09

Table 17. 1 Continued

Component Part Description (SITC Number)*	Regional Trade	
	Value	Share (%)
Railroad equipment and vehicles (791.99)	12,758	0.02
Aircraft and helicopters (792.9)	426,848	0.65
Chairs (821.19)	54,474	0.08
Other furniture parts (821.99)	166,969	0.25
Measuring or drawing machines (874.29)	119,798	0.18
Still cameras, nes (881.19)	686,945	1.05
Cameras under 16mm (881.21)	31,253	0.05
Cameras under 16mm, nes (881.29)	12,580	0.02
Unmounted optical elements (884.11)	23,517	0.04
Clocks and watches (885.29)	328,587	0.50
Umbrellas and canes (899.49)	38,090	0.06
ALL ABOVE ITEMS	65,649,409	100.00
MEMO ITEM: EAST ASIAN REGIONAL TRADE		
All Above Parts and Components	65,649,409	26.23
All Manufactures Excluding Chemicals	250,269,408	100.00

*The official description of this item in UN COMTRADE is preceded by the term "Parts of ….". This has been omitted in the table to avoid excessive duplication.

Source: Computations based on UN COMTRADE statistics.

Table 17.1 utilizes the UN SITC Revision 2 trade statistics to examine the composition and relative importance of individual component products in East Asian trade.[30] The table identifies each product by SITC number, it provides a short description, and also indicates the value and share of each item in all East Asian regional components trade. To help assess the relative importance of East Asian production sharing, the table also compares the value of regional trade in parts and components with that for all manufactured goods exclusive of chemicals. Regional trade in components now accounts for about one-quarter of this exchange.

One interesting point evident from these statistics is that East Asian component trade is concentrated in a relatively few items. Four products account for almost 85 percent of regional trade, with parts of office machinery and telecommunications equipment accounting for about two-thirds of this exchange. Production sharing is of major importance in these sectors that are among the fastest growing global exports of the East Asian countries (see *Trade Trends 14*). An analysis of the underlying individual East Asian country's trade statistics reveals little variation in the relative importance of these products across countries (see Appendix Table A4). A similar high level of product concentration has also been observed in global statistics on components trade except that motor vehicle parts were the largest single traded component product on all world markets (Yeats 2001).

How big is East Asian production sharing? The answer is *very big*! With regard to the relative importance of parts and components in East Asian trade, the table's memo item shows these goods now account for more than one-quarter of the region's intra-trade in manufactures exclusive of chemicals. The

[30] According to United Nations trade data the United States and Germany were the two largest exporters and importers of components, but Singapore, Hong Kong, Japan, Malaysia, and China ranked among the 10 largest countries participating in this exchange. In 1996, East Asian (including Japan) global trade in parts and components ($165 billion) fell between North America ($152 billion) and OECD Europe ($239 billion) according to Ng and Yeats (1999, p. 10)

magnitude of this exchange, and East Asian countries links in international production sharing, would clearly be positive factors in any regional trade arrangements

Trade Trends 18

The Direction of East Asian Trade in Parts and Components

Key Point

Japan is an important center or "hub" of production sharing operations in East Asia originating about one-third ($38.7 billion) of all regional exports of components for assembly. Over 70 percent of Indonesia's regional imports of components originate in Japan, while the corresponding share for Korea, the Philippines and Taiwan exceeds 50 percent. Trade in parts and components plays a key role in several countries strategic trade policy, often serving as a means of penetrating markets for high technology, or high skill products.

Any analysis of East Asian intra-trade in parts and components should examine the geographic pattern of this exchange. Specifically, countries that specialize the *export* of these goods may be at a competitive disadvantage in further assembly operations, possibly due to the influence of relatively high wage costs.[31] Similarly, countries that are primarily *importers* of components may have a competitive advantage in assembly operations, possibly due to a large available pool of low cost labor. These latter countries may be at a comparative disadvantage in the production of some components, particularly those manufactured using capital intensive techniques. As such, the sign and size of the trade balance in parts and components may help indicate the magnitude of the competitive advantage, or disadvantage, of a country in the production of components, or in assembly operations. One further point should be noted. Previous empirical analyses demonstrated the Japan played a central role as a "hub" for production sharing in East Asia in the mid-1990s (Ng and Yeats 1999), and was the major "source" of these goods. As such, the country coverage of this section is expanded to permit current analysis of trade in parts and components between Japan and other countries of East Asia.

Table 18.1 provides 2001 statistics on the origins and destinations of East Asian intra-trade in these goods. The top row of the table identifies the countries originating regional exports of components, while the left-most column shows the destinations (that is, the importers) of these shipments. For example, the table indicates Japan exported $8.3 billion in parts and components to China, while Singapore's exports to Hong Kong were just under $2 billion. Five countries, namely, Brunei, Cambodia, Lao PDR, Mongolia, and Vietnam were excluded from this analysis due to the fact that their participation in this regional activity was relatively unimportant.

The table's middle third shows the share of each country's total *imports* of components supplied by individual East Asian exporters. As an example, China sourced 43 percent of its imports of components from Japan, and about 13 percent from the Republic of Korea. Similarly, Hong Kong's major supplier of components was China which originated $13.6 billion, or 45.5 percent of its total imports. Finally, the lower third of the table shows each exporters regional trade balances (exports minus imports) in terms of values, and expressed as a percentage of total exports. For example, Japan's exports of parts and components to East Asia exceeded its imports by about $23.5 billion – the value of this positive balance was about 60 percent of its total exports. Bilateral trade balances can be determined from the appropriate column and row entries in Table 18.1

Four important points are evident in the statistics in Tables 18.1,

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[31] For example, in 2001 Japan's regional exports of all exports of parts and components totaled about $38.7 billion, which was almost two and one half times the value ($15.2 billion) of imports of components for further assembly. In contrast, the value of imports of components by a low wage country like Indonesia ($2.2 billion) was 30 percent higher than the corresponding value ($1.7 billion) of its exports.

• First, although China's exports of parts and components increased by almost $16 billion over 1995 to 2001 (to a current value of $26.8 billion), Japan largely remains the important center of production sharing operations in East Asia originating about one-third ($38.7 billion) of all regional exports of components. Over 70 percent of Indonesia's regional imports of components originate in Japan, while the corresponding share for Korea, the Philippines and Taiwan exceeds 50 percent (Table 18.1). Only in the unusual cases of Hong Kong and Singapore does China (or Malaysia) surpass Japan as the major supplier of components.[32]

• Second, although Japan was the third largest East Asian importer of components in 2001 (receiving shipments of $15.2 billion) behind Hong Kong (imports of almost $30 billion) and Singapore, it still maintained a sizeable regional trade surplus of about $30 billion for these goods. In addition to China (which had a positive trade balance of $7.7 billion, due largely to its close association with Hong Kong) Indonesia, Korean and Taiwan had a net positive balance for regional trade in components.

• Third, China is the second largest regional importer of parts and components, with trade of $20 billion, behind Hong Kong. In consultations with the World Bank in the early 1990s, Chinese authorities indicated these imports had a major strategic role in the country's overall trade policy. Specifically, trade in components was encouraged by governmental policies, such as tariff exemptions, that viewed local assembly of foreign produced components as a means of entering markets for high skill or high technology products that would otherwise be impenetrable. Imports of components were also viewed as a means of improving the foreign competitiveness of other industries by lowering production costs (see Lemoine and Kesenci 2002, or World Bank 1994 for details).

• Fourth, the statistics suggest that countries with relatively low wage costs tend to be major importers of components for further assembly. For example, according to the World Bank (2000a) yearly labor costs per worker in manufacturing ranged from $1,000 to $3,400 in the Philippines, Malaysia, and Thailand (as opposed to $32,000 in Japan), and these three developing countries had deficits in regional parts and components trade. Singapore and Hong Kong, with average annual labor costs of $21,500 and $13,500 respectively appear, at first, to be outliers as both are relatively high labor cost countries with regional imports of components in excess of their exports.

Why do countries like Singapore and Hong Kong, with their relatively high wage costs, have relatively high imports of parts and components? The answer, in part, is that this is the result of a conscious effort to upgrade the composition of their final exports. Partly as a reaction to the East Asian financial crisis, Singapore and Hong Kong adopted a policy of upgrading exports by encouraging production of high technology products.[33] This strategy relied on increased imports of parts and components, primarily of

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[32] Production sharing between China and Japan has grown rapidly since the mid-1990s. As shown in Table 18.1 Japan now sources about $5.6 billion of its total regional imports of components from China (as opposed to $2.1 billion in 1996), while China's current imports from Japan ($8.3 billion) are approximately double their 1996 value. See Ng and Yeats (1999) for statistics on regional trade in parts and components in the mid-1990s.

[33] A recent (17 September 2002) Oxford Analytica report notes. "Since the introduction of market reform policies, the Pearl River Delta (PRD) transformed its primarily agricultural economy into one of the world's leading export-processing zones. Recent economic development in the PRD has been distinguished by a rapid shift to high-tech industry, the region tops national growth rankings for this sector. In 2001, high-tech manufacturing constituted 24% of total industrial output, of which information technology (IT) and electronics were the fastest growing sectors. High-tech exports reached 31% of total exports, worth 22 billion dollars. Brisk growth continued in the first six months of 2002, spurred by a 24% year-on-year growth in the production of telecommunications equipment and a 21% growth in electrical machinery and equipment."

Table 18. 1 The Matrix of Intra-Trade and Trade Balances in Parts and Components Among East Asian Countries in 2001

	Exporter										
Partner (Importer)	China	Hong Kong	Indonesia	Korea, Rep.	Malaysia	Philippines	Singapore	Taiwan	Thailand	Japan	EA10 *
	Value of Exports of Parts and Components ($ million)										
China	0	1,542	313	2,442	1,267	342	759	3,279	952	8,292	19,188
Hong Kong, China	13,556	0	97	2,038	2,070	494	1,980	2,928	513	6,119	29,795
Indonesia	109	13	0	114	40	10	219	64	82	1,558	2,209
Korea, Republic	1,695	230	64	0	330	183	287	754	162	4,317	8,022
Malaysia	1,394	745	500	748	0	416	1,697	1,102	687	3,610	10,899
Philippines	170	502	26	788	259	0	804	523	256	3,683	7,011
Singapore	1,989	808	1,426	838	4,611	390	0	1,118	1,623	3,890	16,693
Taiwan, China	1,308	237	42	719	303	202	529	0	97	3,502	6,939
Thailand	1,030	153	139	486	729	625	490	363	0	3,714	7,729
Japan	5,587	238	500	1,728	1,086	1,229	766	2,866	1,230	0	15,230
ALL THE ABOVE	26,838	4,468	3,107	9,901	10,695	3,891	7,531	12,997	5,602	38,685	123,715
	Share of Exporter in Total Imports of the Trading Partner (%)										
China	0.0	8.0	1.6	12.7	6.6	1.8	4.0	17.1	5.0	**43.2**	100.0
Hong Kong, China	45.5	0.0	0.3	6.8	6.9	1.7	6.6	9.8	1.7	**20.5**	100.0
Indonesia	4.9	0.6	0.0	5.2	1.8	0.5	9.9	2.9	3.7	**70.5**	100.0
Korea, Rep.	21.1	2.9	0.8	0.0	4.1	2.3	3.6	9.4	2.0	**53.8**	100.0
Malaysia	12.8	6.8	4.6	6.9	0.0	3.8	15.6	10.1	6.3	**33.1**	100.0
Philippines	2.4	7.2	0.4	11.2	3.7	0.0	11.5	7.5	3.7	**52.5**	100.0
Singapore	11.9	4.8	8.5	5.0	27.6	2.3	0.0	6.7	9.8	**23.4**	100.0
Taiwan, China	18.9	3.4	0.6	10.4	4.4	2.9	7.6	0.0	1.4	**50.5**	100.0
Thailand	13.3	2.0	1.8	6.3	9.4	8.1	6.3	4.7	0.0	**48.0**	100.0
Japan	36.7	1.6	3.3	11.3	7.1	8.1	5.0	18.8	8.1	**0.0**	100.0
	Trade Balance of the Exporter										
Value ($ million)	7,650	-25,327	898	1,879	-204	-3,120	-7,736	6,058	-2,127	23,455	--
Share of exports (%)	28.5	-566.8	28.9	19.0	-1.9	-80.2	-102.7	46.6	-38.0	60.6	--

* East Asia only includes 9 countries plus Japan due to the lack of COMTRADE data for Brunei, Cambodia, Lao PDR, Mongolia and Vietnam in 2001.

Source: Computations based on UN COMTRADE Statistics.

telecommunications equipment and office machinery, for further assembly (see Lemoine and Kesenci 2002). In the case of Hong Kong, this strategy drew on the capabilities of "high technology areas" established within China for the manufacture of technology intensive products.[34] These areas were intended to be counterparts to silicon valley in California or the route 128 corridor in Massachusetts.[35]

Table 18.2 provides information relevant to this point. The table lists the largest parts and components products imported from China (which was, by far, the largest supplier of these goods), it shows the value and share of each good, and (in parentheses) reports the share of the product in all regional countries imports. As indicated, the unusually high level of Hong Kong's imports of components is largely accounted for by two high technology products, parts of telecommunication equipment and parts of office and adding machinery. These two component groups accounted for over $10 billion, or 75 percent, of Hong Kong's 2001 imports from China. Trade in telecommunications equipment, that accounted for $6.8 billion or 50 percent of Hong Kong's imports (as opposed to a corresponding share of 32 percent in all regional countries trade) was well above the average levels for imports of these goods in other East Asian countries.[36]

Table 18.2 The 2001 Value and Share of Hong Kong's Major Parts and Components Import Products from China

Component Part Description (SITC Number)*	2001 Imports from China	
	Value (000)	Share**
Telecommunications equipment (764)***	6,797,411	50.14 (32.40)
Office and adding machinery (759)***	3,309,430	24.41 (33.85)
Switchgear (772)	1,788,043	12.19 (14.44)
Electrical power machinery (771.29)	314,460	2.32 (1.62)
Still cameras (881.19)***	242,602	1.79 (1.23)
Electronic components, nes (776.89)***	152,211	1.12 (7.03)
Carriages and cycles (785.39)	146,557	1.08 (0.99)
All Above Products	12,750,716	94.06 (91.56)

*The official description of this item in UN COMTRADE is preceded by the term "Parts of ….". This has been omitted in the table to avoid excessive duplication.
** To better help assess implications of the unusual structure of Hong Kong's imports from China, numbers in parentheses show the share of the product in all East Asian countries regional imports.
*** According to UNCTAD (Mayer *et. al*, 2002) this item is normally manufactured using high skill and high technology production techniques.

[34] Singapore participates in a somewhat more complex economic zone that combines its comparative advantages with those of Malaysia and Indonesia. Specifically, the general objective of the Johor-Riau-Singapore growth zone is to bring together semiskilled labor from Malaysia, low cost land and labor from Indonesia, and capital from Singapore.

[35] Yusuf and Evenett (2002) provide a useful discussion of the factors required for the development of these high technology clusters. The city of Shenzhen, which borders Hong Kong, is one such center and has been a growing supplier of parts and components of high technology products. See the web cite Shenzhenwindow.net/20years/hitech.htm for interesting information on the development of this high technology city.

[36] Our analysis of Singapore's imports showed that these same product groups (parts of office machinery and telecommunications equipment) were also largely responsible for what, at first, appeared to be a relatively high level of components imports. In this case, however, the high technology cluster supplying these goods was located in Malaysia.

Given the special nature of the trade relationship between Hong Kong and China, Table 18.3 examines East Asian trade in parts and components from a somewhat different perspective. The table nets out intra-trade between China and Hong Kong (jointly referred to as Greater China) and analyzes the intra-trade of Greater China, Japan, and the East Asian (7) countries as a group. The latter includes Korea, Malaysia, Philippines, Singapore, Taiwan (China), and Thailand.

This revised analytical framework confirms the generally accepted view of (Greater) China as a major importer and specialist in the assembly of components. As indicated, China's 2001 regional imports and exports of components leaves it with a negative trade balance of $17.6 billion for these goods. A breakdown of this negative balance shows it to be about the same magnitude for Japan and the East Asia (7) countries. Similarly, Japan's total regional trade surplus of $29.3 billion is about evenly distributed between Greater China and East Asia (7). In both cases, the relative size of the negative balances are about 60 percent of Japan's 2001 component exports.

Table 18.3. Trade in Parts and Components Among Greater China (Hong Kong plus China) and Other East Asian Producers in 2001

	Exporter			
Partner (Importer)	Greater China*	East Asia (7)**	Japan	All East Asia
	Value of Exports of Parts and Components ($ million)			
Greater China*	--	19,474	14,411	33,885
East Asia (7)**	10,383	24,845	24,274	59,502
Japan	5,825	9,405	--	15,230
All East Asia	16,208	53,724	38,685	108,617
	Share of Exporter in Total Imports of Trading Partner (%)			
Greater China*	--	57.4	42.6	100.0
East Asia (7)**	17.4	41.8	40.8	100.0
Japan	38.2	61.8	--	100.0
All East Asia	14.9	49.5	35.6	100.0
	Trade Balance of Exporter ($ million)			
Greater China*	--	9,091	8,586	17,677
East Asia**	-9,091	--	14,867	5,778
Japan	-8,586	-14,869	--	-23,455
All East Asia	-17,677	-5,778	29,280	--
	Trade Balance as a Percent of Exports (%)			
Greater China*	--	46.6	59.6	52.2
East Asia**	-87.5	--	61.2	9.7
Japan	-147.4	-158.1	--	-154.0
All East Asia	-109.1	-10.8	60.6	--

* Hong Kong plus China
** Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan (China), and Thailand.

Source: UN COMTRADE statistics

Trade Trends 19

East Asian Comparative Advantage in the Production and Assembly of Manufactured Components

Key Point

Production sharing in East Asia may be motivated by several strategic trade policy factors including efforts to upgrade the quality and types of goods exported. In addition, considerations relating to factor proportions theory also affects a country's participation in production sharing. The production of parts and components, which is often a capital intensive operation, generally is undertaken in wealthier economies like Japan or Taiwan (China). These goods may then be exported to lower wage cost countries like Indonesia and Thailand for further assembly, which generally is a labor intensive operation.

Economic theory argues there is a relationship between the factor intensities required for the manufacture of specific goods and the location for their optimal production. Goods that are manufactured using labor intensive techniques should normally be produced in poorer, less developed, countries to capitalize on relatively low wage costs. In contrast, goods that are capital intensive in production should be manufactured in richer developed countries where the cost of capital is relatively low. While factor proportions theory has been verified in tests involving the manufacture of goods (see Lary 1968 or Yeats 1989), it has not been tested rigorously for production sharing assembly operations. However, since assembly operations often involve labor intensive activities one would anticipate a pattern in which capital intensive components, like transistors and other electronic equipment, are produced in richer countries and then sent for assembly to less developed (lower wage cost) locations. Is this expected pattern observed in production sharing in East Asia?

Economists often utilize the concept of "revealed" comparative advantage to identify countries whose factor endowments make it advantageous for them to specialize in the production of a good. The revealed comparative advantage (RCA) index for country i in the **production** of product j has been defined as;

$$(19.1) \qquad RCA_{ij}^{p} = [x_{ij}/X_j] \div [x_{wj}/X_w] \times 100$$

where x_{ij} and x_{wj} represent the value of j exported by country i and the world, respectively, while X_{wj} and X_w are world trade in j and total world trade. The index has a relatively simple interpretation. If its value exceeds unity the country is said to have a comparative advantage in the production of product j. In contrast, if the RCA index is below one the country is at a comparative disadvantage in the good.[37] However, equation (19.1) must be used with some caution since domestic measures, that have nothing to do with comparative advantage (like local subsidies or foreign trade barriers), can bias the index.

This analysis employs a variant of equation (19.1) developed by Ng and Yeats (1999) to identify countries that appear to have a comparative advantage in further upstream operations – that is, the ***assembly*** of the next step of a manufacturing process. Specifically, the revealed comparative advantage of country i in the assembly of product j is;

$$(19.2) \qquad RCA_{ij}^{a} = [m_{ij}/M_j] \div [m_{wj}/M_w] \times 100$$

where the m's represent imports, but otherwise correspond to the terms in equation (18.1). The reasoning behind this proposition is relatively straightforward. Parts and components typically have no general end us in themselves, but are exchange for further assembly into a product that does.[38] Therefore, it follows

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[37] Balassa (1965) developed and applied the concept of "revealed" comparative advantage and also made important extensions in Balassa (1977)(1979).

[38] There is one exception when an imported component is used as a replacement for a failed part in an already assembled good. However, this should have a neutral effect across countries unless failure rates for

that countries that have above average import shares for components also have a comparative advantage in the assembly operation for these goods.

Appendix Tables A19.1 through A19.3 show 1985, 1995 and 2001 RCA indices calculated using each East Asian country's import statistics. As noted, these data should indicate whether or not the country has a comparative advantage in the *assembly* of each product. Similarly, Appendix Tables A19.4 through A19.6 show RCA indices computed using export statistics, and indicate whether these countries have a comparative advantage in the *production* of components. Statistics for Japan are included in these appendices since *Trade Trends 18* showed this country plays a major role in East Asian production sharing operations. Comparative advantage indices for the United States are also shown to assist in making informed comparisons.

Table 19.1 provides summary statistics for the 1985, 1995 and 2001 RCA indices reported in the appendix tables. Shown here is the percentage of all 60 component product groups in which each East Asian country had a 1985 or 2001 comparative advantage in the production, or assembly, of components. For example, in 1985 China only had a comparative advantage in the production of less than 7 percent of the 60 component groups, as opposed to approximately 42 percent for these item's assembly operations. By 2001, however, China's comparative advantage in the production of components increased to include one-fifth of the parts and components groups and, in assembly operations, more than one-half of these products

Several noteworthy points are evident in these summary statistics;

- The pattern reflected in the data generally are in line with expectations based on factor proportions theory. Japan, which has the highest unit wage costs in the region, now only has a comparative advantage in the assembly of about one-fifth of the 60 component product groups, which is sharply lower than the results for China, Thailand and Indonesia. China, for example, has a comparative advantage in the assembly of 53 percent of the component product groups, while the corresponding share for Indonesia is ten percentage points higher.

- Exclusive of Japan, the East Asian Countries (taken together) now have a comparative advantage in the assembly of about 44 percent of these component product groups. This is almost two and one half times higher than corresponding statistics on their comparative advantage in production. This pattern is reversed for Japan where the comparative advantage in production operations (56.7 percent of all component product groups) is almost three times higher than in the case of imports for further assembly.

- The comparative advantage of almost all East Asian countries in assembly operations is concentrated in the office machinery and electrical machinery groups (see Appendix Table A19.3). In contrast, there are a few product sectors, like motor vehicle components, where no East Asian country has yet to develop a comparative advantage in assembly operations.

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parts in assembled products differed substantially between nations, or there was wide differences in the use of a given finished product across countries.

Table 19.1 The Percentage of All Parts and Components Products in Which East Asian Countries Have a Comparative Advantage

Country	Export – **Production** Operations (% of Products with RCAs > 1)*			Import – **Assembly** Operations (% of Products with RCAs > 1)*		
	1985	1995	2001	1985	1995	2001
East Asia						
Brunei	..	3.3	0.0	0.0	18.3	23.3
Cambodia	..	1.7	0.0	0.0	15.0	11.7
China	6.7	11.7	20.0	41.7	55.0	53.3
Hong Kong	18.3	23.3	23.3	36.7	23.3	31.7
Indonesia	0.0	5.0	10.0	65.0	55.0	63.3
Japan	43.3	58.3	56.7	3.3	8.3	21.7
Korea	6.7	13.3	15.0	25.0	41.7	33.3
Lao PDR	..	0.0	0.0	..	11.7	11.7
Malaysia	8.3	15.0	18.3	53.3	45.0	43.3
Mongolia	..	0.0	0.0	..	21.7	11.7
Philippines	6.7	10.0	10.0	38.3	50.0	31.7
Singapore	20.0	23.3	20.0	36.7	40.0	38.3
Taiwan, China	20.0	31.7	28.3	13.3	35.0	31.7
Thailand	8.3	11.7	15.0	33.3	55.0	58.3
Vietnam	..	8.3	5.0	..	30.0	38.3
Average of Above	13.8	20.3	21.7	34.7	40.8	40.7
Average Excluding Japan	10.5	16.1	17.8	38.1	44.4	42.7
Comparators**						
Mexico	..	20.0	33.3	45.0	46.7	53.3
Hungary	10.0	31.7	25.0	71.7	53.3	46.7
Poland	..	30.0	41.7	51.7	48.3	61.7
United States	61.7	63.3	66.7	30.0	33.3	31.7

* Percentages based on the 60 parts and component products listed in the appendices.
** Comparator countries statistics drawn from Ng and Yeats (1999).

CONCLUSIONS

Almost without exception this study's findings show that East Asian intra-trade has had a major positive influence on regional cooperation and growth. Since the mid-1980s, East Asian intra-trade has been growing at a rate roughly double that of world trade, and at a rate far higher than the intra-trade of NAFTA or the European Union. Similarly, evidence based on intra-industry trade ratios, or statistics on international production sharing, show economic linkages and the interdependence of East Asian economies have considerably strengthened. Furthermore, the export and import profiles of East Asian countries have been changing in directions that increase complementarity which further increases the potential for intra-regional trade. China's emergence has had a major positive influence on the region. Specifically, China's internal counter-cyclical policies, and its maintenance of a stable exchange rate, are generally viewed as important factors that helped contain the effects of the Asian financial crisis.

Appendix Table A19.1. The Revealed Comparative Advantage of East Asian Countries in Assembly Operations as Reflected in Their 2001 Import Statistics

Component Product Group*	China	Hong Kong	Indonesia	Rep. of Korea	Malaysia	Philippines	Singapore	Taiwan, China	Thailand	Japan	USA
Steam boilers	**2.89**	0.19	**1.41**	0.57	**5.83**	0.96	0.90	**1.27**	0.51	0.27	**1.36**
Aircraft engines	0.43	0.45	0.20	0.86	0.82	0.10	**1.59**	0.60	**1.13**	**1.64**	**1.29**
Outboard Motors	0.30	0.20	**2.31**	0.52	0.91	0.12	0.23	0.19	0.28	0.07	**2.12**
Outboard motors, nes	**2.38**	0.19	**2.10**	**1.47**	**1.07**	**1.82**	**2.65**	**2.62**	0.72	0.28	0.56
Combustion engines, nes	0.76	0.18	**2.74**	0.85	0.80	0.56	0.83	0.60	**1.51**	0.34	**1.15**
Engines and motors, nes	0.26	0.57	0.57	0.40	0.65	0.31	**1.95**	0.48	0.90	1.00	**1.60**
Rotating electric motors	**1.99**	**1.23**	**1.19**	**1.17**	**1.09**	**1.90**	**1.26**	0.80	**2.48**	0.80	**1.20**
Water turbines	**4.04**	0.27	0.15	0.10	0.76	**3.59**	0.10	0.11	0.40	0.18	0.43
Cultivating equipment	0.24	0.16	0.89	0.13	0.24	0.85	0.46	0.14	0.79	0.78	0.76
Harvesting machinery	0.15	0.07	0.32	0.18	0.14	0.12	0.09	0.11	0.14	0.36	0.76
Dairy machinery	0.36	0.05	**1.04**	0.52	0.10	0.09	0.07	0.12	0.27	0.77	0.27
Wine making machinery	**2.14**	0.27	**2.02**	0.07	0.78	0.28	0.14	0.35	0.35	0.36	0.28
Agricultural machinery, nes	0.59	0.14	**2.26**	0.30	0.60	**1.37**	0.15	0.18	**1.30**	0.73	0.54
Construction machinery	0.67	0.32	**1.84**	0.44	**2.12**	**1.12**	**3.61**	0.11	**1.06**	0.35	0.43
Spinning machinery	**3.94**	0.48	**5.82**	**1.31**	0.70	0.61	0.36	**1.97**	**3.09**	0.52	0.52
Knitting machinery	**1.94**	**2.06**	**4.23**	**1.06**	0.54	0.47	0.64	**1.28**	**1.91**	0.78	0.68
Textile machinery, nes	**1.94**	0.65	**2.22**	0.47	**1.47**	0.91	0.24	0.50	**3.46**	0.78	0.30
Paper making machinery	**1.52**	0.15	**1.76**	0.57	0.64	0.37	0.24	0.32	**1.63**	0.52	0.81
Bookbinding machinery	0.15	0.33	0.50	0.52	0.20	0.23	0.47	0.30	0.20	0.60	**1.36**
Printing machinery	**1.34**	0.78	**1.55**	1.00	0.64	0.83	0.58	0.77	0.96	**1.05**	0.88
Grain milling machinery	**1.17**	0.29	**1.53**	0.72	0.46	**1.63**	0.32	0.36	**1.12**	0.39	0.43
Food processing machinery	0.88	0.20	**1.75**	0.51	0.40	0.95	0.29	0.24	**1.87**	0.80	0.65
Machines for special industries	**1.06**	0.67	**1.63**	1.00	**1.91**	0.97	**1.72**	**3.00**	**1.11**	0.95	0.79
Mineral working machinery	**1.10**	0.19	**3.44**	0.30	**1.01**	0.56	0.77	0.34	0.53	0.45	0.63
Special industry machines, nes	**1.66**	0.67	**1.35**	**2.19**	**2.42**	**1.87**	**1.86**	**2.26**	**1.98**	0.96	0.82
Metalworking machinery	**1.11**	0.52	0.64	**1.12**	**1.04**	0.72	0.87	**2.23**	**1.71**	**1.02**	**1.03**
Foundry equipment	**1.92**	0.50	**1.61**	0.91	0.66	0.30	0.43	**1.39**	**1.09**	0.82	**1.02**
Rolling mill parts	**3.17**	**1.07**	**3.61**	**2.78**	0.95	0.26	0.13	**1.81**	**1.72**	0.29	0.56
Refrigerating equipment	0.93	0.61	**1.96**	0.24	0.65	0.86	**1.15**	0.45	**1.04**	0.48	0.64
Pumps for liquids	0.85	0.24	**1.24**	**1.21**	0.58	0.44	**1.29**	0.60	0.86	0.43	0.86
Centrifuges and filters	**1.46**	0.49	**1.07**	**1.29**	**1.17**	0.70	**1.21**	**1.06**	**1.71**	0.75	0.83
Fork lift trucks	0.54	0.47	0.76	0.27	0.56	**4.87**	0.40	0.28	**4.23**	0.89	0.93
Lifting and loading machines	**1.37**	0.36	**2.41**	0.74	0.73	0.51	**1.02**	0.45	0.82	0.45	0.87
Power hand tools	0.25	0.42	**1.28**	0.40	**1.56**	1.00	0.81	0.52	0.57	0.62	**1.26**
Packing machinery	0.93	0.39	**1.59**	0.37	0.39	0.77	0.60	0.41	**1.30**	0.54	0.75

Appendix Table A19.1. Continued

Component Product Group*	China	Hong Kong	Indonesia	Rep. of Korea	Malaysia	Philippines	Singapore	Taiwan, China	Thailand	Japan	USA
Non-Electric machinery	0.92	0.52	0.79	**1.20**	**1.13**	0.68	**1.30**	**1.67**	**1.30**	0.64	0.77
Office and adding machinery	**1.50**	**2.06**	0.59	0.86	**2.15**	**2.18**	**3.45**	**1.80**	**2.92**	**1.30**	**1.09**
Telecommunications equipment	**1.61**	**1.69**	**1.17**	0.85	**1.61**	**1.17**	**1.17**	0.91	**1.45**	0.91	**1.13**
Electric power machinery	**3.87**	**2.85**	**1.98**	**1.25**	**2.58**	**2.57**	**1.91**	0.86	**1.72**	0.90	0.75
Switchgear	**1.59**	**1.86**	**1.05**	**1.04**	**2.50**	**2.12**	**2.12**	**1.20**	**1.73**	0.64	0.97
Domestic electrical equipment	**1.75**	**1.04**	0.29	0.52	**1.81**	0.12	0.48	0.23	0.30	0.79	0.85
Electrothermic appliances	**2.85**	**1.56**	**1.40**	0.30	**1.59**	0.22	0.32	0.48	**2.75**	0.77	0.53
Electronic components, nes	**2.97**	**2.02**	**1.92**	**3.68**	**14.70**	**10.25**	**2.39**	**4.93**	**5.83**	0.94	0.59
Electronic accumulators	**3.67**	**1.50**	**2.07**	**1.53**	**2.77**	0.58	0.24	**2.36**	0.51	0.29	0.33
Electric lamps and bulbs	**1.79**	**1.13**	**3.45**	**1.09**	0.43	0.43	0.84	0.77	**2.46**	**1.08**	0.63
Electrical machinery, nes	**1.17**	**2.59**	0.35	**2.52**	**2.21**	**2.89**	**3.01**	**2.23**	**1.79**	0.88	1.00
Motor vehicles and accessories	0.67	0.11	1.04	0.44	0.44	0.44	0.18	0.38	0.99	0.41	**1.14**
Carriages and cycles	0.64	**1.02**	**9.80**	0.29	0.76	**1.69**	0.75	**2.27**	**1.40**	0.97	0.81
Trailers and non-motor vehicles	0.19	0.18	0.65	0.13	**1.02**	0.30	0.34	0.15	0.28	0.39	0.39
Railroad equipment	0.50	0.18	0.20	**1.38**	0.37	0.23	0.25	0.54	0.06	0.31	**1.13**
Aircraft and helicopters	0.34	0.30	0.33	**1.21**	0.28	0.30	**1.23**	0.74	0.68	**1.31**	0.77
Chairs	0.37	0.14	0.40	0.14	0.23	0.14	0.12	0.11	0.57	0.40	**1.85**
Other furniture parts	0.14	0.53	0.23	0.24	0.35	0.30	0.44	0.33	0.16	**1.12**	**1.18**
Measuring or drawing machines	**1.03**	0.60	0.40	**1.35**	**1.90**	**1.20**	**2.26**	**2.38**	**1.38**	**1.64**	**1.09**
Still cameras, nes	**6.55**	**7.47**	**1.58**	0.48	**4.39**	**7.10**	0.54	**1.03**	**3.97**	**2.52**	0.47
Cameras under 16mm	0.45	**1.64**	0.13	0.89	0.54	0.81	**2.07**	0.46	**1.05**	**1.15**	**2.01**
Cameras under 16mm, nes	0.49	**1.34**	0.24	**1.89**	**2.68**	0.71	0.78	0.92	0.75	**1.61**	0.59
Unmounted optical elements	0.25	0.60	0.48	0.39	0.24	0.06	**2.69**	0.58	0.37	**4.49**	0.76
Clocks and watches	**4.07**	**10.64**	0.31	0.65	**3.23**	**2.34**	**1.86**	0.46	**8.91**	**1.18**	0.24
Umbrellas and canes	0.88	**11.10**	**1.19**	0.32	0.42	**1.32**	0.18	0.46	**2.77**	0.97	0.45
MEMO ITEM											
RCA For All Components	**1.25**	**1.18**	**1.14**	0.86	**1.58**	**1.32**	**1.52**	**1.04**	**1.63**	0.84	**1.06**
No. of Product Groups with RCAs exceeding unity	32	19	38	20	26	19	23	19	35	13	19

* See Table 17.1 for the SITC Revision 2 classification number of each component product group
Source: Computed from United Nations SITC Revision 2 COMTRADE statistics

Appendix Table A19.2. The Revealed Comparative Advantage of East Asian Countries in Assembly Operations as Reflected in Their 1995 Import Statistics

Component Product Group*	China	Hong Kong	Indonesia	Rep. of Korea	Malaysia	Philippines	Singapore	Taiwan, China	Thailand	Japan	USA
Steam boilers	**5.31**	0.47	**12.34**	**1.31**	**2.41**	**4.65**	**1.06**	**1.88**	**1.67**	0.17	0.17
Aircraft engines	0.77	0.24	0.18	**1.01**	0.34	0.54	**1.51**	0.40	0.69	**2.14**	**1.15**
Outboard Motors	0.04	0.88	0.58	0.46	**1.04**	0.15	0.83	0.33	0.29	0.10	**1.59**
Outboard motors, nes	0.95	0.20	**2.64**	**2.00**	**1.86**	**1.73**	**2.48**	**3.10**	0.61	0.35	0.81
Combustion engines, nes	0.98	0.40	**2.36**	0.93	0.79	**1.08**	1.00	0.93	**1.55**	0.36	**1.21**
Engines and motors, nes	0.29	0.34	**1.14**	0.84	0.84	0.64	**1.17**	0.45	**1.24**	0.70	**1.63**
Rotating electric motors	**2.39**	**1.85**	**2.93**	**1.03**	**2.30**	0.68	0.84	**1.31**	**3.10**	0.51	0.76
Water turbines	**3.40**	0.05	**2.88**	0.35	**1.56**	**1.78**	0.09	0.15	**1.07**	0.10	0.28
Cultivating equipment	0.05	0.08	0.67	0.51	0.25	0.56	0.22	0.52	0.67	0.27	**1.05**
Harvesting machinery	0.04	0.12	0.09	0.73	0.19	0.12	0.17	0.09	0.17	0.27	0.80
Dairy machinery	0.35	0.17	0.41	0.51	0.19	0.12	0.31	0.32	0.29	0.55	0.32
Wine making machinery	0.87	0.17	0.32	**2.23**	0.20	0.65	0.54	**2.04**	0.28	0.29	0.55
Agricultural machinery, nes	**3.13**	0.06	**1.72**	0.77	0.20	0.95	0.14	0.40	**1.14**	0.32	0.71
Construction machinery	**1.05**	0.79	**1.46**	0.26	**1.70**	**1.62**	**2.30**	0.21	0.92	0.40	0.35
Spinning machinery	**2.08**	0.46	**6.68**	**2.42**	0.52	0.83	0.41	**2.49**	**1.50**	0.44	0.82
Knitting machinery	**1.95**	**1.33**	**2.98**	**1.18**	0.50	0.79	0.42	**1.34**	1.00	0.88	**1.08**
Textile machinery, nes	**1.68**	0.74	**2.27**	0.65	**1.26**	**2.55**	0.60	0.79	**1.48**	0.41	0.51
Paper making machinery	**1.12**	0.16	**7.36**	**1.43**	0.59	**1.03**	0.25	0.75	**2.43**	0.39	0.79
Bookbinding machinery	0.06	0.25	0.62	0.44	0.19	0.19	0.44	0.30	0.21	0.68	**1.92**
Printing machinery	0.81	0.55	0.84	0.56	0.65	0.72	0.57	0.53	0.52	0.81	0.95
Grain milling machinery	**2.56**	0.22	**2.99**	0.94	0.46	**2.26**	0.51	**1.08**	**1.01**	0.32	0.48
Food processing machinery	**1.30**	0.27	0.16	0.50	0.46	0.84	0.15	0.08	**2.16**	0.18	0.69
Machines for special industries	**1.61**	0.76	**1.85**	0.62	**2.21**	**1.30**	**1.13**	0.58	**1.21**	0.48	0.88
Mineral working machinery	**3.15**	0.32	**4.08**	0.79	0.96	**1.63**	0.40	0.57	**1.99**	0.20	0.48
Special industry machines, nes	**2.41**	0.69	**1.58**	**2.27**	**1.82**	**1.74**	**1.36**	**1.35**	**1.44**	0.84	0.95
Metalworking machinery	**2.16**	0.44	0.76	**1.97**	0.96	0.60	0.88	**1.13**	**1.35**	0.65	**1.08**
Foundry equipment	**6.80**	0.45	**1.24**	**2.78**	**2.50**	0.34	0.20	**3.31**	**1.93**	0.43	**1.07**
Rolling mill parts	**6.48**	0.13	**2.91**	**3.54**	**2.95**	**1.22**	0.12	**2.27**	**2.04**	0.16	0.74
Refrigerating equipment	**1.05**	0.59	**2.80**	0.58	0.57	**1.20**	**1.06**	1.00	**1.55**	0.30	0.57
Pumps for liquids	0.67	0.28	**1.55**	**1.61**	0.42	0.66	0.90	0.55	0.90	0.44	0.81
Centrifuges and filters	**1.43**	0.55	**1.69**	**1.31**	**1.13**	**1.01**	**1.25**	**1.18**	**1.53**	0.49	0.85
Fork lift trucks	**1.03**	0.58	0.64	**2.42**	**9.48**	**2.13**	0.60	0.18	0.73	0.19	0.57
Lifting and loading machines	**1.20**	0.42	**1.31**	**1.24**	**1.47**	0.76	**1.30**	0.56	**1.09**	0.28	0.84
Power hand tools	0.13	0.50	0.83	0.56	**1.01**	0.60	**1.51**	0.71	0.64	0.42	**1.43**
Packing machinery	**1.10**	0.54	0.88	0.72	0.37	**1.13**	0.28	0.37	0.95	0.53	0.75

Appendix Table A19.2. Continued

Component Product Group*	China	Hong Kong	Indonesia	Rep. of Korea	Malaysia	Philippines	Singapore	Taiwan, China	Thailand	Japan	USA
Non-Electric machinery	0.59	0.49	**1.04**	0.94	**1.10**	**1.21**	1.00	**1.73**	**1.39**	0.50	0.86
Office and adding machinery	0.69	1.00	0.13	0.52	**1.37**	**1.26**	**2.69**	**1.02**	**1.38**	0.96	**1.80**
Telecommunications equipment	**2.55**	**1.91**	**1.56**	0.87	**2.56**	**1.56**	**1.84**	0.57	**1.51**	0.89	**1.07**
Electric power machinery	**2.61**	**3.46**	**1.16**	**1.28**	**3.25**	**2.21**	**2.00**	**1.47**	**2.11**	0.67	0.56
Switchgear	**1.33**	**1.28**	**1.43**	**1.13**	**2.40**	**1.71**	**2.21**	**1.32**	**1.56**	0.44	**1.02**
Domestic electrical equipment	**1.41**	0.57	0.33	0.22	0.83	0.34	0.53	0.33	0.37	0.50	0.78
Electrothermic appliances	**3.75**	**1.52**	0.19	0.64	**1.82**	0.88	0.35	0.36	0.88	0.43	0.52
Electronic components, nes	**1.01**	0.99	0.50	**4.75**	**11.30**	**8.78**	**3.86**	**4.89**	**2.78**	0.43	**1.02**
Electronic accumulators	**2.89**	**1.68**	**2.43**	**1.24**	0.83	**1.26**	**1.01**	0.37	0.18	0.91	0.25
Electric lamps and bulbs	0.56	**1.17**	**1.94**	0.78	0.52	0.86	0.50	0.44	**1.43**	0.56	0.92
Electrical machinery, nes	0.17	**1.03**	0.22	0.67	0.80	**1.01**	**2.33**	**1.03**	0.65	0.56	**1.67**
Motor vehicles and accessories	0.66	0.13	**1.45**	0.56	0.51	0.65	0.27	0.65	**1.32**	0.29	**1.24**
Carriages and cycles	0.97	**1.63**	**5.48**	0.29	**1.37**	**1.35**	**1.59**	**2.93**	**3.95**	0.69	0.74
Trailers and non-motor vehicles	0.51	0.14	0.44	0.19	0.68	0.18	0.46	0.37	0.62	0.32	0.40
Railroad equipment	0.61	0.20	**2.36**	**2.17**	0.37	0.11	0.14	0.51	0.10	0.23	**1.09**
Aircraft and helicopters	0.39	0.17	0.59	**1.35**	0.33	0.41	0.96	**1.07**	0.63	0.89	0.77
Chairs	0.10	0.07	0.75	0.13	0.42	0.17	0.12	0.23	0.38	0.44	**1.76**
Other furniture parts	0.12	0.48	0.22	0.31	0.21	0.51	0.53	0.40	0.12	**1.24**	0.93
Measuring or drawing machines	**1.02**	0.58	0.34	**1.35**	**1.63**	0.49	**1.20**	0.94	0.79	**1.44**	**1.04**
Still cameras, nes	**3.41**	**4.05**	**1.40**	**2.07**	**6.75**	**12.08**	0.51	**3.34**	**3.28**	**2.19**	0.52
Cameras under 16mm	0.11	**1.40**	0.16	0.92	0.51	**1.07**	**1.03**	0.38	0.44	0.97	**1.67**
Cameras under 16mm, nes	0.25	0.82	0.24	**1.51**	**1.71**	**1.59**	0.86	0.34	0.91	0.97	0.65
Unmounted optical elements	0.18	0.75	0.26	0.43	0.37	0.08	0.91	0.50	0.24	**1.94**	0.49
Clocks and watches	**5.65**	**9.19**	**1.16**	0.81	**3.42**	**2.85**	**1.45**	0.52	**6.12**	0.91	0.21
Umbrellas and canes	**1.05**	**13.47**	0.88	0.21	0.75	**2.93**	0.34	0.96	**3.85**	0.62	0.44
MEMO ITEM											
RCA For All Components	**1.28**	0.94	**1.33**	0.92	**1.60**	**1.29**	**1.48**	0.94	**1.41**	0.63	**1.18**
No. of Product Groups with RCAs exceeding unity	33	14	33	25	27	30	24	21	33	5	20

* See Table 17.1 for the SITC Revision 2 classification number of each component product group
Source: Computed from United Nations SITC Revision 2 COMTRADE statistics

Appendix Table A19.3. The Revealed Comparative Advantage of East Asian Countries in Assembly Operations as Reflected in Their 1985 Import Statistics

Component Product Group*	China	Hong Kong	Indonesia	Rep. of Korea	Malaysia	Philippines	Singapore	Taiwan, China	Thailand	Japan	USA
Steam boilers	**3.47**	**3.61**	**2.22**	0.98	0.30	**2.03**	**1.55**	0.17	**2.17**	0.00	0.34
Aircraft engines	0.03	**1.61**	**3.31**	0.09	**7.52**	0.33	**3.94**	0.00	0.26	0.03	0.00
Outboard Motors	0.17	**1.42**	**1.39**	0.11	**2.84**	0.08	0.52	0.00	0.00	0.05	**1.71**
Outboard motors, nes	0.50	0.97	**1.18**	**12.01**	**1.50**	0.13	**1.96**	0.00	0.00	0.21	0.29
Combustion engines, nes	0.30	0.31	**1.42**	0.84	**1.10**	0.65	**1.23**	0.00	2.15	0.10	**1.16**
Engines and motors, nes	0.18	0.07	**1.15**	**1.17**	0.08	0.12	0.31	0.00	0.26	**1.13**	**1.30**
Rotating electric motors	**2.64**	**1.33**	**3.13**	**1.15**	**1.42**	0.75	1.00	0.00	0.00	0.39	0.87
Water turbines	0.52	0.01	**23.11**	0.26	0.62	0.64	0.11	0.00	0.04	0.11	0.61
Cultivating equipment	0.05	0.08	0.27	0.16	0.25	0.24	0.09	0.00	**2.12**	0.12	0.96
Harvesting machinery	0.61	0.00	0.13	0.51	0.35	0.08	0.05	0.00	0.02	0.07	0.54
Dairy machinery	0.06	0.16	**3.42**	0.22	0.19	0.65	0.08	0.00	0.02	0.09	0.00
Wine making machinery	**16.61**	0.00	**11.18**	0.17	**3.29**	**3.31**	0.25	0.00	0.51	0.09	0.00
Agricultural machinery, nes	0.66	0.17	0.64	0.04	0.45	0.27	0.11	0.00	0.06	0.04	0.52
Construction machinery	**1.05**	0.82	**13.51**	0.33	**4.46**	0.67	**3.31**	0.00	**2.57**	0.08	0.70
Spinning machinery	**4.89**	0.87	**4.13**	**1.79**	0.40	0.90	0.29	**4.04**	0.01	0.29	0.76
Knitting machinery	**1.96**	**1.65**	**1.81**	0.57	0.71	**1.12**	0.20	0.73	**3.23**	0.56	0.89
Textile machinery, nes	**2.24**	**1.52**	0.86	0.32	**1.01**	0.49	0.14	0.00	0.70	0.07	0.61
Paper making machinery	**1.56**	0.11	**1.23**	0.44	**17.62**	0.64	0.05	0.00	**2.27**	0.23	1.00
Bookbinding machinery	0.12	0.23	0.25	0.05	0.92	0.20	0.19	0.00	0.04	0.24	**1.67**
Printing machinery	0.49	0.40	0.58	0.22	0.51	0.15	0.35	0.00	0.09	0.21	**1.03**
Grain milling machinery	0.40	0.12	**12.34**	0.23	**1.13**	**5.08**	0.29	0.00	0.18	0.03	0.20
Food processing machinery	**1.15**	0.40	**3.06**	0.21	0.52	**3.05**	0.28	0.00	**2.59**	0.15	0.00
Machines for special industries	0.57	0.49	**3.59**	0.38	**1.17**	**1.59**	0.62	0.00	0.00	0.21	**1.15**
Mineral working machinery	0.59	0.48	**2.62**	0.23	**2.04**	**1.34**	0.71	0.00	0.00	0.05	0.61
Special industry machines, nes	**2.43**	0.70	**6.29**	0.83	**3.28**	**7.72**	0.58	0.00	**2.30**	0.34	0.32
Metal working machine tools	0.88	0.27	**1.31**	0.61	0.74	0.50	**1.01**	0.57	0.58	0.28	**1.30**
Foundry equipment	**9.21**	0.25	**3.11**	0.51	**1.20**	**1.93**	0.59	0.00	**2.39**	0.22	0.00
Rolling mill parts	**5.87**	0.11	**2.69**	**1.49**	0.98	**18.06**	0.14	0.00	0.70	0.12	0.00
Refrigerating equipment	**8.94**	**1.19**	**1.87**	0.12	**1.74**	0.49	**1.41**	0.00	0.87	0.20	0.00
Pumps for liquids	0.76	0.29	**5.18**	0.75	0.83	1.19	**1.27**	0.00	**1.01**	0.30	0.72
Centrifuges and filters	0.68	0.45	**1.10**	0.65	**1.04**	1.20	**1.25**	0.00	**1.82**	0.77	0.01
Fork lift trucks	0.33	0.20	0.28	0.63	0.48	1.11	0.27	0.43	0.11	0.03	0.86
Lifting and loading machines	**1.34**	**1.80**	**1.77**	0.72	**1.30**	0.86	0.86	0.00	0.00	0.25	0.86
Power hand tools	0.15	0.14	**8.06**	0.22	**2.06**	0.51	0.68	0.00	0.19	0.18	0.70
Packing machinery	0.77	0.46	0.68	0.47	0.77	1.56	0.30	0.00	0.51	0.18	0.31

Appendix Table A19.3. Continued

Component Product Group*	China	Hong Kong	Indonesia	Rep. of Korea	Malaysia	Philippines	Singapore	Taiwan, China	Thailand	Japan	USA
Non-Electric machinery, nes	0.43	0.31	**1.12**	0.89	**1.64**	**1.31**	0.78	0.78	0.50	0.32	0.23
Office and adding machinery	0.45	**1.38**	0.19	0.40	0.37	0.12	**1.60**	0.76	1.00	0.36	**1.38**
Telecommunications equipment	**2.17**	**1.79**	**1.16**	**1.37**	**2.07**	0.59	**1.36**	**1.14**	**1.70**	0.27	**1.75**
Electric power machinery	**1.54**	**3.12**	**1.27**	**3.12**	**3.85**	**1.56**	**1.17**	**1.73**	0.00	0.08	**1.81**
Switchgear	0.57	**1.17**	**1.33**	**1.32**	**2.21**	0.70	**2.07**	**1.88**	**3.28**	0.40	0.79
Domestic electrical equipment	**1.38**	**3.91**	0.87	0.07	0.61	0.40	0.28	0.00	**1.18**	0.16	0.75
Electrothermic appliances	0.31	**2.62**	0.23	0.00	**1.26**	0.16	**2.59**	0.00	0.58	0.03	**1.99**
Electronic components, nes	0.49	**1.78**	0.82	**9.48**	**32.70**	**11.23**	**8.32**	0.00	0.02	0.09	**1.19**
Electronic accumulators	0.07	0.99	**3.81**	0.24	**2.67**	**1.13**	0.43	0.06	0.32	0.07	0.00
Electric lamps and bulbs	0.15	0.63	**2.68**	**1.77**	0.59	**2.02**	0.08	0.31	**1.42**	0.08	0.00
Electrical machinery, nes	**2.37**	**2.33**	**4.21**	**2.46**	0.29	**10.08**	0.01	**2.42**	**2.44**	0.41	0.00
Motor vehicles and accessories	**1.80**	0.19	0.41	0.23	0.24	0.19	0.24	0.34	**1.08**	0.06	**1.25**
Carriages and cycles	**1.39**	0.57	**3.65**	0.45	**1.22**	0.50	0.59	**3.98**	**4.37**	0.13	**1.27**
Trailers and non-motor vehicles	0.10	0.05	0.14	0.10	**1.10**	0.05	0.32	0.51	0.36	0.02	0.00
Railroad equipment	**2.09**	0.64	0.90	0.58	0.29	0.60	0.05	0.32	0.87	0.12	**1.14**
Aircraft and helicopters	**1.09**	0.47	**1.58**	**1.11**	0.71	0.71	**1.41**	0.07	0.20	0.51	**1.13**
Chairs	0.01	0.09	0.38	0.34	0.54	0.05	0.54	0.00	0.28	0.49	0.00
Other furniture parts	0.26	**1.22**	0.31	0.58	0.61	0.02	**1.01**	0.15	0.00	0.54	0.00
Measuring-drawing machines	0.81	0.10	**7.12**	0.71	**1.99**	0.22	0.42	0.00	0.90	0.43	0.00
Still cameras, nes	**2.26**	**6.43**	0.35	**2.82**	**5.53**	**1.56**	0.54	**6.00**	0.51	0.49	0.73
Cameras under 16mm	0.44	0.02	**1.52**	0.05	**1.36**	0.04	**4.65**	0.00	0.00	0.00	**1.20**
Cameras under 16mm, nes	0.54	**1.25**	0.97	0.32	0.92	0.19	0.81	0.00	0.11	0.44	0.65
Unmounted optical elements	0.16	**2.01**	0.09	0.69	0.62	0.07	**1.14**	0.68	0.45	0.92	**1.21**
Clocks and watches	**25.82**	**26.75**	0.13	**6.33**	**2.10**	**1.86**	**1.88**	**1.72**	**5.38**	0.21	0.25
Umbrellas and canes	**2.99**	**7.03**	**1.95**	**2.05**	**3.13**	**3.19**	**2.79**	0.03	**7.00**	**1.31**	0.46
MEMO ITEM											
RCA For All Components	**1.41**	**1.01**	**1.42**	**1.04**	**2.12**	0.95	**1.26**	0.66	**1.36**	0.26	**1.17**
No. of Product Groups with RCAs exceeding unity	25	22	39	15	32	23	22	8	20	**2**	18

* See Table 17.1 for the SITC Revision 2 classification number of each component product group
Source: Computed from United Nations SITC Revision 2 COMTRADE statistics

Appendix Table A19.4. The Revealed Comparative Advantage of East Asian Countries in Production of Components as Reflected in 2001 Export Statistics

Component Product Group*	China	Hong Kong	Indonesia	Rep. of Korea	Malaysia	Philippines	Singapore	Taiwan, China	Thailand	Japan	USA
Steam boilers	0.22	0.01	**1.24**	**6.68**	0.16	0.40	0.16	0.14	**1.32**	0.68	0.95
Aircraft engines	0.03	0.12	0.01	0.19	0.16	0.38	**1.17**	0.06	0.03	**1.97**	**4.39**
Outboard Motors	0.02	0.09	0.00	0.01	0.05	0.00	0.01	0.00	0.10	**9.71**	**1.50**
Outboard motors, nes	0.06	0.04	0.00	**1.95**	0.04	0.00	0.88	0.04	0.15	**2.66**	**1.24**
Combustion engines, nes	0.15	0.04	0.13	0.27	0.04	0.10	0.23	0.24	0.30	**2.31**	**1.47**
Engines and motors, nes	0.11	0.24	0.05	0.35	0.07	0.02	0.84	0.10	0.20	0.65	**3.35**
Rotating electric motors	0.79	0.65	0.34	0.88	0.34	0.65	0.76	**1.14**	0.78	**1.98**	**1.18**
Water turbines	0.91	0.01	0.02	0.90	0.01	0.00	0.21	0.06	0.02	**1.08**	0.72
Cultivating equipment	0.36	0.01	0.03	0.34	0.02	0.02	0.12	0.14	0.01	0.10	0.98
Harvesting machinery	0.27	0.05	0.02	0.16	0.03	0.02	0.06	0.56	0.01	0.40	**1.69**
Dairy machinery	0.03	0.08	0.02	0.00	0.00	0.03	0.20	0.09	0.00	0.03	0.80
Wine making machinery	0.26	0.11	0.00	0.10	0.50	0.08	0.20	0.52	0.08	0.11	0.83
Agricultural machinery, nes	0.49	0.29	0.01	0.10	0.14	0.01	0.24	0.22	0.19	0.05	**1.35**
Construction machinery	0.18	0.09	0.07	0.21	0.31	0.09	**2.11**	0.02	0.19	0.25	**3.13**
Spinning machinery	0.34	0.12	0.17	0.40	0.07	0.00	0.73	0.82	0.05	**1.60**	0.43
Knitting machinery	0.23	0.38	0.14	0.57	0.08	0.01	0.28	0.93	0.09	**1.56**	0.26
Textile machinery, nes	0.73	0.48	0.06	**1.58**	0.05	0.18	0.18	0.57	0.27	0.51	0.58
Paper making machinery	0.06	0.02	0.12	0.26	0.02	0.01	0.14	0.33	0.07	0.43	**1.05**
Bookbinding machinery	0.04	0.12	0.00	0.04	0.02	0.00	0.18	0.15	0.00	0.31	**1.35**
Printing machinery	0.20	0.38	0.12	0.14	0.11	0.06	0.42	0.30	0.16	0.96	**1.47**
Grain milling machinery	0.44	0.02	0.27	0.06	0.26	0.01	0.36	0.72	0.61	0.66	0.82
Food processing machinery	0.07	0.09	0.01	0.07	0.03	0.04	0.16	0.21	0.06	0.30	**1.30**
Machines for special industries	0.26	0.20	0.01	0.48	0.23	0.02	0.39	**1.46**	0.19	**1.80**	**1.24**
Mineral working machinery	0.34	0.07	0.28	0.48	0.59	0.05	0.29	0.23	0.21	0.25	**1.13**
Special industry machines, nes	0.20	0.64	0.16	0.55	0.44	0.13	0.81	0.59	0.28	**2.09**	**1.68**
Metal working machine tools	0.24	0.16	0.01	0.57	0.15	0.12	0.30	**1.10**	0.28	**2.52**	**1.39**
Foundry equipment	0.19	0.07	0.00	**1.32**	0.09	0.01	0.11	0.35	0.20	**1.81**	0.64
Rolling mill parts	0.16	0.04	0.03	0.56	0.06	0.05	0.08	0.21	0.07	**1.79**	0.66
Refrigerating equipment	0.50	0.22	**1.29**	0.92	0.48	0.41	0.64	0.39	0.64	0.84	**1.38**
Pumps for liquids	0.45	0.11	0.13	0.35	0.10	0.11	0.66	0.47	0.87	**1.07**	**1.77**
Centrifuges and filters	0.29	0.34	0.12	0.43	0.17	0.20	0.47	0.59	0.33	**1.65**	**1.75**
Fork lift trucks	0.20	**21.15**	0.00	0.25	0.09	0.02	**2.24**	0.27	**2.10**	**4.11**	0.90
Lifting and loading machines	0.31	0.10	0.27	0.85	0.18	0.11	0.51	0.20	0.14	**1.43**	**1.09**
Power hand tools	0.56	0.16	0.15	0.20	0.09	0.02	0.20	**1.84**	0.04	**1.30**	**2.36**
Packing machinery	0.12	0.06	0.02	0.07	0.09	0.04	0.24	0.24	0.10	0.39	0.88

Appendix Table A19.4. Continued

Component Product Group*	China	Hong Kong	Indonesia	Rep. of Korea	Malaysia	Philippines	Singapore	Taiwan, China	Thailand	Japan	USA
Non-Electric machinery	0.19	0.18	0.19	0.50	0.29	0.29	**1.16**	0.61	0.25	**1.36**	**1.72**
Office and adding machinery	**1.74**	**2.23**	0.47	**1.18**	**4.22**	**3.39**	**3.87**	**3.82**	**2.30**	**1.72**	**1.17**
Telecommunications equipment	**1.68**	**1.49**	0.41	**2.70**	**2.01**	**1.02**	**1.31**	**1.28**	**1.07**	**1.10**	**1.19**
Electric power machinery	**1.72**	**2.30**	**3.05**	**1.94**	**1.17**	0.84	0.95	**2.27**	0.96	**1.80**	**1.19**
Switchgear	**1.08**	**2.07**	0.59	0.76	0.96	0.93	1.65	**2.33**	0.82	**1.86**	**1.52**
Domestic electrical equipment	**2.17**	0.97	0.08	0.44	0.39	0.01	0.20	0.94	0.43	0.33	**1.15**
Electrothermic appliances	**1.97**	**1.86**	0.58	**3.27**	0.54	0.10	**1.13**	**1.07**	0.58	0.81	0.66
Electronic components, nes	0.27	**1.06**	0.23	**1.58**	**1.25**	**2.38**	**2.92**	**1.92**	0.88	**3.01**	**2.83**
Electronic accumulators	0.64	**2.71**	0.24	0.26	**3.14**	**1.04**	0.30	**1.01**	0.43	**3.09**	**1.40**
Electric lamps and bulbs	**1.29**	0.97	0.10	0.59	0.07	0.31	0.26	0.85	0.09	**1.02**	**1.30**
Electrical machinery, nes	0.68	**1.99**	0.14	0.51	0.62	**1.53**	1.87	**1.41**	**1.24**	**2.99**	**2.50**
Motor vehicles and accessories	0.11	0.02	0.14	0.38	0.06	0.29	0.06	0.38	0.30	**1.64**	**1.60**
Carriages and cycles	**2.06**	0.80	0.58	0.26	**1.59**	0.30	**1.27**	**5.88**	**1.84**	**3.54**	0.42
Trailers and non-motor vehicles	0.60	0.09	0.05	0.54	0.45	0.01	0.10	0.58	0.06	0.03	0.88
Railroad equipment	0.13	0.02	0.02	0.13	0.01	0.00	0.01	0.02	0.02	0.88	**1.41**
Aircraft and helicopters	0.05	0.17	0.03	0.30	0.02	0.14	0.39	0.07	0.05	0.70	**2.20**
Chairs	0.39	0.05	0.19	0.19	0.16	0.27	0.04	0.33	0.71	0.26	**1.96**
Other furniture parts	**2.11**	0.71	**3.07**	0.23	**1.05**	**2.44**	0.11	**1.41**	0.79	0.05	0.56
Measuring or drawing machines	0.17	0.73	**1.48**	0.30	0.65	0.50	0.84	0.45	0.47	**1.21**	**2.76**
Still cameras, nes	**2.70**	**5.42**	0.31	0.60	**1.65**	0.77	0.81	**5.27**	**6.79**	**4.68**	0.29
Cameras under 16mm	0.21	0.83	0.04	0.18	**2.85**	0.04	0.64	1.00	0.23	**2.10**	**1.84**
Cameras under 16mm, nes	0.24	**2.63**	0.07	0.17	**3.83**	0.06	0.56	0.50	0.19	**1.49**	**1.88**
Unmounted optical elements	0.15	**1.03**	**8.37**	0.25	0.06	0.28	0.54	0.20	**1.14**	0.19	**2.74**
Clocks and watches	**1.50**	**8.37**	0.04	0.39	**1.36**	0.60	**1.64**	0.96	**4.89**	**4.90**	0.15
Umbrellas and canes	**7.05**	**4.62**	0.72	0.11	0.01	0.02	0.27	6.57	0.17	0.11	0.05
MEMO ITEM											
RCA For All Components	0.96	**1.12**	0.38	**1.19**	**1.43**	**1.11**	**1.40**	**1.50**	0.94	**1.51**	**1.51**
No. of Product Groups with RCAs exceeding unity	12	14	6	9	11	6	12	17	9	34	40

* See Table 17.1 for the SITC Revision 2 classification number of each component product group
Source: Computed from United Nations SITC Revision 2 COMTRADE statistics

Appendix Table A19.5. The Revealed Comparative Advantage of East Asian Countries in Production of Components as Reflected in 1995 Export Statistics

Component Product Group*	China	Hong Kong	Indonesia	Rep. of Korea	Malaysia	Philippines	Singapore	Taiwan, China	Thailand	Japan	USA
Steam boilers	0.12	0.13	0.02	0.33	0.14	**3.12**	0.52	0.18	0.00	**1.74**	**1.05**
Aircraft engines	0.09	0.02	0.00	0.03	0.02	0.01	0.41	0.10	0.01	**1.18**	**4.30**
Outboard Motors	0.01	0.62	0.01	0.01	0.00	0.00	0.03	0.02	0.00	**6.30**	**2.13**
Outboard motors, nes	0.07	0.11	0.00	**1.89**	0.03	0.00	0.25	0.01	0.01	**2.38**	**1.34**
Combustion engines, nes	0.10	0.14	0.06	0.23	0.03	0.03	0.28	0.48	0.14	**2.43**	**1.31**
Engines and motors, nes	0.04	0.19	0.07	0.19	0.05	0.27	0.72	0.04	0.39	0.34	**3.19**
Rotating electric motors	0.57	0.86	0.16	0.46	0.87	0.10	**1.20**	**1.91**	0.42	**2.47**	**1.05**
Water turbines	0.13	0.01	0.00	0.18	0.01	0.00	0.59	0.03	0.00	**1.26**	**1.04**
Cultivating equipment	0.30	0.04	0.01	0.34	0.01	0.01	0.03	0.10	0.02	0.20	0.68
Harvesting machinery	0.12	0.02	0.01	0.09	0.01	0.00	0.03	0.48	0.01	0.71	**1.48**
Dairy machinery	0.01	0.01	0.00	0.03	0.00	0.00	0.05	0.09	0.02	0.06	0.57
Wine making machinery	0.43	0.48	0.00	0.10	0.07	0.00	0.22	**2.02**	0.28	0.19	**1.04**
Agricultural machinery, nes	0.27	0.05	0.00	0.07	0.06	0.00	0.11	0.38	0.15	0.08	**1.42**
Construction machinery	0.08	0.31	0.02	0.27	0.77	0.33	**2.53**	0.04	0.16	0.43	**2.78**
Spinning machinery	0.11	0.17	0.05	0.63	0.04	0.00	0.50	0.54	0.04	**1.62**	0.42
Knitting machinery	0.20	0.42	0.02	0.77	0.03	0.00	0.10	0.83	0.05	**1.12**	0.25
Textile machinery, nes	0.32	0.62	0.02	**1.24**	0.14	0.31	0.89	0.65	0.09	**1.03**	0.61
Paper making machinery	0.05	0.07	0.11	0.12	0.06	0.04	0.15	0.40	0.25	0.83	0.93
Bookbinding machinery	0.02	0.07	0.00	0.02	0.00	0.00	0.05	0.25	0.01	0.23	0.56
Printing machinery	0.07	0.22	0.01	0.13	0.04	0.04	0.27	0.25	0.03	0.74	**1.19**
Grain milling machinery	0.42	0.14	0.44	0.09	0.32	0.00	**1.99**	0.56	0.51	0.37	0.72
Food processing machinery	0.10	**2.49**	0.08	0.17	0.13	0.17	**1.41**	**1.53**	0.13	0.44	0.81
Machines for special industries	0.10	0.22	0.02	0.50	0.07	0.01	0.27	**1.21**	0.06	**1.22**	0.79
Mineral working machinery	0.22	0.09	0.01	0.36	0.28	0.33	0.15	0.17	0.24	0.39	**1.20**
Special industry machines, nes	0.13	0.61	0.02	0.28	0.19	0.05	0.75	0.52	0.11	**1.92**	**1.60**
Metal working machine tools	0.24	0.22	0.03	0.40	0.27	0.24	0.30	0.92	0.32	**1.70**	**1.21**
Foundry equipment	0.17	0.08	0.01	0.97	0.02	0.04	0.07	0.33	0.06	**1.10**	0.64
Rolling mill parts	0.17	0.05	0.02	0.39	0.04	0.00	0.04	0.21	0.07	**1.96**	0.64
Refrigerating equipment	0.16	0.26	0.95	0.77	0.40	0.04	0.26	0.40	0.85	1.00	**1.12**
Pumps for liquids	0.12	0.13	0.00	0.18	0.08	0.10	0.33	0.33	0.10	0.91	**1.51**
Centrifuges and filters	0.27	0.36	0.04	0.29	0.29	0.23	0.59	0.86	0.20	**1.27**	**1.56**
Fork lift trucks	0.08	0.10	0.03	0.37	0.34	0.05	0.11	0.25	0.01	**1.68**	**2.42**
Lifting and loading machines	0.15	0.11	0.26	0.56	0.13	0.08	0.40	0.17	0.10	**1.58**	**1.01**
Power hand tools	0.18	0.12	0.13	0.14	0.03	0.01	0.16	**1.13**	0.03	**1.35**	**1.85**
Packing machinery	0.04	0.21	0.00	0.09	0.01	0.10	0.16	0.18	0.10	0.34	0.88

Appendix Table A19.5. Continued

Component Product Group*	China	Hong Kong	Indonesia	Rep. of Korea	Malaysia	Philippines	Singapore	Taiwan, China	Thailand	Japan	USA
Non-Electric machinery	0.14	0.30	0.14	**1.01**	0.29	0.23	0.85	0.67	0.16	**1.30**	**1.41**
Office and adding machinery	0.95	**2.81**	0.18	**1.81**	**1.98**	**2.84**	**4.28**	**3.57**	**3.13**	**1.70**	**1.62**
Telecommunications equipment	**1.49**	**1.60**	0.35	**1.62**	**2.47**	**2.13**	**2.22**	**1.41**	**1.38**	**1.99**	**1.29**
Electric power machinery	**1.19**	**2.29**	**1.44**	**1.09**	0.89	0.60	**1.45**	**4.99**	**1.37**	**2.30**	0.90
Switchgear	0.71	**1.70**	0.15	0.63	**1.04**	0.78	**1.86**	**2.04**	0.84	**1.95**	**1.22**
Domestic electrical equipment	0.84	**1.30**	0.00	0.42	0.27	0.07	0.24	**1.54**	0.13	0.28	0.84
Electrothermic appliances	0.92	**2.66**	0.15	**4.24**	0.70	0.29	**1.44**	**2.84**	0.51	**1.27**	0.47
Electronic components, nes	0.16	**1.22**	0.01	0.60	**1.28**	0.53	**1.77**	**1.01**	0.62	**3.73**	**2.93**
Electronic accumulators	0.17	**2.35**	0.11	0.15	0.58	0.21	**1.20**	0.65	0.19	**2.28**	**1.28**
Electric lamps and bulbs	0.51	0.57	0.05	0.36	0.05	0.14	0.62	**1.11**	0.53	0.73	**1.31**
Electrical machinery, nes	0.20	0.91	0.02	**15.17**	**1.29**	0.12	0.94	0.97	0.44	**1.77**	**1.12**
Motor vehicles and accessories	0.05	0.02	0.05	0.21	0.05	0.30	0.06	0.32	0.10	**1.90**	**1.39**
Carriages and cycles	**1.13**	**1.03**	0.39	0.17	**1.54**	0.36	**2.42**	**7.01**	0.64	**3.85**	0.32
Trailers and non-motor vehicles	0.33	0.13	0.03	0.73	0.36	0.03	0.34	0.60	0.12	0.10	0.81
Railroad equipment	0.11	0.04	0.00	0.04	0.01	0.00	0.02	0.07	0.01	0.56	**1.37**
Aircraft and helicopters	0.05	0.08	0.01	0.20	0.04	0.05	0.46	0.02	0.06	0.28	**2.82**
Chairs	0.18	0.06	0.47	0.10	0.28	0.24	0.04	0.48	0.84	0.46	**1.33**
Other furniture parts	**1.38**	0.47	**5.32**	0.43	**1.07**	**5.01**	0.12	**1.80**	**1.91**	0.04	0.52
Measuring or drawing machines	0.09	0.55	0.05	0.11	0.09	0.08	0.79	0.37	0.17	**1.32**	**2.20**
Still cameras, nes	**1.79**	**4.06**	0.45	0.39	**2.11**	**1.41**	**1.05**	**3.94**	**3.22**	**5.04**	0.36
Cameras under 16mm	0.19	0.82	0.02	0.22	0.16	0.06	0.57	0.14	0.19	**1.92**	**2.76**
Cameras under 16mm, nes	0.43	**1.11**	0.16	0.14	0.10	0.02	0.33	**1.64**	0.18	**1.63**	**1.62**
Unmounted optical elements	0.32	0.74	**1.92**	0.29	0.24	0.55	0.76	0.61	**3.32**	0.30	2.70
Clocks and watches	**1.87**	**8.52**	0.02	0.43	**2.10**	**1.80**	**1.38**	**1.91**	**5.81**	**3.50**	0.05
Umbrellas and canes	**3.50**	**4.07**	0.81	0.05	0.05	0.19	0.08	**21.87**	0.41	0.12	0.05
MEMO ITEM											
RCA For All Components	0.62	**1.16**	0.21	0.97	**1.07**	**1.14**	**1.59**	**1.45**	**1.03**	**1.79**	**1.49**
No. of Product Groups with RCAs exceeding unity	7	14	3	8	9	6	14	19	7	35	38

* See Table 17.1 for the SITC Revision 2 classification number of each component product group
Source: Computed from United Nations SITC Revision 2 COMTRADE statistics

Appendix Table A19.6. The Revealed Comparative Advantage of East Asian Countries in Production of Components as Reflected in 1985 Export Statistics

Component Product Group*	China	Hong Kong	Indonesia	Rep. of Korea	Malaysia	Philippines	Singapore	Taiwan, China	Thailand	Japan	USA
Steam boilers	0.03	0.00	0.00	0.65	0.09	0.01	0.07	0.03	0.00	4.88	1.74
Aircraft engines	0.03	0.00	0.00	0.08	**3.41**	0.00	**2.61**	0.00	0.12	0.04	7.37
Outboard Motors	0.05	**2.21**	0.00	0.01	0.02	0.03	0.55	0.00	0.00	8.85	0.00
Outboard motors, nes	0.18	0.00	0.00	0.02	0.05	0.00	1.43	0.00	0.00	3.27	0.00
Combustion engines, nes	0.07	0.22	0.00	0.09	0.02	0.01	0.57	0.00	0.07	1.57	2.08
Engines and motors, nes	0.01	0.00	0.00	0.52	0.01	0.00	0.07	0.00	0.00	0.14	3.54
Rotating electric motors	0.13	0.51	0.01	0.25	0.05	0.00	**2.08**	0.00	0.00	1.63	1.95
Water turbines	0.58	0.00	0.00	0.00	0.05	0.00	0.14	0.00	0.06	1.22	1.20
Cultivating equipment	0.37	0.01	0.00	0.26	0.03	0.00	0.02	0.00	0.01	0.13	2.34
Harvesting machinery	0.13	0.00	0.00	0.00	0.01	0.01	0.06	0.00	0.01	0.21	2.58
Dairy machinery	0.00	0.00	0.00	0.00	0.01	0.18	0.02	0.00	0.00	0.05	0.98
Wine making machinery	0.63	0.00	0.00	0.00	0.55	0.00	0.02	0.00	0.00	0.08	0.00
Agricultural machinery, nes	0.15	0.00	0.00	0.00	0.01	0.44	0.14	0.00	0.43	0.01	1.06
Construction machinery	0.03	0.00	0.01	0.04	0.46	0.00	**2.78**	0.00	**1.02**	0.36	5.04
Spinning machinery	0.48	0.04	0.00	0.05	0.01	0.00	0.72	0.05	0.00	1.11	1.27
Knitting machinery	0.52	0.26	0.00	0.31	0.00	0.00	0.08	0.52	0.11	1.01	0.53
Textile machinery, nes	0.13	0.40	0.00	0.07	0.02	0.01	0.06	0.00	0.00	0.41	1.03
Paper making machinery	0.00	0.00	0.00	0.08	0.04	0.00	0.03	0.00	0.00	0.53	1.38
Bookbinding machinery	0.01	0.00	0.00	0.09	0.01	0.00	0.48	0.00	0.00	0.09	1.73
Printing machinery	0.01	0.09	0.00	0.02	0.04	0.00	0.18	0.00	0.02	0.27	2.37
Grain milling machinery	0.41	0.00	0.00	0.02	0.08	0.00	0.70	0.00	0.13	0.41	0.00
Food processing machinery	0.14	0.01	0.00	0.01	0.06	0.00	0.04	0.00	0.05	0.17	0.00
Machines for special industries	0.01	0.01	0.00	0.20	0.03	0.00	0.16	0.00	0.00	0.26	3.49
Mineral working machinery	0.18	0.00	0.00	0.10	0.20	**1.27**	0.19	0.00	0.00	0.48	1.35
Special industry machines, nes	0.35	0.19	0.00	0.05	0.49	0.02	0.80	0.00	0.15	0.79	0.60
Metal working machine tools	0.14	0.03	0.00	0.07	0.03	0.00	0.53	0.77	0.05	0.64	1.76
Foundry equipment	0.10	0.00	0.00	0.00	0.34	0.00	0.01	0.00	0.20	4.69	0.00
Rolling mill parts	0.06	0.01	0.00	0.03	0.05	0.00	0.05	0.00	0.00	3.33	0.28
Refrigerating equipment	0.07	0.07	0.00	0.21	0.06	0.02	0.30	0.00	0.02	1.41	0.00
Pumps for liquids	0.04	0.02	0.00	0.09	0.13	0.01	0.53	0.00	0.02	0.65	2.61
Centrifuges and filters	0.03	0.08	0.00	0.03	0.06	0.00	0.89	0.00	0.75	1.01	0.46
Fork lift trucks	0.01	0.04	0.00	**1.27**	0.04	0.00	0.14	0.01	0.01	0.94	2.68
Lifting and loading machines	0.11	0.03	0.00	0.16	0.16	0.04	0.34	0.00	0.00	0.78	1.22
Power hand tools	0.03	0.00	0.00	0.00	0.07	0.00	0.54	0.00	0.00	0.74	2.96
Packing machinery	0.00	0.02	0.00	0.02	0.02	0.01	0.04	0.00	0.01	0.19	1.61

Appendix Table A19.6. Continued

Component Product Group*	China	Hong Kong	Indonesia	Rep. of Korea	Malaysia	Philippines	Singapore	Taiwan, China	Thailand	Japan	USA
Non-Electric machinery	0.09	0.10	0.00	0.08	0.10	0.00	**1.31**	**1.37**	0.00	**1.35**	**1.02**
Office and adding machinery	0.05	**3.53**	0.00	0.44	0.11	0.00	**1.61**	0.60	0.61	**1.02**	**3.02**
Telecommunications equipment	0.31	**2.47**	0.03	**1.21**	0.65	0.10	**1.39**	**2.15**	0.03	**2.87**	**1.22**
Electric power machinery	0.12	**18.40**	0.00	0.74	0.91	0.00	**1.05**	**4.03**	0.00	**1.57**	0.59
Switchgear	0.13	0.94	0.00	0.28	0.54	0.26	**3.58**	**1.28**	**5.38**	**1.51**	**1.22**
Domestic electrical equipment	0.58	**3.12**	0.00	0.19	0.07	0.60	0.42	0.00	0.04	0.70	**2.24**
Electrothermic appliances	0.15	**7.45**	0.00	0.00	0.15	0.01	0.85	0.00	0.01	**2.92**	**1.68**
Electronic components, nes	0.07	**1.47**	0.02	**1.22**	**8.54**	**1.54**	**7.85**	0.00	0.00	**2.91**	**2.39**
Electronic accumulators	0.08	0.05	0.03	0.28	0.05	0.08	0.32	**1.05**	**1.24**	0.22	**1.73**
Electric lamps and bulbs	0.14	0.28	0.00	0.16	0.01	0.14	0.03	**2.22**	0.09	0.50	**1.25**
Electrical machinery, nes	0.11	**1.82**	0.00	0.10	0.12	0.00	0.11	**16.44**	0.64	0.47	0.00
Motor vehicles and accessories	**1.48**	0.00	0.00	0.13	0.01	0.19	0.14	0.46	0.07	**1.24**	**2.11**
Carriages and cycles	**1.18**	0.00	0.02	0.40	0.02	0.00	0.49	6.94	0.24	**4.68**	0.10
Trailers and non-motor vehicles	0.02	0.00	0.00	**1.06**	0.06	0.00	0.11	0.68	0.00	0.08	0.65
Railroad equipment	0.22	0.00	0.00	0.30	0.01	0.00	0.01	0.01	0.06	0.94	**2.14**
Aircraft and helicopters	0.09	0.00	0.01	0.17	0.80	0.00	0.78	0.01	0.04	0.10	**4.74**
Chairs	0.20	0.01	0.02	0.11	0.12	0.13	0.18	0.00	0.18	0.15	0.00
Other furniture parts	0.67	1.00	0.17	0.31	0.24	**18.20**	0.26	**20.12**	0.00	0.07	0.00
Measuring or drawing machines	0.03	0.13	0.00	0.18	0.06	0.00	0.23	0.00	0.01	**1.74**	0.00
Still cameras, nes	0.04	**2.92**	0.00	0.71	0.63	0.00	0.37	**2.36**	0.03	**5.79**	0.89
Cameras under 16mm	0.19	0.00	0.00	0.17	**6.74**	0.00	**6.56**	0.00	0.00	**4.64**	0.25
Cameras under 16mm, nes	0.10	0.02	0.00	0.14	**2.87**	0.00	0.24	0.00	0.41	0.25	**2.75**
Unmounted optical elements	0.10	0.47	0.00	0.35	0.25	**1.42**	**1.94**	0.78	**3.21**	**1.20**	**1.94**
Clocks and watches	**25.59**	**19.31**	0.00	0.56	**1.58**	0.08	0.89	**2.25**	**3.22**	**2.65**	0.25
Umbrellas and canes	**1.64**	**3.01**	0.00	0.21	0.10	0.23	0.42	**32.20**	0.14	0.22	0.05
MEMO ITEM											
RCA For All Components	0.60	**1.16**	0.01	0.39	0.39	0.27	**1.15**	0.99	0.66	**1.42**	**2.15**
No. of Product Groups with RCAs exceeding unity	4	11	0	4	5	4	12	12	5	26	37

* See Table 17.1 for the SITC Revision 2 classification number of each component product group
Source: Computed from United Nations SITC Revision 2 COMTRADE statistics

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Appendix 1
Hong-Kong's Re-Exports and Other East Asian Trade Data Problems

A serious problem complicating analyses of the composition and geographic directions of East Asian intra-trade is the influence of major entrepot centers, particularly Hong Kong, in the region. Entrepot centers consist of a country, or countries, that serve as an "intermediate way-point" or transshipment center for goods exchanged between two other countries. For example, a relatively high share of Chinese exports pass through Hong Kong before being re-exported to other destinations in East Asia, North America, Europe, or other locations. As a result of these transshipments a specific country, like China, may not be able to correctly identify the destinations of its exports in its own official trade data. The United States also serves as an important entrepot for some goods shipped from East Asia to Europe or Latin America.

Statistics on entrepot trade reported by individual countries to the United Nations provide some indication as to the dimensions of this activity in East Asia. The overall global magnitude of entrepot activity is almost certainly larger as many countries fail to report their transshipments to the United Nations. As indicted below, Hong Kong reported re-exports of $170 billion in 2001, which was almost 60 percent higher than the corresponding total transshipments of the other nine largest entrepot centers.

Table A1. Major Global Entrepot Centers as Reflected in 2001 COMTRADE Statistics

Entrepot Center	Re-Exports ($ million)	Entrepot Center	Re-Exports ($ million)
Hong Kong, China	170,793.4	New Zealand	459.6
United States	65,003.2	Macau	416.6
Taiwan, China	3,457.0	Jordan	387.0
Saudi Arabia	970.7	Malta	199.9
Cyprus	591.3	Sri Lanka	85.3

Source: United Nations COMTRADE Statistics.

Viewed somewhat differently, in 2001 Hong Kong's re-exports exceeded the total global merchandise exports of countries like Spain, Sweden, Switzerland, or Belgium. The importance of this point is further highlighted by the growth in Hong Kong's entrepot trade. From 1980 to 2001, Hong Kong's total transshipments increased more than 28 fold, or at an annual rate of approximately 17.5 percent which was about 11 percentage points higher than the corresponding growth rate for world trade (see the statistics presented below).

Table A2. The Global Value of Hong Kong's Re-Exports in Selected Years

Year	Re-Exports ($ million)	Year	Re-Exports ($ million)	Year	Re-Exports ($ million)
1980	6,033	1995	143,925	1999	152,022
1985	13,459	1997	160,894	2001	179,147
1990	53,388	1998	150,276	2001	170,793

Source: United Nations COMTRADE Statistics.

As indicated in the data that follow, the major destinations of Hong Kong's entrepot trade were geographically diversified in 2001, but China received more than one-third of this exchange, while about one-fifth of the total went to the United States. As reported, four Asian countries, namely, Japan, Taiwan (China), Singapore, and the Republic of Korea received over $21 billion in Hong Kong's re-exports in the year 2001. The magnitude of East Asian re-exports makes it difficult for some exporting countries to correctly identify the true direction of regional and non-regional trade in their official statistics.

Table A3. Major Destinations of Hong Kong's Re-Exports in 2001

Destination	Re-Exports ($ million)	Share of Total (%)	Destination	Re-Exports ($ million)	Share of Total (%)
World	170,793	100.0	United Kingdom	6,056	3.5
China	63,809	37.4	Germany	5,870	3.4
United States	36,265	21.2	Taiwan, China	3,855	2.3
European Union (15)	24,213	14.2	Singapore	3,488	2.0
Japan	10,721	6.3	Korea, Rep. of	3,187	1.9

Source: United Nations COMTRADE Statistics.

A second unrelated trade data problem is that some East Asian countries, particularly the Philippines, fail to properly report the composition of goods shipped from their own export processing zones (EPZs), and simply lump these exports into one highly aggregate SITC (931) category "special transactions." For example, between 1992 and 1995 the Philippines classified between 31 to 37 percent of its total exports in this "special transactions" category in spite of the very diverse nature of the goods being exchanged. Available export statistics could, therefore, be quite misleading as to the composition of the goods being shipped to regional and non-regional markets. A similar problem exists, to a lesser extent, in some other Asian countries trade data.

While no fully satisfactory solutions exist for these problems, it is generally held that import statistics can provide far more accurate information on the direction and composition of trade than export data when entrepot activity is significant, or where countries are inappropriately utilizing the SITC 931 category "special transactions" for classifying export statistics. Importing countries are far more likely to know the correct origins, and composition, of their trade since there normally are important legal penalties for incorrectly specifying this information on customs vouchers. In contrast, entrepot centers normally have no legal or other obligation to inform the originating country of the true final destination of its exports. The potential importance of this point is reflected in official published trade statistics of the United States and China. For example, in 1998 China was able to identify only $37,984 million of its exports as destined for the United States, while the United States reported approximately $75,095 of imports from China. The discrepancy closely matches the $33,609 US re-export total reported by Hong Kong.

For these reasons, import statistics will be used in this analysis to assess the geographic directions and composition of East Asian countries' exports. As an example, China, Thailand, or Malaysia's exports will be tabulated using the reported imports of its trading partners. An attraction of this approach is that import statistics are generally thought to be more accurate than export data since the former are used for the application of direct trade control measures like tariffs. It should be noted that there may be some slight differences in the levels of trade reflected in import and export statistics since the former are normally valued on a c.i.f. basis while the latter are reported in f.o.b. terms.[39]

A third East Asian data problem concerns countries that failed to report their official trade statistics to the United Nations, or report data very late and on an irregular basis. For example, Laos PDR has never reported statistics to UN COMTRADE, the last year of available data for Cambodia was 1972, and Vietnam stopped reporting trade statistics to the United Nations in 1989. Brunei and Mongolia have been consistent but late reporters in that 1998 is the last year for which United Nations statistics are available for the former. While the East Asian country coverage is complete in the very aggregate IMF

[39] United Nations regulations for the compilation of trade data required that goods imported for re-export (without any significant further processing) not be included in a country's official import statistics. If this practice is not being followed fully it could impart a bias in East Asian trade data. Obviously, given its role as a major entrepot, the question is of primary concern in the case of Hong Kong.

Direction of Trade data (which only provides import and export totals), the lack of detailed UN COMTRADE statistics precluded some analyses of these non-reporting countries trade trends.

Two other special data problems should be noted. China failed to report its trade statistics to the United Nations prior to 1987 so most detailed analyses of its trade performance could not be conducted earlier. Second, Singapore failed to report any trade with Indonesia after 1964, purportedly due to a high volume of illicit trade (smuggling) between the countries. As such, Singapore's imports from, and exports to, Indonesia had to be tabulated from the latter's reported UN trade statistics.

Appendix Table A4
East Asian Countries Largest Regional Exports in 2001

	Country/SITC/Product	Exports ($000)	Export Share (%)
	BRUNEI		
	Total Exports	1,212,834	100.0
3330	Petroleum oils	829,020	68.4
3413	Petroleum gases	156,373	12.9
8451	Jerseys and pullovers	53,463	4.4
7932	Ships and boats	41,005	3.4
8462	Under garments of cotton	35,551	2.9
8459	Knit outer garments	32,445	2.7
8452	Knit dresses and skirts	5,546	0.5
8441	Men's shirts of textile fabrics	5,538	0.5
8973	Jewellery of gold or silver	5,183	0.4
8439	Outer garments of textile fabric	4,371	0.4
8429	Other outer garments	3,702	0.3
8435	Blouses of textile fabrics	1,555	0.1
2820	Waste and scrap metal	1,446	0.1
6954	Interchangeable tools	1,273	0.1
6552	Knitted or crocheted fabrics	1,246	0.1
	CAMBODIA		
	Total Exports	153,549	100.0
2320	Natural rubber latex	23,883	15.6
6341	Wood sawn lengthwise	20,669	13.5
6342	Plywood sheets	13,035	8.5
9710	Non-monetary gold	11,902	7.8
0360	Crustaceans	6,534	4.3
8459	Other knit outer garments	5,720	3.7
8452	Knit dresses or skirts	4,359	2.8
8462	Under garments of cotton	4,346	2.8
2483	Non-coniferous wood	4,134	2.7
7932	Ships and boats	4,075	2.7
8439	Other textile outer garments	3,650	2.4
8435	Blouses of textile fabrics	3,048	2.0
0341	Fish, fresh	2,930	1.9
2820	Waste and scrap metal	2,679	1.7
8441	Men's shirts of textile fabrics	2,484	1.6
	CHINA		
	Total Exports	124,282,677	100.0
8942	Children's toys and games	5,804,360	4.7
7599	Parts of office machinery	5,613,303	4.5
8510	Footwear	4,832,699	3.9
7649	Parts telecom equipment	4,454,386	3.6
8451	Jerseys and pullovers	3,610,732	2.9
8310	Travel goods and handbags	3,130,025	2.5
7712	Other electric power machinery	2,517,265	2.0
7643	Radiotelephonic equipment	2,427,842	2.0
8459	Other knit outer garments	2,021,568	1.6
7638	Other sound recorders	1,957,036	1.6

	Country/SITC/Product	Exports ($000)	Export Share (%)
	MALAYSIA		
	Total Exports	44,724,458	100.0
7764	Electronic microcircuits	11,196,817	25.0
7599	Parts of office machinery	5,339,691	11.9
3330	Petroleum oils	1,452,430	3.2
7524	Digital storage units	1,304,255	2.9
3413	Petroleum gases	1,254,136	2.8
7763	Diodes and transistors	1,219,489	2.7
7649	Parts of telecom equipment	918,126	2.1
7643	Radiotelephonic equipment	830,585	1.9
7788	Other electrical machinery	714,626	1.6
4242	Palm oil	637,169	1.4
7768	Piezo-electric crystals	516,428	1.2
7525	Peripheral electronic units	515,456	1.2
7722	Printed circuits and parts	443,989	1.0
2483	Non-coniferous wood	441,139	1.0
7761	Television picture tubes	434,629	1.0
	MONGOLIA		
	Total Exports	242,697	100.0
2871	Copper ores	175,901	72.5
6114	Bovine leather	8,446	3.5
6115	Sheep and lamb skin leather	7,302	3.0
2687	Sheep's and lamb wool	7,001	2.9
2879	Other non-ferrous ores	6,939	2.9
6552	Knitted or crocheted fabrics	6,416	2.6
2111	Bovine & equine hides	4,685	1.9
8451	Jerseys and pullovers	3,384	1.4
2683	Fine animal hair	2,742	1.1
2882	Other non-ferrous waste	2,417	1.0
8471	Clothing accessories	2,399	1.0
2682	Sheep or lamb wool	1,895	0.8
0577	Edible nuts	1,840	0.8
3330	Petroleum oils	1,603	0.7
8423	Trousers of textile fabric	1,546	0.6
	PHILIPPINES		
	Total Exports	1,472,7171	100.0
7764	Electronic microcircuits	6,897,703	46.8
7599	Parts of office machinery	1,358,320	9.2
7524	Digital central storage units	1,169,871	7.9
7763	Diodes and transistors	574,751	3.9
7768	Piezo-electric crystals	441,797	3.0
7649	Parts of telecom equipment	292,435	2.0
6821	Copper alloys	266,434	1.8
7788	Other electrical machinery	204,231	1.4
9710	Non-monetary gold	163,090	1.1
0573	Bananas	155,865	1.1

	Country/SITC/Product	Exports ($000)	Export Share (%)
	CHINA, CONTINUED		
8439	Other textile outer garments	1,846,140	1.5
8462	Under garments of cotton	1,836,566	1.5
8939	Miscellaneous articles	1,798,534	1.4
7525	Peripheral units	1,749,821	1.4
7788	Other electrical machinery	1,674,432	1.3
	HONG KONG		
	Total Exports	19,596,694	100.0
7764	Electronic microcircuits	2,308,751	11.8
7599	Parts of office machinery	996,219	5.1
7649	Parts of telecom equipment	803,804	4.1
6522	Woven cotton fabrics	529,720	2.7
7763	Diodes and transistors	510,115	2.6
7788	Other electrical machinery	507,352	2.6
7721	Electrical switches and relays	464,961	2.4
7722	Printed circuits and parts	424,296	2.2
6552	Knitted fabrics	386,173	2.0
9710	Non-monetary gold	383,418	2.0
7712	Other electric power machinery	351,716	1.8
8451	Jerseys and pullovers	332,357	1.7
8710	Optical instruments & apparatus	320,268	1.6
7643	Radiotelephonic equipment	284,785	1.5
7768	Piezo-electric crystals	280,852	1.4
	INDONESIA		
	Total Exports	16,811,795	100.0
3330	Petroleum oils	1,881,283	11.2
3413	Petroleum gases	1,810,170	10.8
3222	Other coal	979,430	5.8
2517	Chemical wood pulp	655,967	3.9
2483	Non-coniferous wood	621,498	3.7
2871	Copper ores	457,154	2.7
6342	Plywood sheets	426,793	2.5
7649	Parts of telecom equipment	309,752	1.8
6415	Paper and paperboard	263,535	1.6
5138	Poly carboxylic acids	246,201	1.5
2472	Saw logs and veneer logs	245,375	1.5
6821	Copper and copper alloys	233,243	1.4
6513	Cotton yarn	222,572	1.3
7599	Parts of office machinery	220,605	1.3
7525	Peripheral units & adapters	213,491	1.3
	KOREA		
	TOTAL TRADE	52,510,660	100.0
7764	Electronic microcircuits	6,222,941	11.9
7643	Radiotelephonic equipment	3,151,544	6.0
7525	Peripheral units & adapters	1,619,449	3.1
7649	Parts of telecom equipment	1,293,369	2.5
5112	Cyclic hydrocarbons	1,136,874	2.2

	Country/SITC/Product	Exports ($000)	Export Share (%)
	PHILIPPINES, CONTINUED		
7522	Data processing machines	154,511	1.0
7525	Peripheral units	147,652	1.0
7643	Radiotelephonic equipment	139,723	0.9
7849	Parts of motor vehicles	130,102	0.9
7162	Electric motors & generators	110,593	0.8
	SINGAPORE		
	Total Exports	38,076,065	100.0
7764	Electronic microcircuits	7,573,415	19.9
7599	Parts of office machinery	1,946,760	5.1
7524	Digital storage units	1,925,296	5.1
3341	Motor spirits	1,342,493	3.5
3343	Gas oils	1,257,389	3.3
7768	Piezo-electric crystals	1,077,100	2.8
3344	Fuel oils, nes.	950,199	2.5
7788	Other electrical machinery	815,604	2.1
3342	Kerosene	813,982	2.1
7643	Radiotelephonic equipment	800,989	2.1
7763	Diodes and transistors	794,581	2.1
7649	Parts of telecom equipment	703,142	1.8
7721	Electrical switches & relays	639,436	1.7
3345	Lubricating oils	529,810	1.4
5831	Polyethylene	441,127	1.2
	TAIWAN		
	Total Exports	59,992,028	100.0
7764	Electronic microcircuits	11,136,248	18.6
7599	Parts of office machinery	3,389,585	5.7
5833	Polystyrene	1,756,548	2.9
6531	Woven synthetic fabrics	1,508,580	2.5
7768	Piezo-electric crystals	1,325,876	2.2
7284	Specialized machinery	1,259,280	2.1
7722	Printed circuits and parts	1,241,545	2.1
7788	Other electrical machinery	1,135,700	1.9
6552	Knit fabrics	1,084,495	1.8
6746	Iron sheets & plates	1,068,364	1.8
6822	Copper alloys, worked	973,000	1.6
7763	Diodes and transistors	955,906	1.6
6573	Coated textile fabrics	840,704	1.4
5834	Polyvinyl chloride	772,039	1.3
6514	Yarn of synthetic fibers	768,990	1.3
	THAILAND		
	Total Exports	22,020,395	100.0
7599	Parts of office machinery	2,634,716	12.0
7764	Electronic microcircuits	1,977,948	9.0
7524	Digital storage units	1,323,757	6.0
2320	Natural rubber latex	784,259	3.6
7162	Electric motors & generators	527,486	2.4

	Country/SITC/Product	Exports ($000)	Export Share (%)
	KOREA, CONTINUED		
6531	Woven of synthetic fabric	1,081,540	2.1
5833	Polystyrene and its copolymers	1,052,887	2.0
3343	Gas oils	1,013,222	1.9
7768	Piezo-electric crystals	974,947	1.9
7762	Other electric valves	926,614	1.8
6746	Iron sheets & plates	889,304	1.7
5138	Poly carboxylic acids	880,417	1.7
6114	Leather of bovine cattle	835,121	1.6
7599	Parts of office machinery	818,910	1.6
3344	Fuel oils, nes	803,474	1.5
	LAOS		
	Total Exports	102,230	100.0
2483	Non-coniferous wood	49,941	48.9
2472	Saw logs and veneer logs	19,799	19.4
0011	Bovine animals.	5,124	5.0
2482	Sawn wood	4,014	3.9
2876	Tin ores	2,828	2.8
2875	Zinc ores	1,828	1.8
9310	Special transactions	1,715	1.7
3222	Other coal	1,713	1.7
7821	Motor vehicles and trucks	1,612	1.6
2471	Saw logs and veneer logs, nes	1,308	1.3
2924	Seeds used in perfumery	1,173	1.1
0548	Vegetable roots & tubers	948	0.9
2922	Shellac	849	0.8
6342	Plywood sheets	808	0.8
2450	Fuel wood	704	0.7

	Country/SITC/Product	Exports ($000)	Export Share (%)
	THAILAND, CONTINUED		
5833	Polystyrene	456,030	2.1
7763	Diodes and transistors	444,933	2.0
0422	Rice semi- or wholly milled	424,568	1.9
7649	Parts of telecom equipment	371,159	1.7
0611	Beet and cane sugar	289,123	1.3
7525	Peripheral units & adapters	281,982	1.3
0579	Fruit, fresh or dried	271,171	1.2
5832	Polypropylene	264,874	1.2
7768	Piezo-electric crystals	259,556	1.2
7415	Air conditioning machines	207,987	0.9
	VIETNAM		
	Total Exports	4,062,245	100.0
3330	Petroleum oils	1,664,199	41.0
7721	Electrical switches	159,617	3.9
0422	Rice semi- or wholly milled	152,894	3.8
0360	Crustaceans	144,843	3.6
7722	Printed circuits and parts	139,202	3.4
2320	Natural rubber latex	83,588	2.1
8510	Footwear	71,356	1.8
7599	Parts of office machinery	47,595	1.2
0579	Fruit, fresh or dried.	45,308	1.1
8219	Other furniture and parts	43,408	1.1
7761	Television picture tubes	40,475	1.0
0548	Vegetable roots & tubers	38,629	1.0
3221	Anthracite coal	34,219	0.8
0711	Coffee	30,945	0.8
5146	Oxygen-function compounds	29,613	0.7

Source: UN COMTRADE statistics.

Appendix Table A5
East Asia's Largest Four-Digit SITC (Rev. 2) Exports to Japan

SITC No.	Product Description	Export Value ($000) 1985	Export Value ($000) 2001	Share of Exports % 1985	Share of Exports % 2001	Export Share Change
	TOTAL EXPORTS	35,006,728	145,002,541	100.00	100.00	0.00
7764	Electronic microcircuits	106,679	8,834,146	0.30	6.09	5.79
3413	Petroleum gases	6,496,234	8,618,857	18.56	5.94	-12.61
7599	Parts of office machinery	69,182	5,064,704	0.20	3.49	3.30
3330	Petroleum oils	7,791,853	3,385,009	22.26	2.33	-19.92
8451	Jerseys and pullovers	351,624	3,043,494	1.00	2.10	1.09
9310	Special transactions	627,818	3,005,086	1.79	2.07	0.28
7649	Parts of telecom equipment	111,016	2,967,883	0.32	2.05	1.73
7525	Peripheral units including adapters	18,829	2,805,570	0.05	1.93	1.88
7524	Digital central storage units	6	2,784,993	0.00	1.92	1.92
3341	Motor spirit and other light oils	1,261,262	2,457,621	3.60	1.69	-1.91
8510	Footwear	271,935	2,272,008	0.78	1.57	0.79
7523	Complete digital processing equipment	743	2,204,222	0.00	1.52	1.52
0360	Crustaceans	1,014,867	2,187,799	2.90	1.51	-1.39
8439	Other textile outer garments	59,719	2,060,961	0.17	1.42	1.25
7638	Other sound recorders	9,957	1,904,222	0.03	1.31	1.28
7611	Color television receivers	5,328	1,874,914	0.02	1.29	1.28
8462	Under garments of cotton	118,688	1,789,840	0.34	1.23	0.90
8942	Children s toys and games.	60,335	1,764,205	0.17	1.22	1.04
7522	Complete digital data processing machines	318	1,725,974	0.00	1.19	1.19
7731	Insulated electrical wire	8,006	1,686,788	0.02	1.16	1.14
6342	Plywood sheets	50,387	1,592,357	0.14	1.10	0.95
8310	Travel goods and handbags	40,519	1,575,179	0.12	1.09	0.97
8219	Other furniture and parts	118,901	1,544,285	0.34	1.07	0.73
3222	Other coal	187,646	1,422,334	0.54	0.98	0.44
7712	Other electric power machinery	44,865	1,416,974	0.13	0.98	0.85
7788	Other electrical equipment	62,384	1,314,368	0.18	0.91	0.73
7641	Electrical and telephonic line	9,749	1,310,827	0.03	0.90	0.88
8459	Other knit outer garments	150,074	1,303,814	0.43	0.90	0.47
0342	Frozen fish (excluding fillets)	353,075	1,235,742	1.01	0.85	-0.16
7721	Electrical switches and relays	46,761	1,216,875	0.13	0.84	0.71
0371	Fish, prepared or preserved	184,057	1,153,974	0.53	0.80	0.27
8939	Miscellaneous articles	31,687	1,116,852	0.09	0.77	0.68
8423	Trousers and breeches	68,621	1,050,003	0.20	0.72	0.53
8429	Other textile outer garments	46,843	995,424	0.13	0.69	0.55
0372	Crustaceans, prepared or preserved	74,692	850,360	0.21	0.59	0.37
7162	Electric motors & generators	6,452	835,783	0.02	0.58	0.56
8431	Coats and jackets of textile fabric	51,060	793,032	0.15	0.55	0.40
5989	Chemical products and preparations,	64,855	792,767	0.19	0.55	0.36
8710	Optical instruments and apparatus	6,407	788,965	0.02	0.54	0.53
3342	Kerosene and other medium oils	327,742	767,845	0.94	0.53	-0.41
7763	Diodes and transistors	85,970	757,473	0.25	0.52	0.28
8983	Gramophone records	28,947	752,179	0.08	0.52	0.44
7849	Other parts of motor vehicles	19,932	751,297	0.06	0.52	0.46
8441	Men's shirts	80,656	739,647	0.23	0.51	0.28
8947	Other sporting goods	127,599	711,141	0.36	0.49	0.13

Appendix Table A5. Continued

SITC No.	Product Description	Export Value ($000) 1985	Export Value ($000) 2001	Export Share % 1985	Export Share % 2001	Export Share Change
6584	Bed and table linen	45,908	705,861	0.13	0.49	0.36
6613	Building & monumental stone	116,286	699,534	0.33	0.48	0.15
7758	Electro-thermal appliances.	2,981	679,315	0.01	0.47	0.46
8211	Chairs and parts	43,798	661,937	0.13	0.46	0.33
7628	Other radio-broadcast receivers	9,295	652,912	0.03	0.45	0.42
0341	Fish, fresh or chilled	275,328	651,415	0.79	0.45	-0.34
8931	Articles for conveyance or packing	11,613	645,613	0.03	0.45	0.41
0149	Other prepared or preserved meat	7,297	632,877	0.02	0.44	0.42
8212	Furniture for medical establishments	50,913	621,310	0.15	0.43	0.28
8435	Blouses of textile fabrics	35,261	619,880	0.10	0.43	0.33
0546	Vegetables, frozen	114,240	612,990	0.33	0.42	0.10
0114	Poultry& edible offal	68,021	596,610	0.19	0.41	0.22
7722	Printed circuits and parts	3,690	571,338	0.01	0.39	0.38
8811	Photographic cameras and parts	34,895	566,626	0.10	0.39	0.29
8472	Clothing accessories, knitted	50,773	564,388	0.15	0.39	0.24
2483	Wood of non-coniferous species	222,012	561,534	0.63	0.39	-0.25
7528	Off-line data processing equipment.	71	540,641	0.00	0.37	0.37
7591	Parts of office machinery	4,218	529,312	0.01	0.37	0.35
2871	Copper ores & concentrates	318,583	508,892	0.91	0.35	-0.56
3343	Gas oils	42,482	503,929	0.12	0.35	0.23
2320	Natural rubber latex	417,283	497,150	1.19	0.34	-0.85
0545	Other fresh or chilled vegetables	56,630	486,895	0.16	0.34	0.17
8422	Men's suits of textile fabrics	10,186	485,350	0.03	0.33	0.31
8434	Women's skirts of textile fabrics	8,917	481,079	0.03	0.33	0.31
6589	Other made-up textile articles	22,548	478,982	0.06	0.33	0.27
8720	Medical instruments and appliances	4,313	473,075	0.01	0.33	0.31
5823	Alkyds and other polyesters	3,905	472,020	0.01	0.33	0.31
7415	Air conditioning machines	1,094	459,305	0.00	0.32	0.31
8465	Corsets and brassieres	37,057	441,126	0.11	0.30	0.20
0565	Vegetables, prepared or preserved.	109,597	422,756	0.31	0.29	-0.02
2872	Nickel ores and concentrates	145,775	420,696	0.42	0.29	-0.13
7852	Bicycles, not motorized	1,457	407,022	0.00	0.28	0.28
7642	Microphones and loudspeakers	27,321	404,327	0.08	0.28	0.20
7768	Piezo-electric crystals	28,753	400,004	0.08	0.28	0.19
7621	Radio-broadcast receivers for motor	2,838	397,225	0.01	0.27	0.27
6997	Articles of iron or steel, nes.	16,815	396,891	0.05	0.27	0.23
6841	Aluminum and alloys	225,990	390,521	0.65	0.27	-0.38
3344	Fuel oils, nes.	1,561,453	372,788	4.46	0.26	-4.20
6727	Iron or steel coils	232,230	372,450	0.66	0.26	-0.41
7757	Electrical domestic appliances	8,395	370,636	0.02	0.26	0.23
0589	Fruit otherwise prepared or preserved	72,953	368,587	0.21	0.25	0.05
0573	Bananas, fresh or dried	289,915	358,916	0.83	0.25	-0.58
8481	Articles of apparel & clothing accessories	40,604	358,489	0.12	0.25	0.13
0344	Fish fillets, frozen	10,453	356,309	0.03	0.25	0.22
7284	Machines for specialized industries	13,051	352,524	0.04	0.24	0.21
7711	Electrical transformers	73,816	335,128	0.21	0.23	0.02
6911	Structures & parts of iron	758	315,483	0.00	0.22	0.22

Appendix Table A5. Continued

SITC No.	Product Description	Export Values ($000) 1985	Export Values ($000) 2001	Export Shares % 1985	Export Shares % 2001	Export Share Change
6974	Articles used for domestic purposes	9,854	315,023	0.03	0.22	0.19
6412	Printing paper & writing paper	10,211	307,235	0.03	0.21	0.18
8851	Watches and watch movements	125,300	292,106	0.36	0.20	-0.16
5121	A-cyclic alcohols	61,395	289,481	0.18	0.20	0.02
6716	Ferro-alloys	51,302	284,961	0.15	0.20	0.05
7518	Office machines, nes.	1,915	284,182	0.01	0.20	0.19
7499	Other non-electric parts & accessories	10,672	284,032	0.03	0.20	0.17
0980	Edible products and preparations nes	85,948	282,651	0.25	0.19	-0.05
	ALL ABOVE PRODUCTS	25,892,649	114,770,112	73.96	79.15	5.19

Source: UN COMTRADE statistics.

Appendix Table A6
East Asia's Largest Four-Digit SITC (Rev. 2) Exports to All Other Destinations
(Totals Exclude Japan and all Regional Countries)

SITC No.	Product Description	Export Values ($000) 1985	Export Values ($000) 2001	Export Shares % 1985	Export Shares % 2001	Export Share Change
	TOTAL TRADE	96,868,507	572,884,033	100	100	--
7764	Electronic microcircuits	3,767,804	33,851,396	3.89	5.91	2.02
7599	Parts of office machinery	1,940,788	30,882,450	2.00	5.39	3.39
8942	Children s toys and games.	3,176,701	22,689,247	3.28	3.96	0.68
7524	Digital central storage units	3,775	21,150,427	0.00	3.69	3.69
7525	Peripheral units & adapters	499,963	21,033,579	0.52	3.67	3.16
8510	Footwear	4,363,040	20,054,966	4.50	3.50	-1.00
7643	Radiotelephonic equipment	205,680	12,944,357	0.21	2.26	2.05
7810	Passenger motor cars	46,277	12,461,436	0.05	2.18	2.13
7638	Other sound recorders	673,100	10,267,198	0.69	1.79	1.10
7522	Complete digital data processing machines	79,055	10,163,693	0.08	1.77	1.69
8451	Jerseys and pullovers	1,981,580	9,778,780	2.05	1.71	-0.34
7641	Electric telephonic & telegraphic line	524,815	8,491,822	0.54	1.48	0.94
8310	Travel goods and handbags	1,797,510	8,010,007	1.86	1.40	-0.46
8219	Other furniture and parts	144,052	7,934,572	0.15	1.39	1.24
8439	Other outer garments of textile fabric	2,096,054	7,790,250	2.16	1.36	-0.80
7649	Parts of telecom equipment	1,371,712	7,163,547	1.42	1.25	-0.17
9310	Special transactions	828,694	6,824,153	0.86	1.19	0.34
8939	Miscellaneous articles	924,218	6,647,579	0.95	1.16	0.21
7788	Other electrical machinery	838,549	5,773,110	0.87	1.01	0.14
8459	Other knit outer garments	1,453,389	5,667,265	1.50	0.99	-0.51
7712	Other electric power machinery	376,721	5,435,563	0.39	0.95	0.56
8124	Lighting fixtures and fittings	368,089	5,058,851	0.38	0.88	0.50
7758	Electro-thermal appliances	886,482	4,968,078	0.92	0.87	-0.05
7628	Other radio-broadcast receivers	926,202	4,800,235	0.96	0.84	-0.12
7528	Off-line data processing equipment	34,361	4,521,606	0.04	0.79	0.75
8211	Chairs and other seats	69,206	4,473,660	0.07	0.78	0.71
7721	Electrical switches and relays	360,300	4,203,768	0.37	0.73	0.36
3330	Petroleum oils	4,843,947	3,951,801	5.00	0.69	-4.31
8462	Under garments of cotton	739,153	3,840,324	0.76	0.67	-0.09
7611	Color television receivers	760,313	3,695,114	0.78	0.65	-0.14
7722	Printed circuits and parts	150,445	3,546,071	0.16	0.62	0.46
7523	Complete digital processing equipment	206,756	3,535,136	0.21	0.62	0.40
8947	Other sporting goods	875,608	3,433,721	0.90	0.60	-0.30
8429	Other outer garments of textile fabric	631,698	3,366,823	0.65	0.59	-0.06
7731	Insulated electrical wire	431,565	3,356,268	0.45	0.59	0.14
7849	Other parts & accessories of motor vehicles	276,805	3,253,065	0.29	0.57	0.28
7763	Diodes and transistors	504,503	3,249,291	0.52	0.57	0.05
8973	Jewellery of gold or silver	543,046	3,223,597	0.56	0.56	0.00
7757	Electrical domestic appliances	303,264	3,076,607	0.31	0.54	0.22
8481	Apparel & clothing accessories	985,524	3,021,234	1.02	0.53	-0.49
8423	Trousers and breeches	991,124	2,931,993	1.02	0.51	-0.51
8983	Gramophone records	306,507	2,913,471	0.32	0.51	0.19
7415	Air conditioning machines	34,096	2,881,335	0.04	0.50	0.47
7642	Microphones and loudspeakers	291,483	2,788,223	0.30	0.49	0.19

Appendix Table A6. Continued

SITC No.	Product Description	Export Values ($000) 1985	Export Values ($000) 2001	Share of Exports % 1985	Share of Exports % 2001	Export Share Change
8441	Men's shirts of textile fabrics	1,478,649	2,734,354	1.53	0.48	-1.05
0360	Crustaceans	373,829	2,640,950	0.39	0.46	0.08
8482	Articles of apparel & clothing accessories	333,105	2,610,124	0.34	0.46	0.11
6940	Iron nails, screws or nuts	453,678	2,592,438	0.47	0.45	-0.02
6974	Articles used for domestic purposes,	386,945	2,447,315	0.40	0.43	0.03
7932	Ships and boats	505,534	2,442,720	0.52	0.43	-0.10
8811	Photographic cameras and parts	246,161	2,342,983	0.25	0.41	0.15
6531	Woven fabrics of synthetic thread	400,503	2,266,432	0.41	0.40	-0.02
8851	Watches and watch movements	918,582	2,249,557	0.95	0.39	-0.56
6991	Locksmiths wares	305,533	2,244,109	0.32	0.39	0.08
6552	Knitted or crocheted fabrics	80,830	2,217,994	0.08	0.39	0.30
8931	Articles for packing goods	154,848	2,202,754	0.16	0.38	0.22
8435	Blouses of textile fabrics	1,105,656	2,178,960	1.14	0.38	-0.76
7622	Radio-broadcast receivers portable,	848,625	2,098,678	0.88	0.37	-0.51
8999	Manufactured goods, nes	443,254	1,994,268	0.46	0.35	-0.11
7621	Radio-broadcast receivers	362,848	1,920,376	0.37	0.34	-0.04
6953	Other hand tools	400,370	1,903,802	0.41	0.33	-0.08
2320	Natural rubber latex	1,640,401	1,839,854	1.69	0.32	-1.37
7781	Batteries and accumulators	143,141	1,817,769	0.15	0.32	0.17
7492	Taps, cocks, and valves for pipes	148,368	1,803,174	0.15	0.31	0.16
7784	Tools for working in the hand	30,096	1,736,503	0.03	0.30	0.27
7518	Office machines, nes.	63,278	1,666,686	0.07	0.29	0.23
7512	Calculating machines	224,078	1,649,719	0.23	0.29	0.06
7853	Invalid carriages	122,116	1,645,571	0.13	0.29	0.16
8842	Spectacles and spectacle frames	241,981	1,644,279	0.25	0.29	0.04
8710	Optical instruments and apparatus	66,904	1,635,428	0.07	0.29	0.22
6522	Cotton fabrics, woven	438,971	1,628,092	0.45	0.28	-0.17
7852	Bicycles	309,908	1,602,118	0.32	0.28	-0.04
8720	Medical instruments and appliances	95,522	1,590,644	0.10	0.28	0.18
6960	Cutlery	275,116	1,563,716	0.28	0.27	-0.01
8997	Basketwork	401,974	1,537,049	0.41	0.27	-0.15
8484	Headgear and fittings thereof	230,083	1,532,610	0.24	0.27	0.03
6589	Other made-up articles of textile m	213,805	1,527,875	0.22	0.27	0.05
6672	Diamonds	234,149	1,508,847	0.24	0.26	0.02
4242	Palm oil	1,115,175	1,501,677	1.15	0.26	-0.89
8921	Books and pamphlets	193,529	1,482,159	0.20	0.26	0.06
7162	Electrical motors & generators	114,985	1,430,295	0.12	0.25	0.13
7821	Motor vehicles for transport of goods	7,852	1,399,303	0.01	0.24	0.24
6514	Yarn containing 85% synthetic fiber	222,401	1,347,880	0.23	0.24	0.01
6354	Domestic manufactures of wood	272,326	1,316,050	0.28	0.23	-0.05
8465	Corsets and brassieres	145,052	1,305,064	0.15	0.23	0.08
8431	Coats and jackets of textile fabric	661,393	1,302,918	0.68	0.23	-0.46
6251	Tires	212,359	1,301,097	0.22	0.23	0.01
6997	Articles of iron or steel, nes	227,706	1,285,928	0.24	0.22	-0.01
7782	Electrical filament lamps	160,025	1,281,035	0.17	0.22	0.06
7648	Telecommunications equipment	274,430	1,231,839	0.28	0.22	-0.07
0372	Crustaceans	205,302	1,209,928	0.21	0.21	0.00

Appendix Table A6. Continued

SITC No.	Product Description	Export Value ($000) 1985	Export Value ($000) 2001	Share of Exports % 1985	Share of Exports % 2001	Export Share Change
6584	Bed and table linen	427,708	1,185,712	0.44	0.21	-0.23
8433	Women's dresses	382,486	1,180,933	0.39	0.21	-0.19
6342	Plywood sheets	690,936	1,166,016	0.71	0.20	-0.51
8972	Imitation jewellery	482,015	1,147,022	0.50	0.20	-0.30
5156	Hetero-cyclic compounds	120,608	1,132,206	0.12	0.20	0.07
5823	Alkyds and other polyesters	39,696	1,110,004	0.04	0.19	0.15
7768	Piezo-electric crystals	399,173	1,062,147	0.41	0.19	-0.23
7284	Machines for specialized purposes	136,405	1,044,894	0.14	0.18	0.04
8472	Clothing accessories, knitted	290,870	1,018,400	0.30	0.18	-0.12
	ALL ABOVE PRODUCTS	63,075,227	453,565,924	65.11	79.17	14.06

Source: UN COMTRADE statistics.

Appendix Table A7
East Asia's Largest Four-Digit SITC (Rev. 2) Exports to ASEAN Markets

SITC No.	Product Description	Export Value ($000) 1985	Export Value ($000) 2001	Share of Exports (%) 1985	Share of Exports (%) 2001	Export Share Change
	TOTAL TRADE	30,467,224	176,320,781	100.00	100.00	
7764	Electronic microcircuits	2,744,942	19,562,977	9.01	11.10	2.09
7524	Digital central storage units	973	15,760,433	0.00	8.94	8.94
7599	Parts of office machinery	992,401	11,439,900	3.26	6.49	3.23
7525	Peripheral units & adapters	168,514	6,579,090	0.55	3.73	3.18
8510	Footwear	126,080	5,117,799	0.41	2.90	2.49
3330	Petroleum oils	3,423,297	3,805,147	11.24	2.16	-9.08
7638	Other sound recorders	93,470	3,689,712	0.31	2.09	1.79
7643	Radiotelephonic equipment	26,977	2,893,647	0.09	1.64	1.55
8451	Jerseys and pullovers	131,419	2,694,439	0.43	1.53	1.10
7641	Telephonic & telegraphic line	39,751	2,687,202	0.13	1.52	1.39
7522	Digital data processing machines	15,695	2,589,377	0.05	1.47	1.42
9310	Special transactions	288,520	2,537,726	0.95	1.44	0.49
8219	Other furniture	36,095	2,424,683	0.12	1.38	1.26
8439	Other textile outer garments	289,483	2,417,848	0.95	1.37	0.42
7628	Other radio-broadcast receivers	174,972	2,116,440	0.57	1.20	0.63
0360	Crustaceans	193,188	2,054,453	0.63	1.17	0.53
7649	Parts of telecom equipment	399,832	1,996,794	1.31	1.13	-0.18
7611	Color television receivers	226,023	1,951,955	0.74	1.11	0.37
7763	Diodes and transistors	280,414	1,941,438	0.92	1.10	0.18
8459	Other knit outer garments	161,222	1,886,344	0.53	1.07	0.54
2320	Natural rubber latex	1636,194	1,836,166	5.37	1.04	-4.33
7528	Off-line data processing equipment.	8,358	1,793,374	0.03	1.02	0.99
4242	Palm oil	1,091,180	1,500,634	3.58	0.85	-2.73
8482	Articles of clothing accessories	61,489	1,492,246	0.20	0.85	0.64
7712	Other electric power machinery	38,749	1,410,630	0.13	0.80	0.67
7788	Other electrical machinery and equipment	264,490	1,371,270	0.87	0.78	-0.09
8973	Jewellery of gold or silver	274,050	1,330,524	0.90	0.75	-0.14
8310	Travel goods and handbags	40,740	1,308,680	0.13	0.74	0.61
8211	Chairs and other seats and parts	31,156	1,286,372	0.10	0.73	0.63
8462	Under garments of cotton	151,607	1,253,061	0.50	0.71	0.21
7721	Electrical switches and relays	110,645	1,149,969	0.36	0.65	0.29
7523	Complete digital central processing	4,525	1,097,895	0.01	0.62	0.61
7621	Radio-broadcast receivers for motor	91,656	1,089,381	0.30	0.62	0.32
8423	Trousers of textile fabric	156,088	1,077,721	0.51	0.61	0.10
6342	Plywood consisting of sheets	509,364	1,060,208	1.67	0.60	-1.07
8429	Other outer garments of textiles	33,059	1,041,638	0.11	0.59	0.48
7415	Air conditioning machines	23,404	1,013,941	0.08	0.58	0.50
0372	Crustaceans, prepared	136,353	1,011,964	0.45	0.57	0.13
8942	Children s toys and indoor games.	201,670	994,062	0.66	0.56	-0.10
7731	Insulated electrical wire	34,624	974,509	0.11	0.55	0.44
7821	Motor vehicles for transport of goods	1,056	971,700	0.00	0.55	0.55
8441	Men's shirts of textile fabrics	222,075	861,982	0.73	0.49	-0.24
0371	Fish, prepared or preserved	252,257	836,694	0.83	0.47	-0.35
2483	Wood of non-coniferous species	741,446	733,705	2.43	0.42	-2.02
0422	Rice semi-milled or wholly milled,	241,410	704,146	0.79	0.40	-0.39
8720	Medical instruments and appliances	66,175	666,538	0.22	0.38	0.16

Appendix Table A7. Continued

SITC No.	Product Description	Export Value ($000) 1985	Export Value ($000) 2001	Share of Exports (%) 1985	Share of Exports (%) 2001	Export Share Change
7722	Printed circuits and parts thereof	36,216	660,175	0.12	0.37	0.26
5156	Hetero-cyclic compounds	73,169	657,173	0.24	0.37	0.13
7810	Passenger motor cars	420	653,452	0.00	0.37	0.37
0711	Coffee	502,431	650,369	1.65	0.37	-1.28
8435	Blouses of textile fabrics	175,212	598,441	0.58	0.34	-0.24
8465	Corsets and brassieres	61,335	595,571	0.20	0.34	0.14
0589	Fruit otherwise prepared	308,442	579,511	1.01	0.33	-0.68
7642	Microphones and loudspeakers	22,259	570,156	0.07	0.32	0.25
5157	Sulfa compounds	16	551,423	0.00	0.31	0.31
2871	Copper ores	78	522,705	0.00	0.30	0.30
8939	Miscellaneous articles	41,203	504,072	0.14	0.29	0.15
8811	Photographic cameras and parts	16,924	503,072	0.06	0.29	0.23
7768	Piezo-electric crystals	275,893	495,900	0.91	0.28	-0.62
4243	Coconut (copra) oil	511,278	495,091	1.68	0.28	-1.40
9710	Non-Monetary gold	36,387	486,554	0.12	0.28	0.16
8983	Gramophone records	30,440	481,246	0.10	0.27	0.17
5146	Oxygen-function compounds	20,061	472,182	0.07	0.27	0.20
8931	Articles for packing goods	37,858	466,676	0.12	0.26	0.14
7758	Electro-thermal appliances.	196,482	465,516	0.64	0.26	-0.38
8743	Measuring appliances	15,333	454,283	0.05	0.26	0.21
8710	Optical instruments and apparatus	6,034	447,768	0.02	0.25	0.23
6353	Builders' carpentry products	40,818	426,881	0.13	0.24	0.11
3222	Other coal	141	424,692	0.00	0.24	0.24
6514	Yarn of synthetic fiber	37,533	423,539	0.12	0.24	0.12
7849	Other parts of motor vehicles	33,288	423,097	0.11	0.24	0.13
6531	Woven synthetic fabrics	14,779	412,161	0.05	0.23	0.19
5823	Alkyds and other polyesters	919	395,646	0.00	0.22	0.22
8947	Other sporting goods	11,062	393,187	0.04	0.22	0.19
5989	Chemical products and preparations, nes	31,539	388,309	0.10	0.22	0.12
5154	Organic-sulfur compounds	434	372,990	0.00	0.21	0.21
6354	Manufactures of wood for domestic use	43,305	370,153	0.14	0.21	0.07
8851	Watches and watch movements	97,139	369,941	0.32	0.21	-0.11
7781	Batteries and accumulators	40,279	367,815	0.13	0.21	0.08
6612	Portland cement	34,700	360,741	0.11	0.20	0.09
7149	Parts of the engines & motors, nes	61,087	359,965	0.20	0.20	0.00
7162	Electric motors & generators	23,506	359,889	0.08	0.20	0.13
6672	Diamonds	47,471	357,218	0.16	0.20	0.05
0149	Other prepared or preserved meat	920	353,234	0.00	0.20	0.20
8748	Electrical measuring equipment	35,341	352,952	0.12	0.20	0.08
6974	Domestic use articles	5,194	344,395	0.02	0.20	0.18
8921	Books and pamphlets	47,817	334,606	0.16	0.19	0.03
8433	Women's dresses	54,719	332,814	0.18	0.19	0.01
6412	Printing paper	1,458	324,755	0.00	0.18	0.18
4244	Palm kernel oil	279,167	323,282	0.92	0.18	-0.73
5121	Alcohols	29,306	320,893	0.10	0.18	0.09
3344	Fuel oils, nes.	915,020	316,956	3.00	0.18	-2.82
2890	Ores of precious metals	2,328	312,334	0.01	0.18	0.17

Appendix Table A7. Continued

SITC No.	Product Description	Export Value ($000) 1985	Export Value ($000) 2001	Share of Exports (%) 1985	Share of Exports (%) 2001	Export Share Change
7512	Calculating machines	23,299	299,556	0.08	0.17	0.09
0980	Edible products and preparations nes	34,000	293,628	0.11	0.17	0.05
6415	Paper and paperboard	1,895	292,834	0.01	0.17	0.16
8996	Orthopedic appliances	1,763	288,129	0.01	0.16	0.16
8431	Coats and jackets of textile fabric	103,330	285,709	0.34	0.16	-0.18
7723	Electrical resistors	15,751	283,043	0.05	0.16	0.11
7518	Office machines nes	4,330	282,105	0.01	0.16	0.15

Source: UN COMTRADE statistics.