

Chapter V

Regional Trade Arrangement and Strategies of Multinationals: Implications of AFTA for Economic Integration

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1. Introduction

The world's economies, and particularly those in East Asia, have become increasingly integrated and interdependent. The distinct feature of the economic integration in East Asia, at least until the recent years, has been that it has progressed largely by economic force – synergies between dynamic comparative advantage and internationalization of production activities by multinationals – rather than through formalized regional integration arrangements.

An important development over the past few years, however, is a rapid proliferation of regional trade arrangements (RTAs). New initiatives include bilateral arrangements between New Zealand and Singapore, Singapore and Japan, Japan and Korea, and so forth. There have also been proposals to accelerate, link up or enlarge the existing arrangement, such as AFTA-CER linkage or ASEAN-plus-three. Despite increasing expectations for these RTAs to be building blocks for trade liberalization at global and APEC levels¹, the progress and features of the arrangements differ widely. There is a pressing need to study how the pre-existing as well as new initiatives are evolving, and how they might transform *de facto* economic integration in the Asia Pacific region.

ASEAN Free Trade Area (AFTA), one of the sub-regional trade arrangements in APEC and the only formalized one in East Asia, has been in place for nearly a decade. In

¹ A recent study by APEC Economic Committee (2000) points out that existing studies have found no evidence that regional agreements are a stumbling block toward multilateral trade liberalization (p.35), and that new regional initiatives, some of which go into deeper forms of integration not yet covered by the WTO negotiations, may even surpass multilateralism in terms of results (p.41).

January 1993, the ASEAN members² agreed to establish a free trade area, or AFTA, within fifteen years, under the Common Effective Preferential Tariff (CEPT) scheme. The tariff reduction schedule went through a number of revisions, with the inclusion of new members in Indochina and as an attempt to accelerate the overall timetable in response to the economic turbulence in the late 1990s.³ For the six original signatories to the agreement, the establishment of AFTA is currently scheduled to complete by 1 January 2003. In 1996, the members also agreed upon the ASEAN Industrial Cooperation (AICO) scheme, which offers qualified participating companies the benefits of 0 to 5 percent tariffs even before AFTA comes into effect.⁴

Traditionally, low complementarity of trade structures and low intensity of intra-regional trade had characterized the ASEAN economies. With the foreign direct investment (FDI) by multinationals from industrialized countries leading the region's economic development, the ASEAN members had been linked more closely with extra-regional economies than with their neighbors.

However, a number of recent studies suggest that trade linkages in ASEAN have been strengthened in the 1990s. They show that the share of intra-regional trade in the region's total trade has increased consistently through the 1990s, and that ASEAN economies in the 1990s have become significantly more closely integrated than in the 1980s.⁵ These findings point to closer integration of ASEAN economies in the 1990s, and raise the question of how AFTA, which has been in place since the early 1990s, has contributed to the stronger economic linkages within ASEAN.

This study examines the evolving patterns of ASEAN's economic linkages within the region and with major economic partners in APEC, and the extent to which AFTA has contributed to the strengthening of intra-regional linkages in the 1990s. The author will focus specifically on the impact of AFTA on strategies of multinationals, because they have been the major driver of *de facto* regional integration in East Asia, and particularly in ASEAN. Special emphasis will be on the difference in form and extent of specialization in major industrial sectors.

² ASEAN includes Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. Of the ten members, the original signatories to AFTA in 1993 include Brunei, Indonesia, Malaysia, the Philippines, Singapore, and Thailand. The remaining four acceded to AFTA in the late 1990s years when they obtained membership in ASEAN: Vietnam in 1995, Laos and Myanmar in 1997, and Cambodia in 1998.

³ For further details, see ASEAN Secretariat (1998a).

⁴ AICO privileges are granted to participating companies only upon satisfaction of eligibility criteria and approval of application by the respective national authorities. For further details of the scheme, see ASEAN Secretariat (1998b).

⁵ Section 2 discusses the contents of these studies in detail.

The rest of the paper is organized as follows. Section 2 analyzes how ASEAN's trade linkages have been strengthened and transformed in the 1990s. Section 3 analyzes the degree and forms of intra-regional integration in a number of key industrial sectors and how AFTA has contributed to the process, with a focus on strategies of multinationals. Section 4 provides the conclusion of the paper, focusing on the nature of economic integration in ASEAN and expected contribution of AFTA, as well as its implications for future strategic options for ASEAN and multinationals.

2. Evolution of ASEAN's Trade Linkages

Table 1 offers a brief summary of the status of ASEAN economies, in comparison with other major sub-regions in APEC. The members of ASEAN are basically developing countries, with the exception of Singapore and Brunei. The disparity of income levels among ASEAN members is pronounced, especially between the initial members and less developed new member economies in Indochina. The gap is much larger than that of NAFTA, which also includes both industrialized and developing countries. All of the ASEAN member economies are relatively small in size, and the total GDP of the region is much smaller than that of China or the total of East Asian NIEs.

With this background, we will analyze the nature and extent of ASEAN's trade linkages within the region and with major economic partners in APEC.

2.1 Direction of Trade and Trade Intensity

Table 2 provides the export and import matrices of ASEAN countries during the 1990s. It shows that the share of intra-regional exports as a percentage of the region's total exports increased consistently; it peaked in 1996 at 25 percent, and declined following the Asian financial crisis in 1997. The region's largest export market has been the US, absorbing around one-fifth of the region's total export value, while Japan's share in the region's total exports has decreased throughout the 1990s. On the other hand, ASEAN's share of the region's total imports, though lower in absolute level than the case of export, has increased throughout the 1990s. This reflects a large trade surplus recorded by ASEAN economies in 1998 and 1999 due to a sharp drop in imports and a steady increase in exports led by strong US demand. The single largest source of ASEAN's imports is Japan, followed by the US.

Table 1 Economic Indicators of ASEAN: Comparison with Major Sub-Regions in APEC (1998)

	Population	GDP	GDP per capita	Trade (US\$billion)	
	(million)	(US\$ billion)	(US\$)	Exports	Imports
Indonesia	203.7	94.2	462	50.4	31.9
Malaysia	22.2	72.5	3,265	72.0	54.5
Philippines	75.2	65.1	866	29.5	29.5
Singapore	3.2	84.4	26,368	110.4	95.7
Thailand	61.2	111.3	1,819	52.7	36.5
Brunei	0.3	5.0	16,129	0.0	0.0
Vietnam	76.5	27.2	355	9.4	11.5
Lao PDR	5.0	1.3	252	0.3	0.5
Myanmar	44.5	-	-	1.2	2.5
Cambodia	11.5	2.9	250	0.7	1.1
ASEAN	503.3	463.8	250 ~ 26,368	326.5	263.7
ASEAN (APEC members only)	442.3	459.6	355 ~ 26,368	324.3	259.7
as the Share of APEC	18%	3%	-	13%	11%
Japan	126.4	3,783.0	29,929	374.0	251.7
as the Share of APEC	5%	24%	-	15%	10%
China	1,238.6	959.0	774	188.5	136.9
as the Share of APEC	50%	6%	-	8%	6%
East Asian NIEs	74.9	754.4	6,912 ~ 24,841	416.7	380.1
as the Share of APEC	3%	5%	-	17%	16%
CER	22.6	414.6	13,906 ~ 19,240	68.0	72.5
as the Share of APEC	1%	3%	-	3%	3%
NAFTA	396.4	9,204.5	4,107 ~ 30,449	1006.9	1247.2
as the Share of APEC	16%	58%	-	41%	51%
APEC Total	2,492.3	15,996.9	355 ~ 30,499	2475.6	2432.6

Source: World Bank (2000) *World Development Indicators 2000*. All figures for Taiwan and Vietnam's trade data from Asian Development Bank (2000) *Key Indicators of Developing Asian and Pacific Countries*.

Notes: Members included in regional groupings are as follows.

CER: Australia and New Zealand

East Asian NIEs: Korea Republic, Taiwan, Hong Kong (Singapore is included in ASEAN.)

NAFTA: Canada, USA, and Mexico

In view of the expansion of intra-regional trade, can we say ASEAN economies have come to trade intensively with each other? An analysis using the gravity model of international trade provides a statistical test as to whether the regional grouping has had any significant trade-promoting effect.⁶ Existing studies adopting the gravity approach have found that the trade promotion effect of AFTA has increased, both in extent and statistical significance, from the late 1980s or early 1990s to the mid- to late 1990s.⁷ Okuda (2000) found that the trade promotion effect of AFTA increased significantly between 1997 and 1998. This is because serious depreciation of local currencies encouraged the ASEAN economies to expand trade with each other, while the model also controlled for the effect of income plunge of ASEAN economies. The results of these studies provide statistical support that ASEAN economies increased integration, when conditions like economic size and geographical proximity are controlled for.

2.2 Structure of Comparative Advantage

Analysis of comparative advantage enables comparison of the trade structure of different countries, and offers useful insights into sectors which may expect further increase in trade as the result of regional trade liberalization.

Table 3 shows the dynamic changes in ASEAN economies' revealed comparative advantage (RCAX) and comparative disadvantage (RCAM) indices⁸ during the 1990s, using a commodity classification based on factor intensity of production.⁹ An emerging picture becomes clear; the region's trade structure is competitive rather than complementary. With the exception of Singapore, all of the member economies are developing countries, some of which are rapidly shifting their comparative advantage from agricultural products or labor-intensive manufactures to technology-intensive manufactures, at a varying speed.

⁶ The gravity model traditionally attempts to explain bilateral trade flows with basic variables such as the economic size of exporting and importing countries and distance between them. For further detail, see Okuda (1997).

⁷ See Okuda (1997), Okuda (1999), Okuda (2000), and Fujita (1999). Though the studies adopted models with different specifications and resulted in different values and statistical significance of the coefficient for AFTA dummy, all showed increased level and significance of the AFTA dummy through the 1990s.

⁸ RCA indices are calculated using the following formula: $RCA_{xih} = (X_{ih}/X_i)/(W_h/W)$, where RCA_{xih} is the RCA index of Country i in commodity h , X_{ih} is export of commodity h from Country i to the rest of the world, W_h is the world total of trade in commodity h , and W is the total world trade volume. If the RCA index is above unity, the country has comparative advantage in the commodity. Similar indices using import data are comparative disadvantage indices (RCAM).

⁹ For details of the classification, see **Appendix 1**.

All countries except for Singapore are intensive exporters of processed or unprocessed agricultural products. Indonesia, Philippines and Thailand have competitive edge in labor-intensive manufactures, though the extent of advantage has been diminishing in the Philippines and Thailand. Singapore, Malaysia, and recently the Philippines and Thailand have been gaining comparative advantage in technology-intensive manufactures, especially electric and electronic products. In fact, electric and electronic products accounted for over 50% of the Philippines' total exports, and over 30% of Malaysia and Singapore's total exports in 1998. None of the member economies have comparative advantage in any of the capital-intensive industries, except for Singapore's beverage and tobacco industries.

Most ASEAN members have comparative disadvantage in, i.e., are intensive importers of, technology-intensive products. In particular, the RCAM of Singapore, Malaysia, Philippines, and Thailand stand at high levels for electric and electronic products, while all of these countries are also intensive exporters of the same products. As will be suggested later in this section and the following section, a substantial portion of imports of electric and electronic products are likely to be components and semi-finished products that are to be processed or assembled in the importing country for subsequent export abroad. ASEAN countries except for Singapore also have comparative disadvantage industrial materials and capital-intensive manufactures.

2.3 Intra- and Extra-Regional Trade

So far we observed that intra-ASEAN trade linkages have strengthened despite the competitive trade structure of its members. Then, what has caused intra-regional trade to expand?

Table 4 shows the structure of intra-ASEAN trade by industry. For every ASEAN member, trade with Singapore plays a dominant role. Singapore's share of total exports ranges from just below 50 percent for the Philippines to over 70 percent for Malaysia. While this is due to the inclusion of re-exports in Singapore's export data, it clearly shows Singapore's role as an *entrepôt* – intermediating trade between ASEAN economies and the rest of the world. In terms of value, trade between Malaysia and Singapore clearly dominates intra-ASEAN trade. The two-way trade flows between these countries account for more than 40 percent of the total value of intra-regional trade.

Regarding industrial composition, intra-regional trade has become highly concentrated in a few sectors. Whereas the structure of intra-regional trade in 1992 was widely distributed across different industrial sectors, including chemicals, mineral fuels, and

agricultural materials, intra-regional trade in 1997/1998 was clearly dominated by electric and electronic products and industrial machinery. In particular, the share of trade in electric and electronic products involving Singapore, Malaysia, Thailand and the Philippines was often much higher than the average share for the exporting country's total exports, and the share increased rapidly throughout the 1990s.

Table 5 Trade Structure of ASEAN Countries by Level of Processing

(a) Exports		Unit: billion US\$								
ASEAN's exports to		ASEAN	CER	China	India	Japan	NIEs	USA	World	
Natural Resources	92	7.4	1.1	1.1	0.6	13.0	5.7	2.2	36.2	
	97	10.3	1.5	2.6	0.6	12.1	9.9	2.5	42.9	
Intermediate Products	92	14.8	1.2	1.5	0.6	6.4	6.9	7.0	50.8	
	97	32.3	2.1	4.7	2.5	10.3	14.0	11.8	101.4	
Consumer Non-durables	92	1.9	0.4	0.0	0.0	2.1	1.3	6.4	22.0	
	97	3.3	0.6	0.5	0.1	2.4	1.7	9.2	27.4	
Durables and Capital Goods	92	10.7	1.5	1.1	0.2	6.2	9.2	18.5	64.3	
	97	32.2	3.1	2.1	1.1	17.5	20.1	39.1	150.7	
Others	92	1.2	0.1	0.0	0.0	0.8	0.6	2.4	7.0	
	97	4.2	0.5	0.2	0.2	1.6	1.7	2.4	17.7	
Total	92	36.0	4.2	3.8	1.5	28.5	23.7	36.5	180.2	
	97	82.3	7.7	10.2	4.4	43.9	47.4	65.0	340.1	

(b) Imports		Unit: billion US\$								
ASEAN's imports from		ASEAN	CER	China	India	Japan	NIEs	USA	World	
Natural Resources	92	7.7	1.6	1.4	0.5	0.4	1.0	1.3	25.4	
	97	9.8	2.8	1.3	0.9	0.4	1.1	2.0	38.8	
Intermediate Products	92	13.3	2.6	2.3	0.8	21.7	13.1	13.1	85.3	
	97	26.1	4.1	5.9	1.7	34.8	17.8	28.6	153.9	
Consumer Non-durables	92	2.0	0.8	0.6	0.1	0.4	0.8	1.0	7.7	
	97	2.7	1.3	0.8	0.3	0.5	1.3	2.2	12.9	
Durables and Capital Goods	92	10.8	0.6	1.0	0.1	23.2	8.9	12.8	70.5	
	97	28.0	1.2	4.3	0.4	36.1	18.0	23.3	138.5	
Others	92	0.8	0.3	0.1	0.0	1.0	1.0	1.3	6.3	
	97	2.9	0.4	0.2	0.1	1.1	1.3	1.1	8.9	
Total	92	34.5	5.9	5.4	1.5	46.8	24.9	29.5	195.2	
	97	69.4	9.9	12.6	3.3	72.8	39.4	57.2	353.1	

Data sources: IDE-AIDXT (1992); United Nations, COMTRADE on CD-ROM 1994-98 (1997).

Notes:

- (1) Since AIDXT does not provide Taiwan's trade data for 1992, they were substituted by Taiwan's trade data for 1994 from United Nations, COMTRADE on CD-ROM 1994-98.
- (2) Since Singapore does not report its trade with Indonesia, they were substituted by data reported by Indonesia.
- (3) For commodity classification, see Appendix 2.
- (4) ASEAN includes only those members for which data were available, i.e., Indonesia, Malaysia, Philippines, Singapore, and Thailand. 1997 figures also include trade of these countries with Vietnam where data were available.

In view of such a rapid increase in trade within a limited number of manufacturing sectors, an interesting question arises concerning which stages of production processes individual member economies are engaged in. A number of recent studies that shed light on the dynamic nature of trade in ASEAN, or more generally in East Asia, partly inspired this investigation. Menon (1996) showed the growing importance of intra-industry trade in ASEAN in the 1980s, and he argued that the most significant underlying factor was the globalization of production processes of multinationals. Ng and Yeats (1999) showed that trade in components has led the dynamic growth of East Asian trade, with the assembly operations increasingly migrating to low-wage countries, while high-wage countries like Japan, Singapore, and Taiwan increasingly specialize in the manufacture of components.¹⁰

In this study, the author attempted to show the structure of ASEAN's intra- and extra-regional trade classified by the level of processing, rather than providing measurements of intra-industry trade or limiting the discussion to the value of trade in components. **Appendix 2** explains the details of the commodity classification developed by the author.

Table 5 shows trade structure of ASEAN countries within the region and with major external trade partners classified by the stage of processing: unprocessed natural resources, intermediate goods, consumer non-durables, durables and capital goods, and others.¹¹ A number of interesting observations can be made from the table.

- (1) The fastest growth in both ASEAN's exports and imports has occurred in intermediate goods and durables and capital goods.
- (2) Around 40 percent of intra-ASEAN trade consists of intermediate goods – parts, semi-processed materials, and so on. The share did not change much between 1992 and 1997. A rapid increase of intra-ASEAN trade in durables and capital goods is observed between 1992 and 1997, but this should be interpreted with caution. Since the figures do not exclude Singapore's re-exports, due to the data constraints,¹² a substantial portion of intra-ASEAN trade in durables and capital goods may actually be re-exported through Singapore to markets outside ASEAN.
- (3) Japan is the single most important source of intermediate goods and durables and

¹⁰ This phenomenon was referred to as 'production sharing' (Ng and Yeats 1999). Hummels, Rapoport and Yi (1998) emphasized the increasing importance of vertical specialization in international trade using empirical case studies and input-output tables.

¹¹ The author did not distinguish between durables and capital goods, since both were 'final' products in terms of the 'level of processing.'

¹² The databases used by the author (United Nations, COMTRADE on CD-ROM 1994-98 for the year 1997 and IDE-AIDXT for the year 1992) do not provide separate figures for Singapore domestic exports and re-exports.

capital equipment for ASEAN, followed by the US and East Asian NIEs.¹³

- (4) The US is by far the largest export market of durables and capital goods produced in ASEAN, followed by East Asian NIEs. While natural resources dominated ASEAN's exports to Japan in 1992, Japan had become an important export market for durables and capital goods by 1997.
- (5) Though ASEAN's trade with China and India still remains limited in terms of the absolute level, ASEAN's trade with these countries mainly consists of intermediate goods.

These findings imply that ASEAN has reduced its dependence on Japan for sourcing of intermediate goods and has developed intra-regional division of labor in which intermediate goods are increasingly sourced from within the region, while much of the final products are exported to the US, East Asian NIEs, and Japan.

3. The Impact of AFTA on Strategies of Multinationals and Economic Integration in Major Sectors

The previous section described the distinct pattern of trade linkages that have emerged in ASEAN – trade within a few limited industries, especially in electric and electronic sectors, increasingly involving intermediate products. What has determined the nature of intra-regional division of labor in these sectors, and has AFTA played any role in promoting intra-regional integration? In other sectors, what factors explain the slow progress of integration? Is AFTA expected to enhance the extent of integration in these sectors in the future?

In order to answer these questions, we will examine how multinationals have shaped the patterns of integration in major industrial sectors, and how AFTA has affected their strategies. We focus on strategies of multinationals because of their prime importance in industrialization and trade linkages in ASEAN.

3.1 Foreign Direct Investment by Multinationals in ASEAN

Existing researches well document the critical role of foreign direct investment (FDI) by multinationals in trade linkages and economic development of ASEAN countries.¹⁴

¹³ 'East Asian NIEs' refer to Taiwan, South Korea and Hong Kong. Singapore is included in ASEAN.

¹⁴ See Dobson and Chia (1997) (eds.), for an extensive survey of the strategies of multinationals in East Asia including ASEAN. Athukorala and Menon (1997) also provide a brief historical overview of FDI-trade linkages in ASEAN.

Whereas Singapore has attracted substantial export-oriented FDI since the 1960s with its liberal investment policies, FDI flows into the ASEAN-4 (Malaysia, Thailand, Indonesia, and the Philippines) were mostly in import-substituting sectors up until the 1970s due to the high levels of tariffs and other trade restrictions. A remarkable increase in FDI took place in the late 1980s, which is largely attributed to the currency realignment following the 1985 Plaza Accord and liberalization of FDI policies by the ASEAN-4 economies to promote export-oriented industrialization. Because of the shift in policies, FDI flows became increasingly export-oriented and motivated by differences in comparative advantage between the home and host economies. By the early 1990s, foreign firms accounted for more than half of manufactured exports from the Philippines and Thailand, and over 80 percent from Singapore and Malaysia (Athukorala and Menon 1997, p.167).

FDI inflows into ASEAN economies increased further into the early to mid-1990s, as shown in **Table 6**. The table also shows the negative impact the Asian currency crisis in the late 1990s had on FDI, including those not directly hit by the crisis. The sharpest decline occurred in Indonesia, which has recorded a negative figure since 1998, followed by Malaysia, Philippines, and Vietnam. On the other hand, FDI into Thailand and Singapore has remained relatively stable.¹⁵ This implies that multinationals have become much more selective in making investment location decisions within ASEAN since the late 1990s.

Table 6 Direct Investment Inflows in ASEAN

Unit: million US\$

Country	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Indonesia	576	682	1,093	1,482	1,777	2,004	2,109	4,346	6,194	4,677	-356	-2,745
Malaysia	719	1,668	2,332	3,998	5,183	5,006	4,342	4,178	5,078	5,137	2,163	1,553
Philippines	936	563	530	544	228	1,238	1,591	1,478	1,517	1,222	2,287	573
Singapore	3,655	2,887	5,575	4,887	2,204	4,686	8,550	7,206	8,984	8,085	5,493	6,984
Thailand	1,105	1,775	2,444	2,014	2,113	1,804	1,366	2,068	2,336	3,895	7,315	6,213
Vietnam	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1,936	2,349	2,455	2,745	1,972	1,609
Cambodia	n.a.	n.a.	n.a.	n.a.	33	54	69	151	294	204	121	126
Lao PDR	2	4	6	7	8	30	59	95	160	n.a.	n.a.	n.a.

Source: IMF (Various years) *International Financial Statistics*, Washington, DC: IMF, except for Vietnam, whose figures are based on UNCTAD, *World Investment Report 2000*, New York and Geneva: United Nations.

¹⁵ A remarkable increase in FDI inflows into Thailand between 1997 and 1998 was rather exceptional, since it was largely due to an increase in mergers and acquisitions (M&As) of local companies in financial and other service sectors by U.S. and European multinationals (JETRO

While the sectoral composition of FDI has varied considerably across countries, all of the major ASEAN economies have attracted substantial FDI in the electric and electronics industry in the 1990s. Its share of the number of approved FDI projects in manufacturing between 1992 and 1998 totaled 18 percent in Indonesia, 31 percent in Malaysia, 15 percent in the Philippines, 40 percent in Singapore, and 26 percent in Thailand.¹⁶ Other prominent FDI-led industries in ASEAN include capital-intensive sectors like chemical, automobile, and petroleum industries, while countries like the Philippines and Indonesia have also attracted substantial FDI inflows in labor-intensive manufacturing.

3.2 Implications of a Regional Trade Arrangement for Strategies of Multinationals

The economic effects of a RTA have static and dynamic aspects. The static perspective emphasized in traditional economic theory refers to short-term effects of trade creation or diversion resulting from changes in relative prices. On the other hand, a dynamic perspective is related to medium- and long-term implications of regional integration, and the importance of dynamic effects in the context of AFTA has been emphasized in existing researches.¹⁷ The dynamic perspective offers useful insights into the effect of a RTA on foreign investment and strategies of multinationals, which are summarized into the following three aspects.

The first aspect relates to the effects of market enlargement. Trade liberalization at regional level enables multinationals and local companies, which had operated under the domestic demand constraint, to operate at a larger capacity and to exploit economies of scale. The enlarged market may also attract potential investors that did not have a production base in the region before the formation of a regional trade arrangement.

The second aspect is promotion of specialization within the region. A RTA may promote member countries to specialize in manufacturing products for which they have comparative advantage, and this type of specialization increases inter-industry trade within the region. Specialization may also take place within the industry, typically when multinationals allocate different stages of the production process according to

2000b, pp.184-186).

¹⁶ Based on the author's calculation using data provided by ASEAN Secretariat (1999). 'Electric and electronics' industry is the total of office, accounting and computing machinery (ISIC 30), electrical machinery and apparatus (ISIC 31), and radio, television and communication equipment and apparatus (ISIC 32).

¹⁷ A number of analyses based on econometric modeling found that the static trade creation effect of AFTA is positive yet not significantly large (Imada, 1995; Ramasamy, 1995). For researches that emphasize the importance of dynamic effects in the context of AFTA, see Pelkmans and Balaoing (1998) and Plummer (1997).

comparative advantage. This type of specialization increases intra-industry and often intra-firm trade within the region.

The third aspect refers to the competitiveness effect. As liberalization increases competition within the region, inefficient enterprises and plants that have survived due to protection will find it difficult to compete, while efficient and competitive ones will gain from increased business opportunities. This implies competitiveness of the region as a whole is enhanced, though it is often accompanied by certain adjustment costs.

In addition to the above three aspects, especially for multinationals with more than one subsidiary in the region, closer integration of the regional operation may require substantial regional coordination, in terms of logistics, sales and marketing, research and development, financial control, and so on.

3.3 Industry- and Firm-Level Evidence – Has AFTA made a difference?

In this sub-section, we will examine how multinationals have shaped the patterns of integration and how AFTA has affected their strategies in ASEAN. We will focus on three major industries, namely electric and electronic industry, automobiles and auto components, food and consumer (mainly chemical) products. Electric and electronics industry was selected because of intensive intra-regional linkages. The other two industries represent sectors with limited intra-regional integration as observed in the analysis of trade data in the previous section, but each possesses different characteristics that will likely influence the nature of intra-regional specialization and division of labor. The automobile industry used to be a typical import substitution industry, yet the industry is increasingly characterized by global competition in terms rationalization of production and technological development. Since production of automobiles requires a large number of components, the industry has also developed extensive and sophisticated division of labor and production networks. Food and consumer products are also selected as an import-substituting sector targeting the local market, yet its characteristics differ from the automotive industry as follows: (1) the localized nature of the products, in the sense that customers' preferences tend to be influenced by local culture and customs; (2) marketing is considered of prime importance in business strategy, while there is less room for differentiation in terms of technology and (3) much smaller number of inputs (materials or components) which implies the division of labor is likely to be less sophisticated.

The analysis will be based mainly on in-depth interview surveys with six Japanese manufacturing multinationals conducted by the author. While the approach adopted in this study provides the advantage of enabling comparison of the patterns of integration across different sectors,¹⁸ time and other constraints obviously make it difficult to cover a sufficiently large sample of multinationals. For this reason, the research is exploratory rather than explanatory, with the aim of identifying factors that promote or constrain potential economic gains from AFTA.

The author carefully selected multinationals that are likely to face tremendous pressure to adjust their operations towards AFTA. The criteria applied to multinationals to be interviewed included: (1) the multinationals should have subsidiaries in a significant number of the ASEAN member economies, and (2) they should have a long history of operations in the ASEAN region. In addition, the author made attempts to compare the cases of the interviewed multinationals with those of their major competitors, e.g., U.S. and European multinationals, especially the new entrants into ASEAN, using information provided by various published materials.

The interviews were conducted between September and December 2000, with either the head offices in Tokyo or the regional headquarters in Singapore. **Table 7** summarizes the profiles of the multinationals interviewed, in comparison with that of their major competitors in the respective industry.

3.3.1 Electric and Electronic Industry

The electric and electronics sector led the export growth of the ASEAN region as a whole in the 1990s, and the sector also produced the greatest expansion of intra-ASEAN trade. As **Table 8** shows, intra-regional trade in the electric and electronics sector consists largely of trade in components. This contrasts with exports to industrialized countries, especially the U.S., which are made up mainly of final products. The intra- and extra-regional trade linkages in electronics are closely related to procurement and sales networks developed by multinationals. As illustrated by the surveys and case studies in Dobson (1997), leading electronics multinationals have shifted different stages of their operations to countries in East Asia, with the location choice largely based on factor endowments and government policies of the host countries. These multinationals engage in substantial intra-regional trade, much of which is also intra-firm.

¹⁸ Most of the existing studies have either analyzed the impact of AFTA on investment in general (for instance, Athukorala and Menon (1997)) or focused on a specific industry and/or a country (Aldaba (2000), for instance, focused on the Philippine automotive industry).

In examining the impact of AFTA, however, we need to distinguish between export-oriented and import-substituting segments, because they exhibit strikingly different levels of integration. Though the boundary between the two is not clear-cut, the production of information and telecommunication equipment and electronic devices¹⁹ tends to be highly export-oriented. On the other hand, the production of consumer electronics could be either export-oriented or import-substituting, depending on the products and strategies of the multinationals.²⁰ While many of the large Japanese multinationals are involved in all the major segments, they tend to concentrate in consumer electronics, which have a relatively low export propensity. On the other hand, the US multinationals tend to specialize in information and telecommunication products and electronic devices, for which export ratios tend to be much higher.²¹

Table 8 ASEAN's Trade in Electric and Electronic Products (1992/1997)

Unit: million US\$

Partner		Exports			Imports		
		Components	Final Products	Total	Components	Final Products	Total
ASEAN (intra-Regional)	92	4,525	6,026	10,551	11,815	4,173	7,642
	97	12,966	22,921	35,887	33,451	11,549	21,902
CER	92	177	1,484	1,661	423	105	317
	97	398	2,090	2,488	596	176	419
China	92	31	110	141	358	65	293
	97	1,049	686	1,735	3,796	1,572	2,224
India	92	37	117	154	56	22	34
	97	315	645	959	315	137	179
Japan	92	929	2,893	3,821	13,538	4,451	9,087
	97	2,649	11,731	14,379	25,554	10,162	15,392
NIEs	92	703	3,093	3,796	7,497	2,461	5,036
	97	3,253	15,720	18,973	16,335	4,304	12,031
USA	92	3,220	14,672	17,891	7,647	3,842	3,805
	97	6,695	34,084	40,779	23,320	13,195	10,125
World	92	11,518	41,736	53,254	44,818	16,144	28,674
	97	33,830	114,876	148,705	118,726	46,203	72,523

Data Source: Same as Table 5

Note: For commodity classification, see Appendix 2.

¹⁹ Information and telecommunication equipment consists of computers, peripherals, and their components; electronic devices include semiconductors and integrated circuits.

²⁰ Audio-visual products are often produced for export in large quantities in a low-cost country because they are standardized products. On the other hand, electric household appliances such as washing machines, refrigerators and air conditioners tend to be sold in the country where they are manufactured, since they are often localized to suit the climate or customs of the country.

²¹ See Wong (1998) and Chia and Dobson (1997). Both of them describe the strengths of US, European, and Japanese multinationals based on observation of their operations in Singapore, but they seem to reflect the multinationals' relative competitive positions at regional and global levels (Chia and Dobson, *ibid.*, p.255).

Export-oriented segments seem to have been the leading forces behind the expansion of East Asian trade in electronics in the 1990s.²² However, it is unlikely AFTA has had an impact on the strategy of multinationals. First, since the ASEAN market for these products is not yet mature and a large portion of the final products is being exported to the markets in industrialized countries, the market enlargement effect of AFTA is not significant. Second, tariffs for products in these segments were reduced significantly in the mid to late 1990s on an MFN basis, partly due to the WTO's Information Technology Agreement (ITA)²³, so AFTA would not make any difference to the tariff levels of these products anyway. Third, AFTA's impact on promoting regional sourcing is also small because most of the manufacturers producing for exports have already been granted tariff exemption from the authorities of each country.²⁴

In the import-substituting segments, however, the impact of AFTA is likely to be more intense. This is particularly the case for subsidiaries of multinationals established when the government of the respective country was following an import substitution industrialization policy. These subsidiaries, which are unique to Japanese multinationals, typically produce a wide range of household appliances such as washing machines and refrigerators for the local market. They have enjoyed high levels of tariff protection, and tariff reduction to 0-5 percent under AFTA will likely pose a significant challenge for them.

Of the multinationals interviewed by the author, Companies A and B were both manufacturers of a wide range of electric and electronic products, for both exports and domestic market. We will discuss how the two companies are restructuring their operations in ASEAN, and if AFTA has played a role in it.

Company A has a long history of operations in ASEAN since the 1960s. The company has numerous manufacturing subsidiaries in Singapore, Malaysia, Thailand,

²² JETRO (2000a) shows the remarkable growth of trade in information technology (IT) products (defined to include computers and peripherals, office equipment, telecommunication equipment, and semiconductors and electronic components) in East Asia.

²³ Concluded at the Singapore Ministerial Conference of WTO in December 1996, ITA is a mechanism for reducing tariffs on information technology products. Under the agreement, tariff reduction was scheduled to take place in four stages between July 1997 and January 2000. Initial members included Indonesia and Singapore, and Malaysia, Thailand, and the Philippines became participants in subsequent years.

²⁴ A large number of multinationals, especially in electronics, have manufacturing bases in export processing zones, where they can import materials and components duty-free. Chia and Dobson (1997) points out that the high export ratio of the electronics industry is partly explained by the promotion of FDI in electronics in export-processing zones following the transition in trade and industrial policies from import substitution to export orientation in ASEAN countries.

Indonesia, Philippines and Vietnam, as well as a regional support office in Singapore. The Singapore office has regional support functions including sales, finance, logistics, training, and R&D in the Asian region, which covers ASEAN, Taiwan, Australia and New Zealand, and India.

Around 1996 to 1997, the company launched a plan to significantly restructure its ASEAN operations in order to promote specialization and economies of scale and to meet the changes in the business environment following the formation of AFTA. The basic idea is that each country should specialize in manufacturing certain products or product lines, which are largely determined by production costs and the local contents ratio.

Table 9 Company A's Subsidiaries Manufacturing Consumer Electronic Products

Country	Subsidiary	Yr of Est	Major Products
Thailand	A	1979	Washing machines, refrigerators, etc.
	B	1996	Car audios
	C	1998	TV sets
Singapore	D	1972	Air conditioners
	E	1977	Stereos
Malaysia	F	1965	TV, washing machines, refrigerators, etc.
	G	1972	Air conditioners
	H	1987	Air conditioners
	I	1988	TV sets
	J	1989	Air conditioners
	K	1990	Radio cassettes etc.
Philippines	L	1967	TV sets, refrigerators, washing machines, etc.
Indonesia	M	1970	TV sets, radio cassettes, refrigerators, washing machines, etc.
Vietnam	N	n.a.	TV sets, audio products

Source: Information provided at the interview.

However, the progress of restructuring differed considerably across products. **Table 9** shows the locations of Company A's subsidiaries manufacturing consumer electronics products. The fastest restructuring progress is observed in the audio products segment. The production of low-end products is concentrated in Indonesia, higher-end products in Malaysia, and the most sophisticated products in Singapore. The Asian currency crisis and the increasing competitive pressure to reduce costs are cited as the reasons for the rapid progress in restructuring. Especially, the serious depreciation of the Indonesian rupiah significantly increased competitiveness of exports from Indonesia, and promoted rapid relocation of lower-end production processes from Malaysia and Singapore. In turn, higher-end production processes were relocated from Japan to Malaysia. In this segment, the products were standardized yet differentiated by price and technological

standards. Thus, the reallocation of production processes did not prove to be difficult. On the other hand, the import-substituting segment has not achieved much restructuring. For instance, the company still has subsidiaries manufacturing refrigerators and washing machines in Malaysia, Thailand, Indonesia and the Philippines. The main obstacles in restructuring these subsidiaries, as cited in the interview, are: (1) the high degree of localization of these products, (2) the difficulties expected in shutting down or scaling down the operations in certain countries, and (3) the conflict of interests among subsidiaries, most of which are joint ventures with local companies.

Company B also has manufacturing subsidiaries in Singapore, Malaysia, Thailand, the Philippines, Indonesia and Vietnam, producing consumer electronics, information and telecommunication equipment, and electronic devices.

The company had not made concrete plans for restructuring its ASEAN operations at the time of the interview. Still, the export-oriented segments are fairly concentrated – computers and peripherals are manufactured in the Philippines, and semiconductors in Malaysia and Thailand. In contrast, production bases of consumer electronics for local markets are still dispersed throughout the region. It has subsidiaries producing television sets in Thailand, Singapore, Indonesia and Vietnam. Although the Singapore subsidiary specializes in producing high-end products and the Indonesian subsidiary in mass production of lower end products for exports outside the region, the factories in Thailand and Vietnam are operating at inefficiently small scales mainly for the domestic market. Although they expressed concerns that their market share in Thailand and Vietnam may decrease when tariff reduction under AFTA completes in 2003 (Thailand) and 2006 (Vietnam), drastic restructuring was not a likely option. The main reason cited was that shutting down of factories was not a possible option because of its costs as well as the risk that it would harm the long-term relationship with the government of the host country.

In short, ASEAN's electric and electronics industry is highly integrated both internally and externally, though the progress of integration has been observed mainly in the export-oriented segments. AFTA, however, contributed very little to the progress of integration in these highly liberalized segments. Since US multinationals have specialized almost exclusively in these segments, their strategies were not affected by AFTA. The impact of AFTA is more likely in the import-substituting segments within consumer electronics, in which only Japanese multinationals have a significant presence, though restructuring of regional operations has made little progress so far.

3.3.2 Automobiles and Auto Components

The automotive industry is perhaps the most frequently cited case study of ASEAN industrial cooperation. That is probably because the efforts given to advancing regional cooperation have encountered many obstacles in this sector – a typical import substitution industry fraught with strong protectionist tendencies. While Malaysia has developed local car manufacturers, Proton and Perodua, under the national car project, Thailand, Philippines, Indonesia²⁵ and Vietnam have built their auto industry by attracting foreign car and components manufacturers.

Within the framework of ASEAN, a number of initiatives to advance regional cooperation in the automobile industry have been attempted, but their results have been rather disappointing. For example, Brand-to-Brand Complementation (BBC) was introduced in 1988, and allowed auto assemblers to obtain privileges of a 50 percent tariff reduction for imports of components. BBC was succeeded by AICO in 1996, for which companies in any industry could apply. Although automobiles and automotive components are also subject to AFTA, tariff reduction in this sector has made little progress. In response to Malaysia's request to delay reducing automobile tariffs for two years from 2003 to 2005, ASEAN members set a protocol in November 2000 establishing the procedure for member countries to temporarily delay the tariff reduction schedule. It is not clear if Thailand, Indonesia and the Philippines will reduce their tariffs on automobiles and components to 5 percent by the year 2003, as originally planned. Reflecting this tariff situation, most of the car assemblers and components manufacturers currently utilize the AICO scheme.²⁶

Table 10 shows the structure of ASEAN's trade in automobiles and auto components. The value of trade in this sector is substantially smaller than in the electric and electronics industry discussed earlier. Though intra-ASEAN trade of components increased between 1992 and 1997, its share of the region's total import of components still remains minimal. The region still depends on Japan for much of its imports, both automobiles and auto components. In terms of exports, much of ASEAN's automotive export seems destined for markets outside the APEC region. In addition, around 80 percent of intra-ASEAN automobile exports are from Singapore, which does not have

²⁵ Indonesia also had a national car project, run by former president Soeharto's youngest son, but it was suspended in 1998 in line with economic reforms required by the International Monetary Fund in exchange for loans to Indonesia.

²⁶ According to the list of approved AICO applications provided by the ASEAN Secretariat, out of 70 projects approved as of 6 December 2000, 58 involved either automotive CKD pack or components.

car assembling capacity.²⁷ This implies that the majority of what is counted as intra-ASEAN exports is actually re-imports of cars produced outside the region and exported through Singapore. For some countries, the EU market seems to play a significant role: around 50 percent of passenger vehicles produced in Malaysia are exported to the UK, and around 50 percent of commercial vehicles produced in Thailand are exported to the EU.²⁸ Overall, the data seems to suggest that ASEAN's intra-regional and intra-APEC trade in automotive products is very limited, with the exception of the region's dependence on Japan for imports of components.

Table 10 ASEAN's Trade in Automobiles and Auto Components (1992/1997)

Unit: million US\$

Partner		Export			Import		
		Total	Auto	Component	Total	Auto	Component
ASEAN (intra-regional)	92	224	109	115	71	27	44
	97	695	267	428	348	134	215
CER	92	15	4	11	69	31	38
	97	141	114	27	81	38	43
China	92	10	3	7	14	3	11
	97	109	95	14	30	15	15
India	92	4	1	3	14	8	7
	97	23	1	23	27	15	13
Japan	92	38	2	36	4,269	2,569	1,700
	97	174	39	135	6,551	3,608	2,942
NIEs	92	68	25	43	182	104	78
	97	170	35	134	621	455	165
USA	92	69	1	68	226	100	126
	97	127	3	124	514	308	206
World	92	716	368	348	6,043	3,750	2,293
	97	2,420	1,210	1,210	10,171	5,947	4,223

Data Source: Same as Table 5.

Note: For commodity classification, see Appendix 2.

While these results are understandable in view of the limited progress in trade liberalization, is AFTA expected to enhance intra-regional integration in the future, and how? We will attempt to analyze these issues using the cases of Company C, an automobile assembler, and Company D, a components manufacturer.

Company C is an automobile assembler that has been operating in ASEAN since the 1990s. The company has manufacturing bases in Thailand, Indonesia, Malaysia,

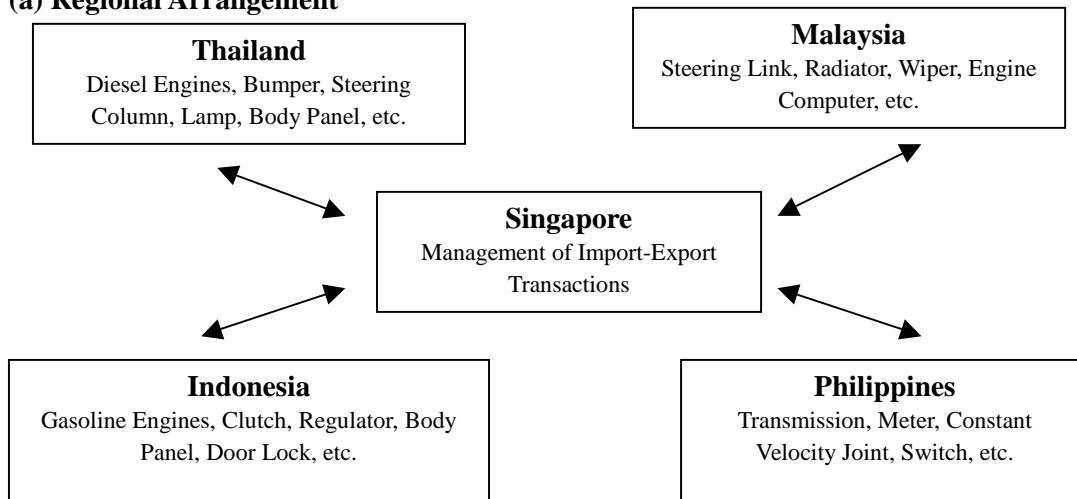
²⁷ Author's calculation using United Nations, COMTRADE on CD-ROM 1994-98.

²⁸ Author's calculation using United Nations, COMTRADE on CD-ROM 1994-98. For discussion on why Malaysia's automotive exports depend heavily on the UK market, see Fujita (1998).

Philippines and Vietnam, as well as a regional support office in Singapore to process regional complementation transactions and to coordinate production engineering, logistics and information systems.

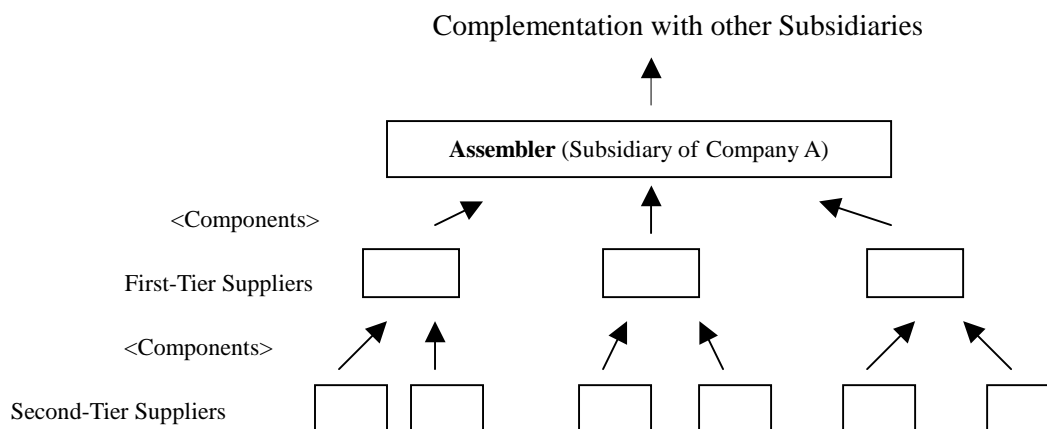
Figure 1
Complementation Scheme of Company A

(a) Regional Arrangement



Note: Components are directly transported between the manufacturing subsidiaries and not through Singapore. The Singapore regional headquarters acts as the intermediary only in terms of managing import-export transactions, logistics, and financial settlements.

(b) Arrangement within Each Country: Consolidated Purchasing of Components



Source: Material Supplied by Company A.

Facing regional integration in ASEAN, the company's strategy from around 1990 was to

develop a system of regional complementation of key components under the BBC scheme. That was succeeded by the AICO scheme in the late 1990s. Under the arrangement (**Figure 1**), the Indonesian subsidiary specializes in production of gasoline engines, the Thai subsidiary in diesel engines, the Philippine subsidiary in transmissions, and the Malaysian subsidiary in steering gears and electrical parts. Each subsidiary purchases components from suppliers in the respective country, makes a 'CKD (completely knocked down) kit' consisting of components manufactured in its own factory and purchased from suppliers, and the package is then exported to subsidiaries in other ASEAN countries for final assembly. This form of complementation is widely adopted by car assemblers utilizing the AICO scheme.

The reason why this form of complementation had to be adopted was because authorities of respective ASEAN member economies grant AICO privileges to companies fulfilling certain criteria.²⁹ One of the criteria is the sharing of resources among member economies, which implied each of the company's ASEAN subsidiaries involved in the AICO arrangement should be engaged in value-adding activities. Because of this condition, simple trading of completely-built-up-cars (CBUs) was not allowed as an AICO arrangement. Automotive assemblers, including Company C, proposed the scheme of consolidated purchasing of components from suppliers in the respective countries and regional complementation of CKD packages, in order to meet this requirement.

According to the interview, the regional division of labor was determined largely by industrial policies of each country during the history of their operation, such as localization requirements and incentive structure, rather than economic factors such as production costs or technological levels. Another important consideration was that they could not shut down or significantly reduce the size of operations in any country, which would inevitably lead to large-scale layoffs. The size of operations in each subsidiary has remained relatively stable, and currently each assembles cars mainly for the domestic market.³⁰ Though trade in CBUs was limited, intra- and extra regional trade in components increased rapidly in late 1990s – from 200 items in 1996 to 5,600

²⁹ The process of AICO approval was often a long and cumbersome process. A number of researches have pointed out problems in the implementation process of AICO, such as reluctance of some member countries fearing potential adverse impact of the projects on its own industry, inconsistency in interpretation of criteria, and the lack of transparency in the process of approval. See, for example, Legewie (2000).

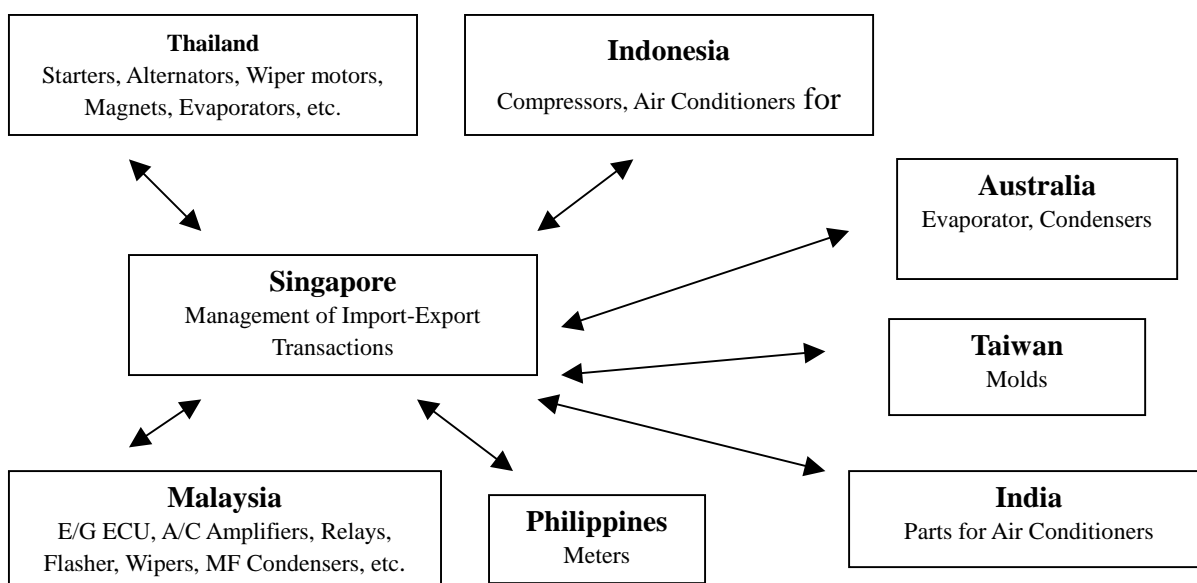
³⁰ Following the Asian currency crisis, the company's Thai subsidiary increased exports of cars to Australia and New Zealand. Still, the share of exports as a percentage of total sales was around 10 to 20 percent, and most of the sales were in the domestic market.

items in 1999.³¹

At the moment, the company is preparing for the reduction of tariffs for both CBUs and CKDs to 0-5 percent scheduled to take effect in 2003 for Indonesia, Thailand, and the Philippines, and 2005 for Malaysia. Although they basically take a 'wait-and-see' attitude due to the uncertainties regarding fulfillment of tariff reduction commitments, they regard it as inevitable in the long run. The company has begun considering a plan in which each ASEAN subsidiary would eventually specialize in assembling certain models of cars.³²

Company D is an automotive components manufacturer with factories in Thailand, Indonesia, Malaysia and Philippines; the earliest of which was established in the 1970s. It also has a regional support office in Singapore established in 1995. It mainly takes care of financial and logistics functions of regional complementation and procurement of materials for its operations in the Asian region, which not only covers ASEAN but Taiwan, India and Australia.

Figure 2 Complementation Scheme of Company B



Note: Components are directly transported between the manufacturing subsidiaries and not through Singapore. The Singapore regional headquarters acts as the intermediary only in terms of managing import-export transactions, logistics, and financial settlements.

Source: Material supplied by Company B.

³¹ Based on materials provided by the company.

³² The timing will depend not only on the progress of tariff reduction but also on the timing of changes in the models, which take place once every four to five years. This is due to the huge amount invested in production equipment and the years required for amortization.

The company has developed an arrangement of regional complementation of semi-finished components used to assemble finished components, again, to meet the criteria of resource sharing required by the AICO scheme³³ (**Figure 2**). Each subsidiary specializes in production of semi-finished components, which are exported to other regional subsidiaries to assemble finished components. For instance, its Thai subsidiary specializes in production of several components including starters and alternators, the Indonesian subsidiary in compressors, the Philippine subsidiary in meters, and Malaysian subsidiary in condensers. The division of labor seems to have evolved gradually while the company was expanding its operations in ASEAN, rather than as an overall restructuring of the regional operations.³⁴

The value of intra-firm trade in ASEAN increased significantly from 2.4 billion yen in 1997 to 4.9 billion yen in 1999, and the value is expected to increase to around 6 billion yen in 2000. In addition, the company exported components worth 3 billion yen to intra-regional destinations through assemblers in the respective country by using the system of consolidated purchase by assemblers mentioned in our previous discussion of Company C. However, intra-regional export is still small compared to the extra-regional export, which was expected to reach 10 billion yen in 2000.

The company is currently facing two major challenges, which arise from both AFTA and global changes. One is the challenge to meet the increasingly demanding cost and quality requirements from assemblers. The major assemblers in ASEAN – particularly the new entrants in the region like General Motors (GM) and their competitors – are adopting global sourcing strategy to boost competitiveness, and they started requesting world-class cost and quality standards from regional components manufacturers. In order to cut costs, the company has recently taken a bold measure to increase the local contents ratio.³⁵ The other challenge is to further restructure its ASEAN operations in order to meet the planned tariff reduction in 2003. The company plans to upgrade its complementation scheme to that of finished components in the coming years.

Japanese multinationals have played a dominant role in ASEAN's automotive industry for many years. However, recently, a number of important developments have been

³³ The company obtained AICO approvals for transactions between some countries, but otherwise AICO approval was not necessary since some ASEAN members had already reduced tariffs on certain components, either on MFN or CEPT (AFTA) basis.

³⁴ For example, of the five major components the Thai subsidiary focuses on, only three had previously been produced in other ASEAN subsidiaries and were restructured for intensive production in Thailand. The other two were manufactured in Thailand right from the beginning.

³⁵ The company regards the low local contents ratio as a major factor behind the high-cost structure of ASEAN operations, since imports of components and materials incur additional costs such as tariffs, transport costs, and risks of fluctuation in exchange rates.

observed among their competitors, which are transforming the dynamics of the auto industry in ASEAN. First, since new entrants could serve the whole region by investing in one location that enables the most efficient production, new investments have increasingly concentrated in Thailand, which has a solid base of automotive industry including the components manufacturers. In 2000, GM built an assembly plant in Thailand, with the majority of output to be exported abroad in order to support strong global demand. Ford established a joint venture with Mazda, its strategic partner, in Thailand in 1998, and also established its own subsidiary in the Philippines in 1999. These large-scale investments by US multinationals, which target both regional and global market, have also attracted investments by US components manufacturers, which resulted in agglomeration of the automotive industry in Thailand. Second, AFTA is likely to bring a major shakeup to Malaysia's automotive industry, which has been dominated by national car manufacturers, Proton and Perodua, and local components suppliers that have depended on them. Even with two years of deferment, the tariff reduction for CBUs will likely have serious implications especially for Proton, unless drastic measures are taken to boost its competitiveness.³⁶ With its rather flexible approach, Perodua seems to be better positioned to tackle with the challenge.³⁷ While persistent protection has hindered intra-regional integration in the automotive sector, AFTA – coupled with increasing competition at global and regional levels – is finally starting to have a concrete impact on the strategies of multinationals and local companies. The initial positions of the companies is critical in determining the way they perceived the opportunities or challenges AFTA is likely to bring. Apart from the increases in intra-regional trade of automobiles and components resulting from tariff reduction, AFTA is expected to promote restructuring within the industry and enhance the competitiveness of the region's automotive industry as a whole, though at certain adjustment costs.

3.3.3 Food and Consumer Products

The food and consumer (chemical) products industry was selected as another import-substituting sector with features different from the automotive industry. Accordingly, though multinationals investing in these industries in ASEAN have

³⁶ Tyndall (2000) points out that collaboration with a global player is vital for Proton's survival after opening of the markets under AFTA.

³⁷ Perodua has obtained an AICO approval for complementation of components with the Indonesian subsidiary of Daihatsu, one of its stakeholders. The company also disclosed its vision to focus on providing CKD components to assemblers elsewhere in the region, rather than exporting vehicles alone (*New Straits Times*, August 9, 2000, p.23).

different motives,³⁸ we specifically focus on multinationals targeting the local market. Although the breadth of ‘food’ and ‘consumer (chemical) products’ as industrial classification makes it difficult to observe a coherent pattern of integration based on trade data, at least we know from Table 4 that intra-regional trade in processed food and chemical products has been generally limited. We focus our discussion on the potential economic effects of AFTA on strategies of multinationals, based on the cases of Companies E and F.

Company E is a manufacturer of seasoning and various processed food products, and has manufacturing subsidiaries in Thailand, Philippines, Malaysia, Indonesia and Vietnam. Basically the company has manufactured products using locally available resources and sold them in protected local markets, which meant that its subsidiaries have engaged in almost no intra- or extra-regional trade. The company adopts a highly localized marketing strategy and has extensive local sales networks.

The impact of AFTA on the company’s strategy is observed on both procurement and sales. On the procurement side, the company was starting to take advantage of tariff reduction under the CEPT scheme. Whereas the company previously sourced most materials locally, it is starting to purchase the necessary inputs from regional sources that offered the lowest price. The company recently introduced a system with which each subsidiary could monitor the prices of major primary commodities it purchases as inputs, such as tapioca, in each country. As for chemical ingredients, the company was planning to exert pressure on Thailand’s oligopolistic chemical companies by importing chemical ingredients from Indonesia at a lower price once tariffs on chemical products are reduced.

On the sales side, the effects of AFTA depended on the type of the product. In terms of seasoning, a standardized product, the company mentioned their vision to restructure their operations in ASEAN in the long run. There was a substantial difference among five ASEAN subsidiaries in terms of production costs, mainly due to the difference in prices of locally sourced inputs. When protection is dismantled, seasonings manufactured in higher-cost locations, namely the Philippines and Malaysia, will be expected to face difficulties competing with the same products imported at a lower price from Indonesia and Thailand.³⁹ The company had stopped making new investments in

³⁸ Another dominant type includes multinationals engaged in food processing using locally available materials, e.g. seafood, for export to market in industrialized countries. They will not be considered here, since AFTA is not likely to significant impact them.

³⁹ As the company had an established brand name in ASEAN markets, competition other firms producing the same seasoning was not their central concern. Instead, they were afraid of a situation in which their own subsidiaries in different ASEAN countries were competing with each other.

the Philippines and Malaysia, with a vision to concentrate their manufacturing operations in Indonesia and Thailand in the future. A major problem expected in the course of restructuring was that of coordinating the conflicting interests between the parent company in Japan and the subsidiaries in ASEAN, all of which were joint ventures with the parent company holding a minority stake.

On the other hand, regarding processed food such as instant noodles, another major product, the company did not have a plan to restructure their operations in ASEAN because these products were highly localized to meet the customs and tastes of consumers in each country, which differed considerably even within ASEAN.

AFTA is not likely to have an impact on the company's product development and marketing strategies since they are already highly localized. On the whole, the main problem in adjusting towards AFTA seems to be in coordinating the conflicting interests of subsidiaries to pursue the 'corporate' objective. Another concern for the company was rapidly growing Chinese companies manufacturing similar products. The interviewee mentioned not only the difficulties of competing in the Chinese market but also the risk that the company's established position in the ASEAN market may be threatened once they start exporting their products. This suggests the possibility that AFTA may be insufficient to protect the member economies from the competitive pressure from China, which in fact was one of the major motivations driving ASEAN economies to form AFTA.

Company F is a manufacturer of a wide range of consumer products, including shampoo, skin-care products, detergent, and sanitary napkins.⁴⁰ In the ASEAN region, these products are produced by subsidiaries in Thailand, Malaysia, Singapore, Indonesia and Vietnam. The oldest of these subsidiaries is in Thailand, and it was established in the 1960s. In the past, basically each subsidiary took care of manufacturing, sales and marketing activities in its respective country.

In response to AFTA, the company recently introduced the concept of 'regional strategy for ASEAN,' in which its ASEAN subsidiaries are managed with a coherent regional vision.⁴¹ As the initial step, a regional headquarters was established in 2000 in

⁴⁰ The company also produced industrial chemicals, which are both used within the company for manufacturing toiletry products and sold to other companies. Within ASEAN, production of industrial chemicals was concentrated in Malaysia and the Philippines, with the abundant and low-cost supply of palm oil, and their products were exported to worldwide destinations. Since AFTA was expected to have a limited impact on the industrial chemicals segment, the discussion in this paper will focus exclusively on the consumer products segments.

⁴¹ Besides ASEAN, 'China and Hong Kong', and 'Taiwan' also constituted independent regions within the company's business strategy. Each of the three regions, according to the company, could be treated as a single market due to the similarity of income levels and local climate.

Bangkok, which is in charge of product development, marketing, and coordination of manufacturing activities in the ASEAN region. Bangkok was chosen because the largest and the oldest manufacturing facility in the region is located there.

With the regional product development and marketing headquarter in Bangkok, the company's adjustment towards AFTA emphasizes horizontal specialization and market enlargement. In the long run, the company plans to restructure the manufacturing facilities, with the Thai facility focusing on production of shampoo and skin-care products and the Indonesian facility on production of detergents. Malaysia and Singapore, which also have production facilities, are regarded as markets rather than production bases in the long run. The reasons for such an arrangement are two-fold. First, the company needs to utilize large-scale production facilities, which required huge investments, in Indonesia and Thailand. Second, Malaysia and Singapore are considered attractive markets because of the relatively high levels of income and the rapid progress of tariff reduction.

The company, however, is less clear about the possibility of regional sourcing. The local procurement ratio of ASEAN subsidiaries was low to start with, with the large portion of chemical materials imported from Japan. In order to promote regional sourcing, the company considers it vital that the regional headquarters in Bangkok acquire research and development (R&D) capabilities, not simply product development. Though it is a possibility in the long run, it was not a priority.

The strategy of Company F is strongly influenced by strategies of its major competitors. Especially, Proctor and Gamble (P&G for short, a US multinational) and Unilever (an Anglo-Dutch multinational) have a great deal of experience in regionalized business strategies, and they have been quick to respond to the changes expected with the formation of AFTA. P&G announced a major adjustment towards AFTA in 1999, in which Thailand acts as the regional sourcing center for hair-care and skin-care products and the Philippines for laundry detergents and soap.⁴² Unilever also announced in September 1999 that it would realign its manufacturing facilities in ASEAN to prepare for AFTA.⁴³ The plan aimed to raise economies of scale by focusing on producing a certain product in a specific plant, based on consideration of tariffs, production costs, local expertise and manufacturing equipment.

While Company F, Unilever, and P&G seem to be moving towards horizontal specialization, a major difference between strategies of Company F and the other two is the extent of decentralization in decision making. While Unilever and P&G have

⁴² *The Nation*, Aug. 17, 1999.

⁴³ *The Nation*, Sep.23, 1999.

decentralized system of decision making at regional levels, Company F is yet to change its traditional centralized system by the head office. Since a regional strategy requires prompt and flexible decision making to be effective, Company F will likely have to make further adjustments to its regional operations to compete on a par with its global competitors in ASEAN.

3.4 What explains the different patterns of integration across sectors?

Our industry- and firm-level analysis showed that a well-developed intra-regional division of labor was observed only in export-oriented segments of the electric and electronics industry, though AFTA has had little impact on integration in these highly liberalized sectors. In other sectors, namely automotive and food/consumer products industries, intra-regional integration has been limited so far, mainly because substantial tariff reduction is yet to take place. Still, multinationals in these industries are gradually starting to adjust their operations towards the formation of AFTA.

Among the expected economic effects of AFTA, promotion of specialization was most readily observed in the strategies of multinationals. Some multinationals have started to source their inputs regionally or to promote complementation of components within the region. Others have started to consolidate their manufacturing activities with each facility focusing on specific products or product lines.

There are also signs that market enlargement and competitiveness effects will improve economic efficiency and competitiveness of industries in the long run. Although the current demand situation in most of the ASEAN economies is still on the road to recovery from the devastating impact of the economic crisis, multinationals still seem to be attracted by the long-term growth prospects of the region. Especially with the growing importance of the Chinese market to multinationals, AFTA is critical for the ASEAN economies to keep investments from shifting to China.

The competitiveness effect is particularly important for companies that have operated largely in protected domestic markets. Competitiveness will only be improved at the expense of certain adjustment costs, which is symbolized by the conflict between 'regional competitiveness' and 'national competitiveness' at industry level and 'corporate competitiveness' and 'competitiveness of subsidiaries' at the firm level. In globalized industries such as automotive and electronics, the synergy effects of AFTA and global competition are accelerating the process of industrial restructuring in the ASEAN region. AFTA is expected to be a major force in restructuring and raising competitiveness of protected and domestically oriented industries in ASEAN.

The above overall remarks notwithstanding, multinationals investing in the ASEAN

region were diverse – in terms of nationality, strategic orientation, and the nature of business in ASEAN – and so was the impact of AFTA on their strategies. Multinationals seem to have responded to AFTA according to different internal and external conditions, which can be summarized into the following factors.

First, the initial level of tariffs and progress in liberalization influenced companies' strategies. In the highly liberalized electric and electronic industry, AFTA did not make much difference to the tariff levels of the regional economies. In the automotive industry, the progress of tariff reduction is already behind the original schedule. Due to the slow progress of liberalization, multinationals inevitably had to rely on the AICO scheme, which only allowed complementation of components for assemblers and that of semi-finished components for components manufacturers.

Second, the nature of the industry and products constrained strategic options of multinationals. Regional export was a viable option for companies that produced standardized products, but not for those producing highly localized products that had to be adapted to the tastes and customs of specific markets. Regional sourcing was an attractive strategy for industries requiring a large number of components and materials that can be sourced from various locations within the region.

Third, the initial position of the multinational was also a vital factor. First, this factor determined how multinationals perceived AFTA. Whereas new entrants could exploit the advantage of expanded markets by concentrating their investments in a single country where lowest-cost production was possible, multinationals with multiple production bases that had targeted protected domestic market perceived AFTA largely as a challenge to their established position. Second, the initial allocation of FDI in the region critically influenced location and relocation decisions of multinationals. In restructuring their ASEAN operations, multinationals with multiple production bases put top priority on utilizing their existing facilities because of the enormous costs likely to be incurred in factory closure. In case they chose to reallocate production activities, the decision was likely to be based on previous accumulation of investment, where they can benefit from the strong presence of local and foreign suppliers (in the case of automotive industry) or where they have the largest facility and abundant supplies of local materials (in food and consumer products industry). Moreover, for new entrants, too, the most efficient location is also likely to be where previous accumulation of investments are located.

Fourth, strategies in ASEAN were also strongly influenced by the companies' global strategies and corporate orientation. On the whole, Japanese multinationals were more hesitant than Western multinationals to decentralize the decision-making process to the

regional headquarters or to carry out drastic restructuring including possible closure of factories, but there was a significant difference in attitude even among the six Japanese multinationals interviewed by the author. In some case, adjustment towards AFTA has resulted in the need to coordinate the conflicting interests of subsidiaries that are joint ventures with local companies to pursue the 'corporate' objective, which in turn requires an effective system to implement a regional strategy.

4. Conclusions

This paper has explored the nature and degree of economic integration in ASEAN, and examined the extent to which AFTA has contributed to strengthening intra-regional linkages, with a specific focus on strategies of multinationals.

Stronger intra-regional trade linkages in ASEAN in the 1990s were largely the result of *de facto* integration, led primarily by a few internationally integrated industries. The dominant form of integration in these sectors was vertical specialization, in which intermediate products, mainly components and semi-finished products, were traded within the region and final products were exported to extra-regional destinations. AFTA has contributed very little to integration of these relatively liberalized sectors.

Thus, the main contribution of AFTA to the member economies is that it will likely act as a catalyst to promoting economic efficiency in sectors that have been subject to protection and isolated from international integration in the past. Industry- and firm-level analysis showed that the impact of AFTA is starting to be observed in some industries, which so far has centered on attempts to develop specialization within the region. Further potential economic gains are expected in the long run from improvement of competitiveness as the result of regional competition and economies of scale from market enlargement, though the process is likely to incur certain adjustment costs, hesitation of certain member governments, and opposition from industries. This is because economic gains from regional trade liberalization are likely to be unevenly distributed. As discussed in the case studies, countries with the highest previous industrial accumulation, including foreign investments, are likely to attract substantial new investments as the result of market enlargement, which offers an even more attractive environment for new investors as well as existing ones. At the firm level, competitive subsidiaries (in the case of multinationals) or companies (in the case of local companies) are best positioned to gain from trade liberalization.

Despite the anticipated obstacles, there is a good reason why ASEAN countries should

seriously promote restructuring and international integration and raise the efficiency of the protected sectors. That is, it is extremely risky to solely rely on internationally integrated sectors to lead economic growth, in view of their heavy dependence on the US markets. Although ASEAN economies have been recovering from the Asian currency crisis largely by export-led economic growth, the long-term sustainability of such a strategy is doubtful, especially in view of the recent slowdown of the US economy. In this regard, the potential contribution of AFTA to promote efficiency of domestic- or regional-demand-led sectors should not be dismissed, though the process is likely to be a gradual one.

Apart from its internal effects, AFTA is also expected to be a means for ASEAN to explore stronger economic relationships with external economic partners and improve the region's international position. ASEAN economies are currently facing major competitive challenges, which provide the fundamental reasons for the region's sustained efforts to accelerate trade liberalization despite the expected difficulties. First and foremost, China has emerged as a major competitor for ASEAN in attracting FDI and export to third country markets. China has been rapidly shifting its comparative advantage from simple labor-intensive manufactures to technology-intensive manufactures. Second, regional trading arrangements in the Americas and Western, Central and Eastern Europe have also emerged as key manufacturing sites in industries like electronics, textiles, garments and automobiles. Third, with the increasing competitive pressure further advancing globalization and restructuring of major industries, multinationals increasingly regard ASEAN in the context of their wider regional or global strategies, and they are becoming increasingly selective in investments. In coping with these challenges, a viable approach for a group of small-sized developing and newly industrializing countries like ASEAN is to form a regional trade arrangement. This enables the member economies to improve the region's international bargaining position and improve its attractiveness for foreign investors, and to improve competitiveness of the region as a whole. The analysis of strategies of multinationals showed that multinationals keep their eyes on the ASEAN region as a whole, and multinationals are also considering areas where they can exploit intra- or extra-regional complementarity, which in effect will contribute to improving the region's competitiveness and strengthening its linkages with other regions. In today's globalized and competitive environment, the same objectives will probably be much more difficult to achieve when attempted by each member country independently. The discussion in this paper will have important implications for ASEAN as well as for multinationals investing in the region. For ASEAN, the first implication is that, in

order for potential economic gains to be realized, the priority should be on fulfilling the tariff reduction commitments according to the schedule. Especially in view of Malaysia's deferment of the tariff reduction schedule for CBUs, it is important to ensure that such requests do not proliferate in the future because that would seriously harm the credibility of AFTA and investors' confidence in the ASEAN region. Second, the region should ensure transparency in the AFTA process. Third, ASEAN should give consideration to less developed members in view of uneven economic gains, and perhaps explore possible areas for economic cooperation or complementarity within the region.

As for multinationals, a major implication lies on adjustment of their operations to regional trade arrangements including AFTA. Multinationals today are faced with enormous pressure to restructure their operations in the rapidly changing international environment – including the increasing trend towards regionalism. The Japanese multinationals interviewed in this study, all with established positions in ASEAN, have found themselves in a rather defensive position, and adjustment of their operations towards ASEAN has proven to be a complicated and difficult process. Furthermore, in order to be effective, a regional strategy is likely to require managerial and organizational capability to implement required measures promptly and flexibly, coordinating multiple subsidiaries under the 'corporate' objective. It still remains to be seen, however, how well Japanese multinationals will cope with this major challenge. In this regard, useful insights may be obtained from further research on the strategies of other multinationals in ASEAN, perhaps those of US or European multinationals that have more experience in regional strategies elsewhere and are rapidly adjusting their operations to benefit from AFTA.

Appendix 1 Commodity Classification by Industry

The commodity classification used in this study is basically the same as the classification used by Okuda (1997) and Fujita (1999), though it is based on Standard International Trade Classification (SITC) Revision 3 instead of Revision 1.

Trade values for each classification are calculated by subtracting the trade value of commodities under ‘- (minus)’ category from the trade value of commodities under ‘+ (plus)’ category.

Agricultural Products

A1	Crude Foodstuff	+	0, 0221, 025, 0611
		-	017, 02, 0253, 037, 046, 047, 048, 0564, 058, 059, 06, 07131, 0724, 073, 09
A2	Agricultural Materials	+	2, 4
		-	2461, 27, 28, 251
A3	Processed Food	+	017, 02,, 037, 046, 047, 048, 0564, 058, 059, 06, 07131, 0724, 073, 09
		-	0221, 025, 0611

Minerals

M1	Mineral Materials	+	27, 28, 68633, 68914
		-	28233, 2852
M2	Mineral Fuels	+	3
		-	3341, 3342, 3343, 3345, 3351,3352, 3353, 3354
M3	Petroleum Products	+	3341, 3342, 3343, 3345, 3351,3352, 3353, 3354
M4	Non-ferrous Metals	+	68, 6999
		-	68633, 68914

Labor-intensive Manufactures

L1	Textiles	+	65, 77585
		-	65893
L2	Clothing	+	84, 65893
		-	84821
L3	Leather and Footwear	+	61, 85
L4	Furniture and Wood Products	+	63, 82, 8724, 2461
L5	Rubber and Plastic Products	+	62, 57, 8933
L6	Miscellaneous Manufactures	+	81, 7633, 76382, 76383, 76384, 76499, 84821, 89, 9
		-	8933, 89122, 89123, 89124, 892

Capital-intensive Manufactures

C1	Beverage and Tobacco	+	1
C2	Pulp, Paper and Paper products	+	251, 64, 892
C3	Chemicals	+	5, 2852, 3352, 89122, 89123, 89124, 0253
		-	57
C4	Glass and Non-metal Products	+	66
C5	Iron and Steel	+	67, 28233
C6	Metal Products	+	69
		-	69751, 69781, 6999

Technology-intensive Manufactures

T1	Industrial Materials	+	69781, 71, 72, 73, 74, 75, 77512, 7753, 79191
		-	716, 7373, 74131, 74132, 74133, 74134, 74136, 7513, 7591
T2	Electric Machinery	+	716, 7373, 74131, 74132, 74133, 74134, 74136, 76, 77, 8746, 8747, 88112, 88113
		-	7633, 76382, 76383, 76384, 76499, 77512, 7753, 77585,
T3	Motor Vehicles	+	7812, 782, 7811, 783, 784, 7851
T4	Other Transport Equipment	+	78
		-	7812, 782, 7811, 783, 784, 7851, 79191
T5	Precision Instruments	+	7513, 7591, 87, 88
		-	8724, 8746, 8747, 88112, 88113

Appendix 2 Commodity Classification by Level of Processing

Whereas Ng and Yeats (1999) analyzed East Asian trade in parts and components for machinery and equipment, the author developed a commodity classification that embraces all traded commodities. The classification covers five categories: (1) natural resources (unprocessed crude materials and mineral fuels), (2) intermediate goods (industrial materials and components), (3) consumer non-durables (goods for direct consumption, non-durable manufactures), (4) durables and capital goods machinery (electric and electronic, industrial, and transport) and durable manufactures, excluding components), and (5) others (goods not classified above, including arms and ammunition, jewelry, etc.).

The following explains how each category roughly corresponds with the classification by industry provided in Appendix 1, and lists commodities (in SITC R3) included in each category.

Natural Resources

*Corresponding industries: A1, M2, M3

+	0, 0221, 025, 0611, 3, 4112, 4211, 4212, 4213, 4214, 42159, 4217
-	017, 02, 0253, 046, 047, 0564, 058, 059, 06, 07131, 02723, 0724, 073, 09, 3352

Intermediate Goods

* Corresponding industries: A2 (except for 22 oil seeds), M1, C1 (121 tobacco, unmanufactured), L1 (except 658 made-up articles of textiles), L3 (except 851 footwear), L4 (except 82 furniture), C2 (except 892 printed matter), C3 (except 553 perfumes), L5 (except 625 rubber tyres and tubes), C4 (except 666 pottery), C5, M4, C6 (except 695 tools, 696 cutlery, 697 base metal household equipment, nes), T1&T2&T3&T4 (components only), T5 (882 photo and cinema supplies), L6 (893 musical instruments and parts)

+	2, 3352, 4, 5, 61, 62, 64, .65, 66, 67, 68, 69, 7119, 7128, 71319, 7149, 7169, 71819, 71878, 71899, 72119, 72129, 72139, 72198, 72199, 7239, 72439, 72449, 72467, 72468, 7249, 7259, 72689, 7269, 72719, 72729, 72819, 72839, 7285, 735, 73719, 73739, 73749, 74128, 74135, 74139, 74149, 74159, 74172, 7419, 7429, 7438, 7439, 74419, 7449, 74519, 74529, 74539, 74568, 74593, 74597, 7469, 7479, 74839, 7489, 749, 759, 7649, 77129, 77238, 7728, 77549, 77579, 77585, 77589, 77629, 77688, 77689, 77817, 77819, 77829, 77833, 77835, 77848, 77869, 77879, 77883, 77885, 784, 78535, 78537, 78689, 79199, 7929, 848421, 8519, 87119, 87139, 87149, 87199, 87319, 87329, 87412, 87414, 87424, 87426, 87439, 87449, 87454, 87469, 87479, 8749, 88114, 88115, 88123, 88124, 88134, 88136, 882, 88422, 88599, 893
-	22, 2461, 4112, 4211, 4212, 4213, 4214, 42159, 4217, 553, 625, 658, 6652, 666, 695, 696, 697

Consumer Non-durables

* Corresponding industries: part of A2 (22 oil seeds), A3, C1 (except 121 tobacco, unmanufactured), L2, part of C2 (892 printed matter), part of C3 (553 perfumes and cosmetics), part of L6 (895 office and stationary supplies)

+	017, 02, 0253, 046, 047, 0564, 058, 059, 06, 07131, 02723, 0724, 073, 09, 11, 122, 22, 553, 658, 83, 84, 85, 892, 895
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-	0221, 025, 0661, 84821, 8519
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Durables and Capital Goods

* Corresponding industries: L4, part of L5 (625 rubber tyres), part of C6 (695, 696, 697), T1&T2&T3&T4 (excluding components), T4 (excluding 882and 883), part of T5, part of L6.

+	2461, 625, 63, 6652, 666, 695, 696, 697, 71, 72, 73, 74, 75, 76, 77, 78, 79, 81, 82, 87, 88, 894, 896, 898
-	7119, 7128, 71319, 7149, 7169, 71819, 71878, 71899, 72119, 72129, 72139, 72198, 72199, 7239, 72439, 72449, 72467, 72468, 7249, 7259, 72689, 7269, 72719, 72729, 72819, 72839, 7285, 735, 73719, 73739, 73749, 74128, 74135, 74139, 74149, 74159, 74172, 7419, 7429, 7438, 7439, 74419, 7449, 74519, 74529, 74539, 74568, 74593, 74597, 7469, 7479, 74839, 7489, 749, 759, 7649, 77129, 77238, 7728, 77549, 77579, 77585, 77589, 77629, 77688, 77689, 77817, 77819, 77829, 77833, 77835, 77848, 77869, 77879, 77883, 77885, 784, 78535, 78537, 78689, 79199, 7929, 848421, 8519, 87119, 87139, 87149, 87199, 87319, 87329, 87412, 87414, 87424, 87426, 87439, 87449, 87454, 87469, 87479, 8749, 88114, 88115, 88123, 88124, 88134, 88136, 882, 883, 88422, 88599

Others

+	883, 891, 897, 899, 9
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Section 3 of this paper also analyzes ASEAN's trade linkages for two major industries by levels of processing. The commodity classifications adopted are as follows.

Electric and Electronic Industry

Finished Products	75, 76, 77
Components	759, 7649, 77129, 77238, 7728, 77549, 77579, 77585, 77589, 77629, 77688, 77689, 77817, 77819, 77829, 77833, 77835, 77848, 77869, 77879, 77883, 77885

Automobile Industry

Automobiles	781, 782, 783
Components	784

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