

**30**

**The Changing Patterns of International Trade in East Asia**

Oct. 2006

Shujiro Urata

Professor, Graduate School of Asia-Pacific Studies

Waseda University

## I. Introduction

East Asian Economies have achieved remarkable economic growth in the last several decades, although they experienced several setbacks including a very serious crisis in the late 1990s. Rapid economic growth is attributable to various factors such as favorable macroeconomic management and availability of well-disciplined workers. Among them, foreign trade and foreign direct investment (FDI) are very important. As can be seen clearly from Figures 1 and 2, the importance of foreign trade and FDI in

1985=100  
Figure 1 Exports, FDI Inflows, and GDP in Developing East Asia (\$, 1985=100)

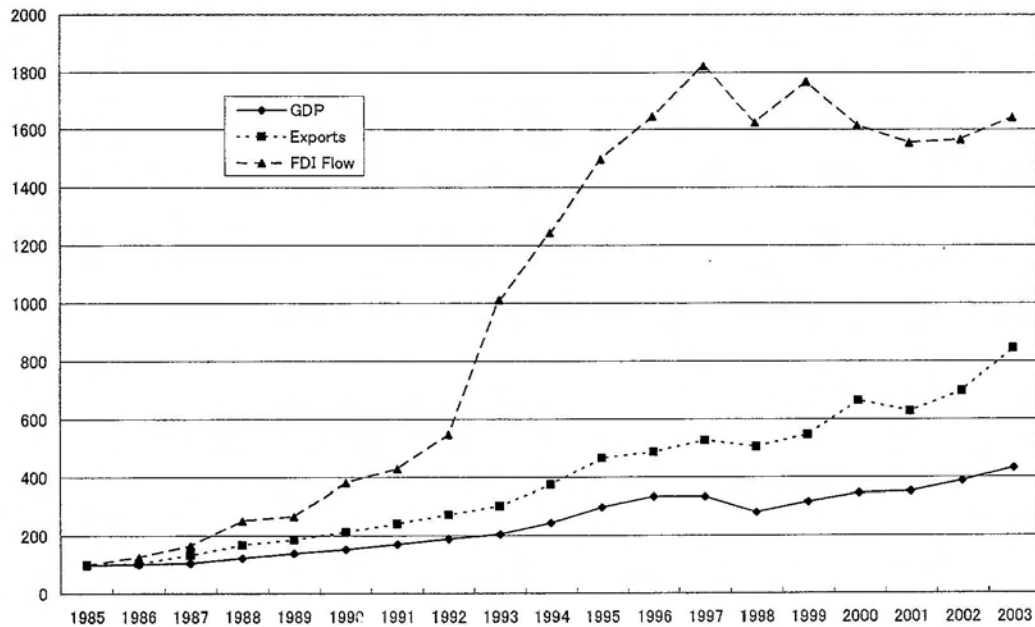
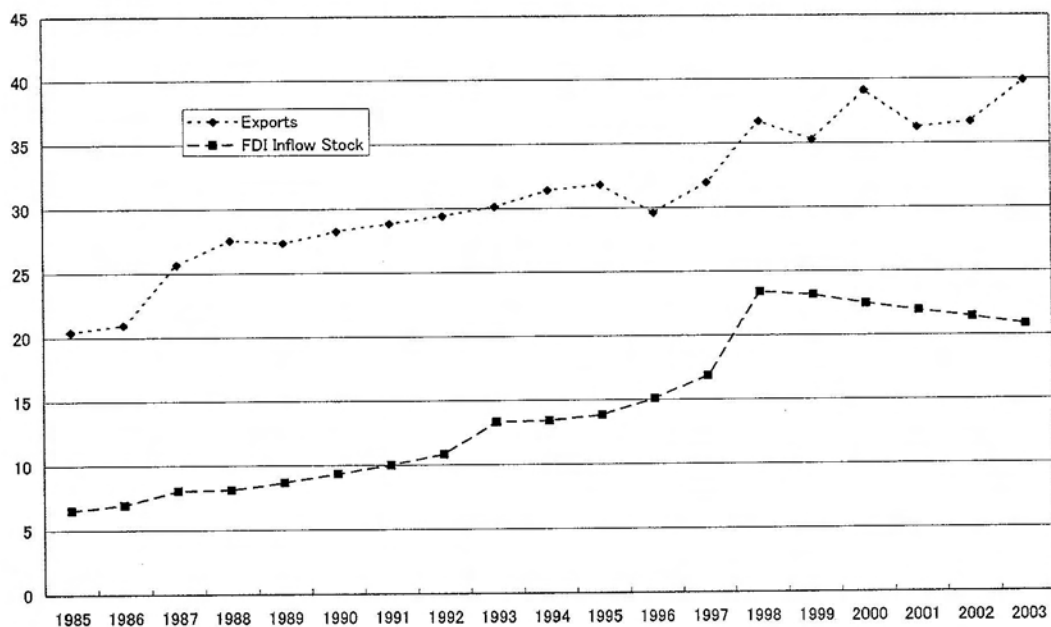


Figure 2 Exports and FDI Inflow Stock as Share of GDP in Developing East Asia (%)



economic activities in East Asia grew remarkably since the mid-1980s. Through foreign trade and FDI, East Asian economies obtained technology, management know-how from foreign countries, which contributed to economic growth by improving production and technological capability.

In light of these developments, this paper attempts to examine the changing characteristics of foreign trade in East Asia, which are masked by aggregated picture shown in the figures. Such an analysis would discern the ways and reasons how and why foreign trade contributed to economic growth in East Asia. Since foreign trade and FDI are closely related, this paper analyzes them jointly. However, the main focus is foreign trade and therefore the discussions and analysis of FDI are limited to minimum.

The structure of the paper is as follows. Section II examines the changing patterns of foreign trade in East Asia from various perspectives including geographical distribution of trading partners, commodity composition, comparative advantage, intra-industry trade and trade in parts. Section III sheds light on trade by multinational corporations (MNCs), major promoter of FDI. Section IV discusses trade policies in East Asia, in order to discern the reasons for rapid expansion of foreign trade and FDI. Finally, section V presents some concluding remarks.

## II. Changing Pattern of Foreign Trade in East Asia

### II. 1. Rapid Expansion of Intra-regional Trade in East Asia: Overall Trade

One notable characteristic of East Asian trade in recent years is the rapid expansion of intra-regional trade, that is, trade between and among East Asian economies<sup>1</sup>. The share of intra-regional exports and imports in total regional exports and imports in East Asia respectively increased from 44.1 and 49.0 percent in 1990-94 to 49 and 54.6 percent in 2000-04 (Table 1). As a result of rapid expansion of intra-regional trade, more than a half of East Asia's trade (combining exports and imports) is now conducted inside the region. It should be noted that East Asia is a more important region as an import source rather than an export destination for East Asia. This observation not only reflects the role of East Asia as a "factory" for the world market, as East Asia manufactures products for the world market with the parts and components procured in East Asia, but also indicates the importance of non-East Asian market for East Asia<sup>2</sup>.

---

<sup>1</sup> Many studies have identified rapid expansion of intra-regional trade in East Asia See, for example, Petri (1993), Ng and Yeats (2003), Urata (2001, 2005a)

<sup>2</sup> This observation on the role of East Asia as a factory of the world will be elaborated later by examining the nature of intra-regional trade in East Asia.

Table 1 Changing regional patterns of trade

	East Asia		ASEAN		NIES		CHINA		JAPAN		EU		US		WORLD	
	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04
	Trading partners															
<b>Export</b>																
East Asia	44.1	49.0	13.0	12.9	16.3	17.1	6.4	11.1	8.6	8.2	15.9	14.7	24.4	21.4	100.0	100.0
Indonesia	62.0	56.9	12.9	17.9	12.6	12.7	3.6	5.4	32.9	21.0	14.0	13.6	13.5	13.3	100.0	100.0
Malaysia	54.7	54.2	28.8	25.5	10.4	12.4	2.5	5.3	13.6	11.5	14.9	12.6	19.2	19.9	100.0	100.0
Philippines	36.1	53.7	7.8	16.5	9.7	16.7	1.2	4.2	17.4	16.4	18.3	17.5	38.1	24.0	100.0	100.0
Singapore	48.2	56.4	25.3	26.0	14.9	18.3	2.0	6.1	7.8	7.0	14.5	13.3	20.1	14.9	100.0	100.0
Thailand	41.7	48.3	15.8	19.8	8.3	10.3	1.5	5.3	17.3	14.7	19.0	15.5	21.7	19.4	100.0	100.0
Vietnam		49.0		15.9		9.3		9.6		15.7		19.4		12.3		100.0
China	60.5	45.3	5.9	7.1	39.2	24.2	29.9	39.3	15.8	14.3	11.3	16.0	13.5	21.1	100.0	100.0
Hong Kong	47.0	55.5	6.6	6.1	5.1	4.8	0.0	10.3	5.4	5.4	16.9	14.0	23.2	20.0	100.0	100.0
Taiwan	42.7	55.2	10.8	12.5	20.6	23.4	0.0	10.3	11.3	9.2	15.4	13.5	28.7	19.9	100.0	100.0
Korea	40.8	46.6	11.2	10.6	9.6	10.8	4.2	15.6	15.7	9.8	13.2	13.2	24.3	19.2	100.0	100.0
Japan	34.6	43.1	13.4	13.4	17.5	19.9	3.7	10.0			18.0	15.5	30.0	27.1	100.0	100.0
<b>Imports</b>																
East Asia	49.1	54.6	11.7	14.6	11.8	13.2	9.2	13.8	16.8	13.3	13.9	11.5	16.9	12.5	100.0	100.0
Indonesia	48.4	52.8	9.4	21.4	12.2	9.5	3.4	7.8	23.4	14.5	21.3	12.2	12.3	8.9	100.0	100.0
Malaysia	58.9	62.5	19.9	23.8	10.5	13.2	2.3	7.3	26.4	18.3	14.4	11.8	16.4	15.9	100.0	100.0
Philippines	48.9	57.5	10.5	17.0	15.7	16.8	1.4	4.2	21.8	19.5	11.3	8.5	19.2	18.5	100.0	100.0
Singapore	55.3	56.4	20.5	24.5	10.7	11.1	3.1	7.7	21.4	13.4	13.1	12.1	15.9	14.4	100.0	100.0
Thailand	55.4	54.6	13.4	16.5	10.4	9.4	2.8	6.6	29.9	23.8	15.8	10.8	11.4	10.9	100.0	100.0
Vietnam		75.3		25.2		27.1		10.8		13.0		9.3		3.1		100.0
China	55.8	53.5	6.0	10.8	30.6	25.2			19.4	17.6	15.1	13.0	11.5	8.9	100.0	100.0
Hong Kong	73.8	78.4	8.2	11.3	13.2	12.1	36.4	43.4	16.0	11.7	10.2	8.6	7.8	5.9	100.0	100.0
Taiwan	45.2	55.0	8.9	13.9	5.5	8.2	1.1	7.3	29.8	25.7	14.4	10.6	22.0	15.1	100.0	100.0
Korea	39.2	45.7	8.0	10.7	2.3	4.3	4.3	11.1	24.9	19.9	13.3	10.6	22.4	15.0	100.0	100.0
Japan	30.5	42.2	13.9	15.3	9.7	9.3	7.5	18.1			14.6	12.6	22.9	16.7	100.0	100.0

The importance of intra-regional trade increased for most East Asian countries. One notable exception is China, whose trade with non-East Asian countries expanded faster compared to that with East Asian countries from 1990-94 to 2000-04. Specifically, the share of East Asia for China's overall exports and imports declined from 60.5 and 55.8 percent to 45.3 and 53.5 percent over the period under study. A large decline in the importance of intra-regional exports mirrors substantial increase in the importance of exports to the US and the EU.

Contrary to the declining trend of the importance of East Asia for China's trade, China has become an increasingly important country for other East Asian countries in their trade relationships. The share of China for East Asia's exports and imports increased substantially from 6.4 and 9.2 percent in 1990-94 to 11.1 and 13.8 percent in 2000-04. The increased importance of China in trade is shared by all the East Asian economies under study. Having pointed out the increased importance of China in East Asia's trade, it should be noted that ASEAN and NIEs account for similar importance in East Asia's trade in 2000-04. What is notable is a decline in the importance of Japan for East Asia's trade. Indeed, the share of Japan for East Asia's exports and imports declined from 8.6 and 16.8 percent in 1990-94 to 8.2 and 13.3 percent in 2000-04. This decline in Japan's importance in East Asia's trade is largely attributable to long economic recession in Japan.

## II.2. Trade intensity

We observed above that for many East Asian economies trade with other East Asian economies expanded faster than their trade with non-East Asian economies. An increase in trade with a country may be attributable to two factors. One is the expansion of trade by a trading partner and the other is a "pure" intensification of the trade relationship. Specifically, trade relationship of a country with (or dependency on) a trading partner country can increase when the trading partner's trade expands faster than other countries. Taking into account of this factor, we compute trade intensity index (definition) and its changes over time<sup>3</sup>. Trade intensity index captures the "bias" in trade relationship by considering the trade volume of the trading partner. Trade relationship is more (less) intensive (or biased) than normal if the value of trade intensity is greater (less) than unity.

---

<sup>3</sup> Trade intensity index is computed as  $(X_{ij} / X_{..}) / [(X_i / X_{..}) * (X_j / X_{..})]$ , where  $X_{ij}$  represents exports from region  $i$  to region  $j$ , and a dot (".") indicates the summation across all  $i$  or  $j$ . Therefore,  $X_i$  represents total export of region  $i$ ,  $X_j$  represents total import of region  $j$ , and  $X_{..}$  represents world total trade.

The computed “trade intensities” are shown in Table 2. The results show that for all the East Asian countries listed in the table trade relationship with other East Asian countries as a whole is more intensive than normal, as shown by the fact that trade intensities with East Asia are greater than unity for all East Asian countries. It is interesting to observe that the level of intensity for East Asian economies with the US is slightly above normal but it is less than normal for their relationship with the EU.

Among various pairs of economies and groups in East Asia, the intensity is particularly high for intra-ASEAN trade and China-NIEs trade relationship. Trade relationships are relatively weak for ASEAN-China, and intra-NIEs.

Table 2 Trade Intensity among East Asian Economies

1990-94							
	East Asia	ASEAN	NIES	China	Japan	US	EU
East Asia	2.1						
ASEAN	2.5	3.8					
NIES	2.3	1.8	1.5				
China	2.7	1.1	5.5				
Japan	1.6	2.7	2.2	2.1			
US	1.6	1.3	1.5	1.1	2.0		
EU	0.4	0.4	0.3	0.2	0.4	0.5	1.6
2000-04							
	East Asia	ASEAN	NIES	China	Japan	US	EU
East Asia	2.2						
ASEAN	2.4	3.9					
NIES	2.4	2.0	1.6				
China	2.1	1.3	3.9				
Japan	1.8	2.5	2.3	2.5			
US	1.3	1.1	1.1	1.3	1.6		
EU	0.4	0.4	0.3	0.4	0.4	0.6	1.7
Change from 1990-94 to 2000-04							
	East Asia	ASEAN	NIES	China	Japan	US	EU
East Asia	0.1						
ASEAN	-0.1	0.1					
NIES	0.1	0.2	0.1				
China	-0.6	0.2	-1.6				
Japan	0.2	-0.2	0.1	0.4			
US	-0.3	-0.2	-0.4	0.2	-0.4		
EU	0.0	0.0	0.0	0.2	0.0	0.1	0.1

Trade intensities for East Asian economies generally did not change much from the 1990-94 to 2000-04 periods. One noticeable change is a sizeable decline in China's trade intensity with the NIEs, while its trade intensity with Japan and ASEAN increased. Another change is a decline in East Asia's trade intensity with the US with an exception of China. This may be a possible cause for US's concern about East Asia's regionalism, as it may discriminate against the US.

Our analysis of East Asia's regional trade pattern found an increasing importance of East Asia, or intra-regional trade in East Asia. Our finding on the relative stability of trade intensity among East Asian economies indicate that the increasing intra-regional trade is mainly due to rapid growth of East Asia's overall trade, which in turn is attributable to rapid economic growth. Indeed, unlike the European Union (EU) or the North American Free Trade Agreement (NAFTA) region, intra-regional trade expanded notably in East Asia without the formation of preferential regional trade frameworks such as the customs unions or free trade agreements (FTA). As such, an increase in regional trade relationship in East Asia is characterized as "de facto" regionalization. However, this pattern has been changing as many East Asian economies have become interested in FTAs in recent years, which will be discussed in a later section.

### II.3. Rapid Expansion of Machinery Trade

Rapid expansion of foreign trade by East Asian economies was accompanied by substantial changes in commodity compositions from 1990-94 to 2000-04 (Table 3). The changes are especially notable for exports, among which manufactures and in particular machinery increased notably. Among machinery, exports of office and telecommunication equipment and electrical machinery grew particularly fast for ASEAN, NIES and China<sup>4</sup>. For China the share of office and telecommunications equipment in its overall exports increased remarkably from 6.3 to 22.3 percent, while the share of electrical machinery increased from 4 to 10.1 percent. Many ASEAN countries with notable exception of Indonesia saw exports of office and telecommunications equipment and electrical machinery rise significantly to account for the combined share of 30-60 percent of their total exports.

Among manufactured exports, textiles and garment grew relatively slowly to

---

<sup>4</sup> For the Philippines the share of others was high in 1990-94, mainly because consignment trade was classified under others. In 2000-04 consignment trade was classified under specific sectors such as office and telecommunications equipment, for the production of which consignment trade was utilized.

Table 3 Commodity Composition of Foreign Trade for East Asian Economies (percentage share of total)

	Export Composition of East Asia (1)											
	EA		ASEAN		NIES		China		Japan		World	
	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04
Agriculture	7	4.1	15.7	9	4.7	2.3	13.7	5.2	1.1	1	12.1	8.8
Raw Materials	1.9	1	4.4	1.9	1.3	0.9	2.5	0.7	0.5	0.5	2.5	1.7
Food	5.1	3.1	11.2	7.1	3.4	1.4	11.2	4.5	0.6	0.5	9.6	7.1
Mining & fuels	5.4	5.1	16.5	12.6	2.1	3.5	6.4	4.1	1.3	1.7	9.9	11.3
Metalliferous ores and metal scraf	0.3	0.3	0.8	0.7	0.2	0.1	0.2	0.1	0.1	0.3	0.9	0.8
Mineral fuels	4.2	3.7	14.7	10.9	1.1	2.2	5.3	2.7	0.5	0.4	7.2	8.7
Non-ferrous metals	0.9	1.1	1	1	0.8	1.2	1	1.3	0.7	1	1.8	1.8
Total manufacture	86.1	88.7	65.2	75.6	92.7	93.2	78.5	90.1	95.8	93	74.9	76.9
Chemicals	5	6.5	3.8	6.2	5.2	6.8	5.3	4.6	5.6	7.8	9	10.4
Liber, rubber, trvl goods, ftwear	4	2.9	2.3	1.7	7.1	3.5	6.9	5.4	1.3	1.2	2.5	2.1
Wood, paper, & furnitures	2.3	2	4.6	3.3	2.2	1.5	2	3.3	0.8	0.6	3.5	3.2
Metal	4.6	4.3	1.7	1.6	5.7	5.1	4.4	5.1	5.5	5	5.1	4.6
Machinery	46.6	53.6	37.6	51	36.8	52.6	17.4	40.6	71.6	67.1	38	41.4
Power gntr	1.9	1.7	0.9	0.9	0.9	1	0.8	1.1	3.9	3.9	2.5	2.6
Industrl & metal wrking	6.8	6.3	3.1	3	4.7	4.9	2.6	3.8	12.8	12.6	8.3	7.1
Office & telecm	15.9	19.4	19.5	22	14.4	21.6	6.3	22.3	17.7	12.2	7.9	10.2
Electrical	11.1	16.8	11.9	23.2	11.2	18	4	10.1	12.7	15.2	6.9	9.3
Autos	9	7.7	0.9	1.3	3.9	4.9	3	2.6	21.8	20.6	9.3	9.5
Oth. transpt	1.8	1.7	1.2	0.6	1.7	2.3	0.6	0.8	2.7	2.5	3	2.6
Textiles & garment	12.7	9.1	8.7	5.8	20.6	11.8	29.1	18.3	2.1	1.5	7.1	5.7
Other manufactures	11	10.2	6.6	6	15	11.9	13.4	12.8	9	9.8	9.7	9.3
Others	1.5	2.1	2.6	2.8	0.5	1	1.4	0.6	1.8	4.3	3.1	3
Total	100	100	100	100	100	100	100	100	100	100	100	100

	Export Composition of East Asia (2)													
	Indonesia		Malaysia		Philippines		Singapore		Thailand		Taiwan		Korea	
	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04
Agriculture	16	15.3	19.9	9.6	17.9	6	6.8	2.5	28.7	18.3	5.3	2.5	4.1	2.3
Raw Materials	4.8	4.4	9.6	2.4	1.5	0.5	1.7	0.4	4.4	3.8	1.3	0.9	1.4	0.9
Food	11.2	10.9	10.3	7.2	16.4	5.5	5.1	2.1	24.3	14.6	3.5	1.4	3.9	2.8
Mining & fuels	36.8	29.1	13.4	11	7.6	2.9	14.7	9.8	1.2	3.6	1.9	1.5	1.7	3.4
Metalliferous ores and metal scraf	2.7	3.6	0.3	0.1	2.9	0.7	0.3	0.2	0.1	0.2	0.3	0.2	0.1	0.1
Mineral fuels	33	23.6	12	10	2.1	1.2	13.3	8.8	0.9	2.9	0.8	0.3	0.7	2
Non-ferrous metals	1.2	1.9	1.1	0.9	2.6	1.1	1.1	0.9	0.2	0.5	0.8	1.1	0.9	1.2
Total manufacture	46.5	54.8	66.1	78.2	45.9	83	76.9	84.3	68.6	74.8	92.5	94.7	92.8	94
Chemicals	2.5	5.4	2.1	4.7	2.7	1.2	6.2	9.7	2.6	6.1	5.4	4.8	4.8	7.5
Lther, rubber, trvl goods, ftwear	4.5	3.4	1	0.6	2	0.8	0.5	0.5	5.7	3.4	7.5	6	5.9	1.6
Wood, paper, & furnitures	14.9	10.9	4	3.7	3.8	1.5	1.3	0.5	2.4	2.8	1.8	1.5	3.9	1.8
Metal	1.5	1.7	1.6	2	1	0.5	1.9	1.2	2	2.8	3	2.4	7.1	8.4
Machinery	4.7	16.9	46	58.6	19.8	68.6	56.8	63.3	28	43.2	28.6	43.7	41.9	55.5
Power gntr	0.1	0.8	0.9	0.7	0.1	0.2	1.7	1.1	0.7	1.8	0.9	1.3	0.6	0.5
Industrl & metal wrking	0.3	1.1	2.5	2.4	0.4	1.2	5.4	4.7	3	3.9	3.8	2.9	7	6.9
Office & telecm	2.4	9.4	20.4	29.6	6.3	22.4	32.7	25.6	13.3	17.5	12.9	21.4	18.1	21.7
Electrical	1	4.4	18.9	25.1	12.2	41.8	14.5	30.2	9	15	8.8	17.3	11.2	22.7
Autos	0.6	1	0.6	0.5	0.9	2.6	1.1	0.8	1.4	4.4	2	0.7	4.5	3.3
Oth. transpt	0.3	0.2	2.7	0.4	0	0.4	1.3	1	0.6	0.6	0.1	0.1	0.4	0.5
Textiles & garment	15.2	12.6	5.6	3.2	11.3	6.8	4	1.8	15.4	8	25.4	16.9	14.9	8.7
Other manufactures	3.3	3.9	5.7	5.4	5.4	3.5	6.2	7.3	12.6	8.4	20.8	19.3	14.5	10.5
Others	0.7	0.8	0.6	1.2	28.6	8.1	1.6	3.4	1.5	3.3	0.8	1.5	0.2	0.1
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100



Import Composition of East Asia (1)

	EA		ASEAN		NIES		China		Japan		World	
	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04
Agriculture	12.9	8.9	8.5	6.9	9.9	6.2	9.3	7.7	23.3	15.6	12	9.1
Raw Materials	4.3	2.5	2.5	1.6	3.8	1.8	4.4	4	6.8	3.1	2.9	1.9
Food	8.6	6.3	6.1	5.2	6.1	4.4	4.9	3.7	16.4	12.5	9.2	7.2
Mining & fuels	15.4	16.8	11.5	13.6	11.5	14.7	7.7	13.7	27.9	25.5	12.2	13.3
Metalliferous ores and metal scrap	1.7	1.8	0.7	0.5	1.2	1.2	1.9	3.3	3.3	2.4	1.1	1
Mineral fuels	11.3	12.7	9	11.5	8	11.1	4.1	7.8	21.2	20.7	9.1	10.5
Non-ferrous metals	2.4	2.3	1.8	1.6	2.3	2.4	1.7	2.6	3.4	2.4	2	1.8
Total manufacture	68.8	72.7	76.5	77.5	75.4	77.8	82.3	77.9	45.7	56.7	72.5	74.7
Chemicals	8.8	9	8.9	8.6	9	8.3	11.7	12.2	7	7.3	9.1	10.5
Lther, rubber, trvl goods, ftwear	2.3	1.9	1.1	1	3.6	2.8	1.8	1.2	1.9	2	2.4	2.1
Wood, paper, & furnitures	2.1	1.7	1.6	1.3	2.2	1.5	2.7	1.5	2.3	2.6	3.4	3.2
Metal	5.3	4	6.6	4.6	5.1	4.1	8.6	5.5	2.7	2.1	5.1	4.6
Machinery	34.3	41.8	47.6	52.9	34.4	42.6	42	45	16.9	27.6	36	39.5
Power gntr	2.1	1.8	3.3	2.1	1.8	1.6	2.7	2	1	1.6	2.3	2.5
Indstral & metal wrking	9	6.8	12.1	7.8	8.4	6.4	18	10.5	2.9	3.2	7.9	6.7
Office & telecm	7.5	11.6	10.2	12.3	7.8	13.2	6.6	10.3	4.4	10.1	7.8	9.9
Electrical	9.7	18.1	14.5	25.9	11.4	19.3	5.6	18.6	4.1	8.8	6.8	9.5
Autos	3.7	2.3	4.1	2.9	3.3	1.5	5.7	2.3	3	2.9	9	9
Oth. transprt	2.3	1.2	3.4	1.9	1.8	0.8	3.3	1.5	1.5	1	2.2	1.9
Textiles & garment	7.3	5.4	3.7	2.9	10	7	9.4	4.4	6.6	6.5	6.8	5.5
Other manufactures	8.7	8.9	7.2	6.3	11	11.5	6.2	8	8.2	8.5	9.7	9.3
Others	2.9	1.6	3.5	2	3.2	1.3	0.7	0.7	3.1	2.2	3.3	2.9
Total	100	100	100	100	100	100	100	100	100	100	100	100

Import Composition of East Asia (2)

	Indonesia		Malaysia		Philippines		Singapore		Thailand		Hong Kong		Taiwan		Korea	
	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04
Agriculture	11.5	16.6	7.2	6.3	10.9	8.4	7	3.7	9.5	7.5	8.1	4.9	10.4	6	12.3	8
Raw Materials	5.2	6	1.1	1.2	2.3	1.1	1.2	1.2	0.4	4.5	2.8	1.7	1.1	4.5	2	6.5
Food	6.3	10.6	6.1	5.1	8.5	7.3	5.9	3.3	4.9	4.7	6.4	3.8	5.9	4	5.8	5.3
Mining & fuels	11.7	23.1	8.8	8.4	15.3	12.9	13.9	14.7	10.8	15.1	3.4	3.8	13.3	15.9	22.2	28.2
Metalliferous ores and metal scrap	1.6	1.1	0.9	0.7	1.5	1.1	0.1	0.1	0.7	0.5	0.2	0.1	1.2	1.3	2.9	2.7
Mineral fuels	8.2	20.3	3.8	5.5	12.5	10.7	12	13.4	8.1	12.1	2	2.1	8.4	11.3	16.5	22.7
Non-ferrous metals	1.9	1.7	2.1	2.2	1.3	1.1	1.7	1.2	2	2.4	1.3	1.6	3.7	3.3	2.7	2.8
Total manufacture	75.6	59.5	82	82	59.1	78.1	77.5	80.1	76.6	75.3	85.4	90.6	71.2	76.5	64.1	61.9
Chemicals	14.2	16.8	7.5	7.3	10.2	7.9	7	6.1	10.1	10.7	6.7	5.9	12.3	11.6	9.7	8.9
Lther, rubber, trvl goods, ftwear	1.6	1.3	0.5	0.6	1.1	0.8	1.2	0.8	1.1	1.1	6.5	5.4	1.2	0.8	1.3	1
Wood, paper, & furnitures	1	1.2	1.9	1.6	1.4	1.6	1.7	1	1.2	1	2.7	1.9	2.3	1.4	1.6	1.2
Metal	7.5	6.6	6.7	4.6	6.4	3.8	4.2	2.8	9.9	7.9	3.3	2.8	7.5	4.8	5.8	5.2
Machinery	43.4	28	55.7	60.6	31.4	56.8	50.5	59.3	43.3	44.3	31.8	46.4	38.2	46.4	35.1	34.8
Power gntr	5.1	2.7	2.7	2	3.2	1.1	3.1	2.2	3.2	2.2	1.1	1.6	1.6	1.3	2.9	1.7
Indstral & metal wrking	21.1	11.6	13.2	7	7.5	4.7	8.4	7.4	13.8	8.9	4.6	3.5	9.6	10	13	7.3
Office & telecm	3.5	2.8	8.1	11.2	4.8	13.5	16.6	17.1	7.1	9.8	11.6	20.6	5	8.7	4.5	6.7
Electrical	5	3	23.1	36.8	8.6	34.1	16.8	27.8	10.4	18.4	10.4	18.9	14.6	23	10.1	16.8
Autos	5.5	5.6	3.4	2.3	4.4	3	2.3	2	6.8	3.5	3.4	1.2	5.4	2	1.3	1.4
Oth. transprt	3.2	2.3	5.3	1.3	2.9	0.4	3.3	2.8	2	1.5	0.6	0.4	2	1.3	3.2	0.8
Textiles & garment	3.8	2.8	3.1	1.4	4.8	3.3	4.1	2.2	2.8	2.6	18.3	12.9	2.8	1.7	3.6	3.2
Other manufactures	4	2.9	6.5	6.1	3.7	3.9	8.8	7.9	8.2	7.6	16.1	15.5	6.8	9.7	7.1	7.7
Others	1.2	0.8	4	3.3	14.7	0.6	1.6	1.5	3.1	2.1	3.1	0.7	5.1	1.6	1.4	1.9
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

experience a decline in their share in total exports for East Asian developing economies, although their share is still high for China and the NIEs.

In contrast to these East Asian developing countries, Japan did not experience notable changes in export composition from 1990-94 to 2000-04. It should be noted that unlike East Asian developing economies, with an exception of Korea, Japan registered a high share of automobiles in its exports.

A close examination of the export commodity composition of East Asian economies in 1990-94 and 2000-04 reveals increasing similarity among them. This trend can be found by an increase in the correlations coefficient of the export composition between most pairs of economies in East Asia over time (Table 4). Indeed,

Table 4 Similarity of Export Composition among East Asian Economies

1990-94										
	Indonesia	Malaysia	Philippine	Singapore	Thailand	China	Hong Kon	Taiwan	Korea	Japan
Indonesia	1.00	0.22	0.18	0.10	0.19	0.18	0.13	0.04	0.09	-0.06
Malaysia	0.24	1.00	0.63	0.49	0.42	0.08	0.34	0.44	0.60	0.35
Philippine	0.20	0.49	1.00	0.38	0.50	0.28	0.42	0.38	0.51	0.21
Singapore	0.21	0.49	0.42	1.00	0.35	0.10	0.28	0.57	0.49	0.39
Thailand	0.11	0.47	0.43	0.28	1.00	0.42	0.52	0.52	0.43	0.20
China	0.06	0.05	0.07	0.11	0.13	1.00	0.73	0.36	0.30	0.04
Hong Kon	0.05	0.48	0.27	0.40	0.38	0.36	1.00	0.62	0.50	0.23
Taiwan	0.02	0.43	0.29	0.31	0.37	0.22	0.74	1.00	0.59	0.40
Korea	0.08	0.63	0.48	0.51	0.37	0.22	0.63	0.63	1.00	0.55
Japan	-0.04	0.62	0.38	0.47	0.34	0.10	0.59	0.58	0.70	1.00
2000-04										
	Indonesia	Malaysia	Philippine	Singapore	Thailand	China	Hong Kon	Taiwan	Korea	Japan
Indonesia	1.00	0.33	0.13	0.18	0.26	0.34	0.27	0.19	0.20	0.07
Malaysia	0.38	1.00	0.89	0.92	0.81	0.46	0.68	0.90	0.73	0.53
Philippine	0.13	0.94	1.00	0.93	0.69	0.33	0.58	0.84	0.67	0.51
Singapore	0.19	0.92	0.94	1.00	0.74	0.42	0.61	0.89	0.76	0.54
Thailand	0.24	0.83	0.75	0.76	1.00	0.55	0.69	0.80	0.67	0.49
China	0.18	0.46	0.41	0.46	0.55	1.00	0.79	0.53	0.48	0.27
Hong Kon	0.20	0.80	0.75	0.76	0.80	0.74	1.00	0.72	0.63	0.43
Taiwan	0.16	0.90	0.92	0.91	0.78	0.47	0.83	1.00	0.76	0.58
Korea	0.22	0.83	0.82	0.91	0.77	0.53	0.81	0.88	1.00	0.75
Japan	0.12	0.81	0.83	0.84	0.70	0.41	0.77	0.90	0.80	1.00
Change from 1990-94 to 2000-04										
	Indonesia	Malaysia	Philippine	Singapore	Thailand	China	Hong Kon	Taiwan	Korea	Japan
Indonesia	0.00	0.11	-0.05	0.09	0.07	0.16	0.14	0.16	0.11	0.13
Malaysia	0.14	0.00	0.26	0.43	0.39	0.38	0.34	0.46	0.13	0.18
Philippine	-0.07	0.44	0.00	0.54	0.19	0.05	0.16	0.45	0.16	0.30
Singapore	-0.02	0.43	0.52	0.00	0.39	0.32	0.33	0.32	0.27	0.15
Thailand	0.14	0.36	0.33	0.48	0.00	0.13	0.18	0.29	0.24	0.30
China	0.12	0.42	0.34	0.35	0.42	0.00	0.06	0.18	0.18	0.23
Hong Kon	0.15	0.32	0.48	0.37	0.42	0.38	0.00	0.11	0.13	0.20
Taiwan	0.14	0.46	0.63	0.59	0.40	0.24	0.09	0.00	0.17	0.18
Korea	0.14	0.21	0.34	0.40	0.40	0.31	0.18	0.25	0.00	0.20
Japan	0.16	0.19	0.45	0.37	0.35	0.31	0.17	0.32	0.10	0.00

Note: The figures indicate the correlatoin coefficients of the compositional shares of exports for a pair of economies. Below diagonal are with respect to total export to E. Asia, above diagonal are with respect to total export to the world

the decline in the correlation coefficient from 1990-94 to 2000-04 was found in only three cases out of 90 pairs. As to the magnitude of the index, the correlation coefficient was greater than 0.5 for only 12 in the case of exports to the world (7 in the case of exports to East Asia) out of 45 cases in 1990-94, but the number increased to 29 (31). In 2000-04, Indonesia is practically the only country that has a very different export product composition.

Turning to the import composition of East Asian economies, one finds relatively smaller changes, when compared to the case for the exports. The shares of manufactures remained around 70-80 percent throughout the period for East Asian developing economies with an exception of Korea, where the corresponding shares stayed at lower level at around 60 percent. It is worth noting here that Japan's import composition is similar to that of Korea, as the share of manufactures in total imports was significantly low at 57 percent in 2000-04 even after a rise from 46 percent in 1990-94.

Similar to the changes observed for exports, imports of machinery, in particular office and telecommunications equipment and electrical machinery, increased their shares in total imports in many East Asian economies including Japan.

An examination of the changes in commodity composition of trade for East Asian economies from 1990-94 to 2000-04 revealed a shift in exports from non-manufactures to manufactures. Among the manufactures a shift was observed from light manufactures such as textiles and garment, and wood, paper and furniture to more sophisticated manufactures such as machinery. The share of office and telecommunications equipment and electrical machinery increased notably. Although the changes in import composition were less dramatic, similar to the case of exports, the share of telecommunications equipment and electrical machinery increased substantially. These observations indicate rapid growth of intra-industry trade in telecommunications equipment and electrical machinery.

Before analyzing intra-industry trade in East Asia in a later section, we examine similarities or differences between export product composition of a country and import product composition of its trading partner. Such an analysis would not only give us useful information on the extent of intra-industry trade but also provide useful information on the possible scope for the benefits of regional preferential trade agreement such as free trade agreement (FTA) and customs union. Trade complementarity index is computed for this purpose and the results are shown in Table 5. The most interesting observation appears to be an increase in the complementarity

Table 5 Trade complementarity index for East Asian Economies

Exporter	Importer										
	Indonesia	Malaysia	Philippin	Singapore	Thailand	Vietnam	China	Hong Ko	Taiwan	Japan	Korea
Indonesia	1990-94		21.4	35.7	32.1	26.5	25.2	41.1	26.8	42.4	31.4
	2000-04		34	36.8	38.5	42.6	36.9	38.7	45.9	39	49.6
	change		12.6	1.1	6.4	16.1	13.5	4.8	12.2	7.2	12.1
Malaysia	1990-94	29.8		47.5	59.3	41	35.8	47.1	45	41.8	43.9
	2000-04	29.2		60.7	66.8	51.6	31.7	51.6	56.9	55.3	46.2
	change	-0.6		13.2	7.5	10.6	15.8	9.8	10.3	4.4	4.1
Philippines	1990-94	32	44		46.2	40	37.7	50.7	45.9	48.1	41.3
	2000-04	21.4	59.5		57.6	43.3	26.4	40.6	48.5	46.7	39.9
	change	-10.6	15.5		11.4	3.3	2.9	-2.2	0.8	-8.2	-1.9
Singapore	1990-94	35.7	51.2	46.4		46.6	39.9	50.6	48.2	36.8	43.2
	2000-04	35	66.6	61.5		51.5	40	50.6	53.5	55.9	48.7
	change	-0.7	15.4	15.1		4.9	10.7	2.9	7.7	6.8	5.5
Thailand	1990-94	26.2	35	38.2	42.4		31.6	54.4	34.5	39.3	31.7
	2000-04	33.9	50.8	49.5	54.6		41.2	48.9	60.7	47.2	52.1
	change	7.7	15.8	11.3	12.2		17.3	6.3	12.7	12.8	14
Vietnam	1990-94										
	2000-04	27.5	21.2	26.9	26.1	30.1		23	40.5	25	43.2
	change										
China	1990-94	35.2	33.7	41.2	39.9	37.3		58.4	40.1	43.7	36.9
	2000-04	30.7	41.9	36.9	44.7	43.7	40.8		63.7	40.1	49.5
	change	-4.5	8.2	-4.3	4.8	6.4		5.3	0	5.8	2.7
Hong Kong	1990-94	32.9	39.8	46.7	50.7	42.5		43.1		40.5	44
	2000-04	27.8	47.2	46.5	53.7	53.1	36.8	49.4		44.8	48.4
	change	-5.1	7.4	-0.2	3	10.6		6.3		4.3	4.4
Taiwan	1990-94	33.7	42.9	44.1	50.4	44.8		43.4	60.1		34.4
	2000-04	32.1	56.5	54	59.1	56.5	40.8	57.4	58.6		40.6
	change	-1.6	13.6	9.9	8.7	11.7		14	-1.5		6.2
Japan	1990-94	45.2	54.1	50.8	58	55.7		47.2	46.5	50.7	45.2
	2000-04	41.5	52.1	43.4	52	55.5	42.7	54.8	47.4	52.6	50.4
	change	-3.7	-2	-7.4	-6	-0.2		7.6	0.9	1.9	5.2
Korea	1990-94	34.7	47.6	48.9	53.7	42.8		43.7	61	48.2	38.5
	2000-04	38.1	51.6	47.4	55	51.9	43.8	53.1	57.9	48.9	42.3
	change	3.4	4	-1.5	1.3	9.1		9.4	-3.1	0.7	3.8

Note: Trade complementarity index between two countries k and j (C<sub>kj</sub>) is defined as  $C_{kj} = 100 - \frac{\sum (|m_{ik} - x_{ij}|)}{2}$

indices for most pairs of economies from 1990-94 to 2000-04. Out of 90 cases, the decline in complementarity indices was found in 19 cases. Increasing complementarity among the East Asian economies apparently contributed to increasing intra-regional trade, as it provided scope for trade. It also indicates favorable prospects from the formation of FTA in the region. According to Yeats (1998), for the previously failed arrangements the value of complementarity indices ranged from 7 to 22. In the case of East Asian economies in 2000-04, only 10 pairs of economies registered the value less than 30. It should be added that seven out of 10 cases involve Vietnam, implying that the scope for trade for East Asian economies with Vietnam is rather limited.

We saw in an earlier section that intra-regional dependence in East Asia is stronger in the case of its imports than exports. An investigation of regional dependence in East Asia's exports and imports by commodity shows that the above-mentioned pattern is mainly due to machinery products and particularly office and telecommunication equipment and electrical machinery (Table 6). It is worth noting that

Table 6 Changing Regional Patterns of Trade for East Asia by Commodity (%)

Destinations of East Asia's Export														
	East Asia		ASEAN		China		NIES		Japan		EU		US	
	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04
Agriculture	60.6	58.3	13.1	14.3	6.1	11.8	17.1	14.0	25.1	19.3	13.0	11.2	9.5	10.7
Raw Materials	64.6	63.2	12.6	11.4	9.8	25.2	21.6	14.6	20.7	12.2	14.3	13.7	8.6	9.1
Food	59.1	56.7	13.2	15.2	4.8	7.4	15.5	13.8	26.7	21.6	12.5	10.3	9.9	11.2
Mining & fuels	80.7	76.9	19.9	20.5	7.5	12.4	20.3	24.5	33.3	20.3	2.7	3.7	5.6	4.5
Metalliferous ores and metal scrap	80.4	76.5	7.9	8.5	9.1	20.3	14.2	24.0	49.4	23.8	7.3	13.9	3.6	1.5
Mineral fuels	81.1	75.9	20.1	21.7	6.4	9.4	18.7	22.1	36.3	23.8	1.8	2.3	5.4	4.4
Non-ferrous metals	79.0	80.4	23.1	19.9	12.6	20.3	30.5	32.3	13.1	8.1	5.5	5.5	7.8	5.5
Total manufacture	40.5	46.9	12.5	12.3	6.4	11.1	16.0	16.7	5.8	7.0	16.9	15.5	26.7	22.9
Chemicals	64.4	63.9	18.6	15.1	14.8	22.8	26.0	21.5	5.4	4.9	12.2	11.9	11.0	11.3
Lther, rubber, trvl goods, ftwear	30.5	31.1	5.3	5.5	4.2	7.7	14.0	10.6	7.2	7.6	18.0	18.3	35.3	31.0
Wood, paper, & furnitures	56.4	45.6	8.8	8.1	11.6	8.3	19.6	14.0	16.7	15.5	12.2	13.0	20.2	27.8
Metal	54.3	54.6	18.4	15.8	10.0	13.4	17.3	19.0	9.1	6.8	9.3	10.9	19.5	18.7
Machinery	36.2	46.1	14.5	13.8	5.1	10.3	13.5	16.3	3.4	6.0	17.9	16.4	29.7	23.9
Power gntr	42.4	42.4	19.5	16.9	6.3	9.9	12.7	11.1	4.3	4.8	11.9	12.8	28.1	27.9
Indstral & metal wrking	54.7	52.3	21.3	16.0	10.7	15.0	20.6	17.9	2.5	3.7	11.3	13.2	18.2	18.3
Office & telecm	28.8	41.9	11.1	10.4	4.3	9.7	9.8	14.1	3.7	7.8	24.6	20.9	34.7	27.2
Electrical	50.8	66.1	20.4	20.3	4.0	13.2	21.0	25.4	5.5	7.2	14.5	12.0	26.4	15.6
Autos	19.7	15.6	7.5	6.9	3.9	3.4	7.6	4.1	1.1	1.6	18.3	17.6	38.2	40.6
Oth. transpt	16.8	16.5	10.7	8.1	1.8	0.9	4.1	6.4	0.7	1.4	10.5	18.9	8.3	9.1
Textiles & garment	44.9	45.3	7.0	7.2	7.9	10.8	20.0	16.1	10.1	12.0	15.9	13.0	20.7	19.0
Other manufactures	37.5	42.9	8.9	8.4	4.8	8.9	17.0	17.8	7.0	7.9	19.8	17.0	29.0	27.1
Others	37.9	49.6	15.4	18.0	4.7	7.2	13.2	21.2	4.9	3.5	14.6	13.3	30.5	17.9
Total Trade	44.1	49.0	13.0	12.9	6.4	11.1	16.3	17.1	8.6	8.2	15.9	14.7	24.4	21.4
Source of East Asia's Imports														
	East Asia		ASEAN		China		NIES		Japan		EU		US	
	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04	1990-94	2000-04
Agriculture	33.4	31.5	16.1	15.6	8.5	9.8	6.8	4.2	2.5	2.3	9.3	9.8	27.6	23.3
Raw Materials	32.9	31.4	19.9	17.9	5.3	4.6	5.5	5.9	3.6	4.0	5.3	9.5	28.1	19.2
Food	33.6	31.5	14.2	14.7	10.1	11.9	7.5	3.5	1.9	1.7	11.3	10.0	27.3	24.9
Mining & fuels	29.7	27.4	21.8	17.0	3.7	4.0	2.8	5.0	3.0	2.6	2.8	1.9	6.2	2.5
Metalliferous ores and metal scrap	16.0	19.0	10.3	10.1	1.3	0.9	2.5	3.0	2.1	5.1	6.1	4.9	13.9	8.3
Mineral fuels	32.0	26.7	26.9	19.8	4.0	3.6	1.9	4.1	1.4	0.8	0.8	0.6	4.0	1.3
Non-ferrous metals	28.8	37.7	6.2	6.9	4.0	8.9	7.6	11.4	11.0	10.6	9.7	6.5	11.3	4.5
Total manufacture	57.4	64.0	8.8	14.0	10.7	16.7	14.9	16.2	23.0	17.2	17.1	13.9	17.0	13.5
Chemicals	38.9	49.9	5.9	11.7	3.8	4.9	12.1	17.2	17.1	16.1	24.1	20.6	23.0	16.5
Lther, rubber, trvl goods, ftwear	70.0	69.9	4.4	7.8	38.5	45.7	21.0	11.7	6.0	5.0	18.1	17.2	6.1	4.6
Wood, paper, & furnitures	60.8	65.1	29.1	26.7	8.0	20.6	13.3	11.4	10.5	6.6	16.0	16.2	15.1	10.3
Metal	55.4	64.7	4.2	5.5	6.1	12.7	15.1	20.4	30.0	26.0	12.7	10.4	5.9	4.8
Machinery	57.0	65.4	10.6	17.4	4.8	12.7	12.0	16.4	29.6	19.0	18.1	13.4	20.8	15.1
Power gntr	44.6	44.4	5.0	9.6	4.4	10.4	5.3	6.0	29.9	18.4	22.0	22.4	27.7	23.7
Indstral & metal wrking	50.8	52.3	3.9	5.8	1.5	5.2	11.7	11.3	33.6	30.1	29.0	25.9	15.1	16.6
Office & telecm	71.5	75.6	21.0	22.2	10.9	24.5	13.4	16.5	26.2	12.5	7.4	7.4	18.6	10.1
Electrical	66.5	71.5	15.3	21.8	5.1	10.0	16.5	21.4	29.5	18.4	10.0	8.1	21.4	15.0
Autos	51.9	47.8	1.9	6.0	1.9	5.1	8.0	7.0	40.1	29.8	31.2	37.5	12.0	8.0
Oth. transpt	13.6	13.2	2.4	2.8	0.8	1.4	2.2	2.3	8.3	6.8	19.4	20.1	55.4	55.5
Textiles & garment	82.0	83.1	5.7	6.8	36.1	51.0	32.2	19.3	8.1	6.3	8.4	6.9	3.1	2.0
Other manufactures	53.6	58.4	6.2	7.3	16.1	21.1	12.8	12.5	18.5	17.5	16.5	14.4	17.7	16.5
Others	25.2	45.7	8.0	16.1	2.0	5.0	8.6	17.7	6.8	7.0	15.3	12.7	25.0	16.1
Total Trade	49.1	54.6	11.7	14.6	9.2	13.8	11.8	13.2	16.8	13.3	13.9	11.5	16.9	12.5

for these sectors East Asia's import dependence on other East Asian economies increased except on Japan.

Trade intensity index among East Asian economies was computed for different products and the results are shown in Table 7. The results indicate that non-machinery products such as wood and furniture tend to have high trade intensity. Office and telecommunication equipment (electronics products) and electric machinery exhibit relatively low trade intensity. This is expected because export dependency on non-East Asian economies such as the US and the EU is high. Among machinery products, automobile is shown to have high trade intensity for intra-ASEAN trade. This may be due to regional preferential program such as BBC (brand to brand complementation) and AICO (ASEAN Industrial Cooperation) programs, which were implemented to

Table 7 Trade Intensity in East Asia by Products

	ASEAN		China		Japan		NIES		East Asia	
	90-94	00-04	90-94	00-04	90-94	00-04	90-94	00-04	90-94	00-04
ASEAN										
Ag raw	2.7	2.4	1.7	2.2	2.3	2.3	2.3	2.3	2.3	2.3
Food	4.0	4.2	2.6	2.4	2.6	2.2	2.5	2.3	3.0	2.9
Mining & fuels	4.4	5.0	3.3	2.5	4.4	3.5	2.9	2.9	3.9	3.6
Chemicals	5.5	6.1	1.7	2.6	3.1	2.6	2.7	2.6	3.3	3.4
Lther rubber hndbag ftwr	2.6	2.4	0.2	0.6	2.0	2.1	1.3	1.7	1.3	1.3
Wood & furniture	2.9	3.6	3.9	1.3	6.9	6.8	3.3	3.4	3.9	3.3
Metal	3.9	5.3	1.4	1.3	4.7	5.0	1.9	1.9	3.0	3.0
Machinery	3.4	3.2	0.5	1.2	2.1	1.9	1.7	1.8	2.2	2.0
Power gntr	3.3	7.2	1.0	2.1	4.0	3.4	1.5	2.5	3.0	3.7
Indstral & metal wrking	3.0	4.5	0.7	1.2	3.8	3.1	1.9	1.8	2.7	2.6
Office & telecm	2.4	2.0	0.2	0.8	1.1	1.5	1.1	1.1	1.4	1.3
Electrical	2.3	1.9	0.3	0.8	1.9	1.6	1.3	1.3	1.7	1.5
Autos	6.5	14.4	1.7	3.5	4.8	4.3	2.2	3.4	4.3	5.0
Oth. transpt	2.6	3.7	1.0	1.1	1.7	2.2	1.1	1.3	1.7	2.0
Textl Garment	3.2	2.1	0.4	0.6	1.8	1.7	1.2	1.6	1.4	1.3
China										
Ag raw					2.0	2.0	3.8	2.9	2.1	1.7
Food					3.7	4.6	7.3	6.2	3.7	3.3
Mining & fuels					3.8	2.0	5.0	4.3	3.6	2.4
Chemicals					2.4	3.3	6.7	6.4	3.4	3.4
Lther rubber hndbag ftwr					1.3	2.0	3.2	2.9	1.7	1.2
Wood & furniture					3.4	4.6	8.0	5.8	4.6	2.4
Metal					3.4	3.2	4.0	3.8	2.8	2.2
Machinery					1.6	2.0	5.6	3.4	2.3	1.8
Power gntr					2.2	2.8	6.1	6.8	2.5	3.0
Indstral & metal wrking					2.4	2.9	4.9	3.3	2.4	2.0
Office & telecm					1.2	1.5	4.7	2.4	1.8	1.2
Electrical					1.5	1.9	4.2	2.5	2.0	1.4
Autos					1.7	2.7	15.7	6.3	4.0	3.2
Oth. transpt					1.4	1.1	1.1	1.1	1.0	0.9
Textl Garment					3.6	5.1	3.3	3.1	2.1	1.8
Japan										
Ag raw							1.1	1.3	1.2	1.5
Food							3.7	2.9	2.2	2.2
Mining & fuels							1.3	1.7	2.0	1.8
Chemicals							3.7	4.0	2.3	2.5
Lther rubber hndbag ftwr							1.8	1.4	1.4	1.5
Wood & furniture							4.4	3.8	4.2	4.2
Metal							3.9	4.0	2.8	3.0
Machinery							2.0	1.9	1.2	1.4
Power gntr							3.4	2.6	1.9	1.8
Indstral & metal wrking							3.5	3.4	2.1	2.1
Office & telecm							1.2	1.4	0.7	1.2
Electrical							2.1	1.8	1.4	1.4
Autos							1.9	1.3	0.8	0.9
Oth. transpt							1.1	1.3	1.0	1.1
Textl Garment							2.0	1.1	2.1	2.6
NIES										
Ag raw							1.6	1.4	1.9	2.0
Food							1.8	1.1	3.4	3.0
Mining & fuels							1.0	1.3	2.0	2.4
Chemicals							2.8	2.5	3.6	3.8
Lther rubber hndbag ftwr							0.9	1.1	1.6	1.9
Wood & furniture							2.6	2.5	3.9	4.0
Metal							1.1	1.5	2.5	2.8
Machinery							1.4	1.5	2.1	2.0
Power gntr							1.6	1.6	2.8	3.2
Indstral & metal wrking							1.4	1.2	2.7	2.5
Office & telecm							0.7	1.0	1.3	1.4
Electrical							1.3	1.2	1.7	1.6
Autos							1.9	0.8	2.7	1.9
Oth. transpt							0.4	0.8	0.9	1.1
Textl Garment							1.1	1.0	1.8	1.9
East Asia										
Ag raw									1.9	1.9
Food									2.9	2.8
Mining & fuels									2.7	2.6
Chemicals									3.1	3.3
Lther rubber hndbag ftwr									1.6	1.5
Wood & furniture									4.1	3.3
Metal									2.7	2.7
Machinery									1.8	1.8
Power gntr									2.5	2.7
Indstral & metal wrking									2.4	2.3
Office & telecm									1.2	1.3
Electrical									1.6	1.5
Autos									1.6	1.7
Oth. transpt									1.2	1.3
Textl Garment									1.8	1.9

develop automobile sectors in ASEAN.

#### II.4. Pattern of Comparative Advantage for East Asian Economies

An analysis of the pattern of comparative advantage is useful to identify the commodity with relative competitiveness and it would also help understand the factors determining trade patterns.

The commodity composition of exports and imports of a country, which we analyzed above, largely reflects the pattern of comparative advantage of the country. However, the commodity composition is a very rough measure of comparative advantage, because it does not take into account of the important information in measuring the pattern of comparative advantage such as the commodity composition of other countries. To overcome such deficiency and to identify the sectors with a comparative advantage, the concept of revealed comparative advantage (RCA) was developed<sup>5</sup>.

An examination of the computed RCAs for East Asian economies in Table 8, in which the manufactured products are classified into 4 and 9 broad categories, reveals the fact that many East Asian economies have a comparative advantage in electrical and electronics products. Specifically, for 2000-2004 China, Japan, Korea, Malaysia, the Philippines, Singapore, Thailand, and Taiwan are shown to have a comparative advantage in electrical and electronics products, as the values of RCA for that product for these economies are greater than unity. What is noteworthy is that RCA for China increased from 0.99 in 1990-94 to 1.70 in 2000-04, indicating that electrical and electronics products became a product with a comparative advantage from that with a comparative disadvantage. Having discussed that East Asian economies enjoy a comparative advantage in electrical and electronics products, which can be characterized as high-technology products, one should be aware that many East Asian developing economies are engaged in assembly operation of these products, which require labor-intensive rather than high-technology intensive operations such as developing new products. This reflects the “inter-process” division of labor in East Asia, which we will discuss below.

Another product, which many East Asian economies have a comparative advantage in, is textiles and garments, as China, Indonesia, Korea, Philippines,

---

<sup>5</sup> Balassa (1965) developed the concept of “revealed comparative advantage.” In our exercise  $RCA_{ij} = [x_{ij}/X_j] \div [x_{wj}/X_w]$ , where  $x_{ij}$  and  $x_{wj}$  are the value of  $j$  product exported by country  $i$  and the world, respectively, while  $X_{wj}$  and  $X_w$  are world exports of  $j$  product and total world trade, respectively. Product  $i$  is interpreted to have a comparative advantage if  $RCA_i$  is greater than unity.

Table 8 Revealed Comparative Advantage

Reporters	Technology class/1	Period		Reporters	Technology class/1	Period	
		1990-94	2000-04			1990-94	2000-04
China & Hong Kong				Philippines			
A. Resources-based	a.1. Agro based	0.53	0.45	A. Resources-based	a.1. Agro based	1.40	0.60
	a.2. Fuel, mining	0.54	0.51		a.2. Fuel, mining	0.63	0.32
B. Low technology	b.1 Textiles, garment, shoe	4.00	3.33	B. Low technology	b.1 Textiles, garment, shoes	1.63	1.12
	b.2 Glass, iron, steel	1.65	1.64		b.2 Glass, iron, steel	0.78	0.34
C. Medium technology	c.1. Automotive	0.25	0.14	C. Medium technology	c.1. Automotive	0.09	0.28
	c.2. Process	0.74	0.73		c.2. Process	0.36	0.15
	c.3. Engineering	0.84	0.95		c.3. Engineering	0.31	0.46
D. High technology	d.1. Electrical, electronics	0.99	1.70	D. High technology	d.1. Electrical, electronics	1.19	3.60
	d.2. Engines, aircraft, optic	0.39	0.42		d.2. Engines, aircraft, optics	0.07	0.18
Indonesia				Singapore			
A. Resources-based	a.1. Agro based	2.27	2.39	A. Resources-based	a.1. Agro based	0.58	0.30
	a.2. Fuel, mining	0.93	1.11		a.2. Fuel, mining	2.08	1.68
B. Low technology	b.1 Textiles, garment, shoe	2.02	2.05	B. Low technology	b.1 Textiles, garment, shoes	0.45	0.28
	b.2 Glass, iron, steel	0.56	0.86		b.2 Glass, iron, steel	0.49	0.51
C. Medium technology	c.1. Automotive	0.06	0.11	C. Medium technology	c.1. Automotive	0.11	0.08
	c.2. Process	0.71	0.82		c.2. Process	0.67	0.79
	c.3. Engineering	0.13	0.41		c.3. Engineering	1.01	0.72
D. High technology	d.1. Electrical, electronics	0.18	0.61	D. High technology	d.1. Electrical, electronics	3.38	3.15
	d.2. Engines, aircraft, optic	0.09	0.07		d.2. Engines, aircraft, optics	0.40	0.52
Japan				Thailand			
A. Resources-based	a.1. Agro based	0.27	0.33	A. Resources-based	a.1. Agro based	1.34	1.52
	a.2. Fuel, mining	0.47	0.55		a.2. Fuel, mining	0.65	0.74
B. Low technology	b.1 Textiles, garment, shoe	0.18	0.17	B. Low technology	b.1 Textiles, garment, shoes	2.36	1.44
	b.2 Glass, iron, steel	0.79	0.71		b.2 Glass, iron, steel	1.12	0.98
C. Medium technology	c.1. Automotive	2.38	2.22	C. Medium technology	c.1. Automotive	0.12	0.47
	c.2. Process	0.83	1.04		c.2. Process	0.51	0.81
	c.3. Engineering	1.65	1.67		c.3. Engineering	0.58	0.78
D. High technology	d.1. Electrical, electronics	2.11	1.37	D. High technology	d.1. Electrical, electronics	1.54	1.69
	d.2. Engines, aircraft, optic	0.65	0.82		d.2. Engines, aircraft, optics	0.20	0.21
S.Korea				Taiwan			
A. Resources-based	a.1. Agro based	0.42	0.45	A. Resources-based	a.1. Agro based	0.43	0.28
	a.2. Fuel, mining	0.57	0.94		a.2. Fuel, mining	0.34	0.46
B. Low technology	b.1 Textiles, garment, shoe	2.46	1.13	B. Low technology	b.1 Textiles, garment, shoes	2.17	1.20
	b.2 Glass, iron, steel	1.25	0.81		b.2 Glass, iron, steel	2.08	1.63
C. Medium technology	c.1. Automotive	0.53	1.18	C. Medium technology	c.1. Automotive	0.44	0.34
	c.2. Process	1.72	1.33		c.2. Process	1.07	1.38
	c.3. Engineering	1.03	1.11		c.3. Engineering	0.88	0.86
D. High technology	d.1. Electrical, electronics	1.84	2.02	D. High technology	d.1. Electrical, electronics	2.15	2.43
	d.2. Engines, aircraft, optic	0.24	0.22		d.2. Engines, aircraft, optics	0.24	0.62
Malaysia				Vietnam			
A. Resources-based	a.1. Agro based	2.28	1.48	A. Resources-based	a.1. Agro based		0.63
	a.2. Fuel, mining	0.31	0.45		a.2. Fuel, mining		0.38
B. Low technology	b.1 Textiles, garment, shoe	0.69	0.47	B. Low technology	b.1 Textiles, garment, shoes		4.44
	b.2 Glass, iron, steel	0.61	0.64		b.2 Glass, iron, steel		0.69
C. Medium technology	c.1. Automotive	0.06	0.05	C. Medium technology	c.1. Automotive		0.10
	c.2. Process	0.37	0.70		c.2. Process		0.20
	c.3. Engineering	0.89	0.73		c.3. Engineering		0.20
D. High technology	d.1. Electrical, electronics	2.52	2.87	D. High technology	d.1. Electrical, electronics		0.30
	d.2. Engines, aircraft, optic	0.57	0.34		d.2. Engines, aircraft, optics		0.05

Note: Technology classification is based on Lall (2000)

Sources: COMTRADE

Thailand, Taiwan, and Vietnam registered the value greater than unity. It should be noted, however, that the degree of comparative advantage declined for all the countries except Indonesia.



Indonesia, Malaysia and Thailand share a common pattern in that they have a comparative advantage in agriculture-based products, while Japan and Korea exhibit a similar pattern in that they have a comparative advantage in medium to high technology products. Medium technology products include automotives, chemicals and industrial machinery, while high technology products include electrical and electronics products.

Our findings on the pattern of comparative advantage for East Asian economies are mostly consistent with the expectation that it reflects the endowment of resources. Specifically, advanced economies abundantly endowed with well-educated human resources such as Japan and Korea have a comparative advantage in medium- and hi-technology products, while developing economies abundantly endowed with low-wage labor such as ASEAN countries, China and Vietnam have a comparative advantage in low technology products. Economies with abundant natural resources such as Indonesia and Malaysia have a comparative advantage in natural resource-based products. One important caveat to note is the case of developing economies that are shown to have a comparative advantage in high technology products, i.e. electrical and electronic products. This seeming inconsistency can be due to the development of inter-process division of labor in East Asia, where labor-intensive process in the production of high technology products is conducted in low-wage developing economies. As we will see later, the main promoter of developing inter-process division of labor is multinational corporations (MNCs) from developed economies such as Japan and the United States and developing economies from Korea, Taiwan and others.

## II.5. Expansion of Vertical Intra-Industry Trade

We saw earlier that export composition of East Asian economies became similar in the 1990s, as the share of machinery, in particular office and communications equipment and electrical machinery, increased for most economies. We also observed similar increasing shares of machinery, in particular office and communications equipment and electrical machinery, in the import composition for many East Asian economies. Furthermore, we confirmed the increasing complementarity of trading patterns between and among East Asian economies. These observations on changing export and import compositions appear to indicate the increase in intra-industry trade for East Asian economies.

To investigate the degree of intra-industry trade, intra-industry trade (IIT) index is computed for the manufactured products for East Asian economies (Table 9)<sup>6</sup>. As expected, many East Asian economies experienced the expansion in intra-industry trade

Table 9 Intra-industry Trade in East Asia: Manufactured Products (Intra-Industry Trade Index)

	Trading Partners																	
	East Asia			ASEAN			NIES			China			Japan			World		
	90-94	00-04	Change	90-94	00-04	Change	90-94	00-04	Change	90-94	00-04	Change	90-94	00-04	Change	90-94	00-04	Change
<b>Chemicals (SITC 5)</b>																		
East Asia	0.64	0.64	0.00	0.42	0.53	0.11	0.45	0.50	0.05	0.33	0.26	-0.07	0.31	0.34	0.03	0.60	0.62	0.02
ASEAN	0.56	0.60	0.04	0.52	0.61	0.09	0.49	0.56	0.07	0.30	0.27	-0.03	0.26	0.51	0.25	0.46	0.58	0.12
Indonesia	0.27	0.51	0.24	0.27	0.43	0.16	0.26	0.42	0.16	0.09	0.19	0.10	0.14	0.41	0.27	0.25	0.47	0.22
Malaysia	0.35	0.51	0.16	0.43	0.51	0.08	0.28	0.44	0.16	0.22	0.17	-0.05	0.19	0.49	0.30	0.33	0.51	0.18
Philippines	0.36	0.19	-0.17	0.40	0.20	-0.20	0.16	0.13	-0.03	0.27	0.17	-0.10	0.21	0.12	-0.09	0.29	0.20	-0.09
Singapore	0.58	0.40	-0.18	0.25	0.31	0.06	0.45	0.33	-0.12	0.32	0.20	-0.12	0.32	0.49	0.17	0.55	0.51	-0.04
Thailand	0.26	0.39	0.13	0.34	0.35	0.01	0.24	0.31	0.07	0.13	0.21	0.08	0.17	0.24	0.07	0.23	0.38	0.15
Vietnam	0.13	0.13	0.00	0.12	0.12	0.00	0.12	0.12	0.00	0.07	0.07	0.00	0.17	0.17	0.00	0.13	0.13	0.00
NIES	0.53	0.52	-0.01	0.44	0.51	0.07	0.42	0.45	0.03	0.26	0.22	-0.04	0.23	0.24	0.01	0.46	0.48	0.02
Hong Kong	0.39	0.38	-0.01	0.40	0.18	-0.22	0.22	0.14	-0.08	0.22	0.17	-0.05	0.18	0.06	-0.12	0.49	0.44	-0.05
Taiwan	0.43	0.43	0.00	0.36	0.54	0.18	0.18	0.19	0.01	0.03	0.19	0.16	0.18	0.21	0.03	0.32	0.41	0.09
Korea	0.49	0.49	0.00	0.24	0.35	0.11	0.16	0.20	0.04	0.26	0.18	-0.08	0.28	0.33	0.05	0.41	0.46	0.05
China	0.34	0.25	-0.09	0.27	0.22	-0.05	0.27	0.24	-0.03	0.00	0.00	0.00	0.36	0.26	-0.10	0.37	0.35	-0.02
Japan	0.29	0.35	0.06	0.26	0.42	0.16	0.20	0.24	0.04	0.40	0.32	-0.08	0.00	0.00	0.00	0.58	0.55	-0.03
<b>Materials (SITC 6)</b>																		
East Asia	0.76	0.79	0.03	0.41	0.53	0.12	0.72	0.69	-0.03	0.50	0.56	0.06	0.38	0.40	0.02	0.63	0.68	0.05
ASEAN	0.50	0.60	0.10	0.67	0.76	0.09	0.39	0.45	0.06	0.17	0.37	0.20	0.19	0.32	0.13	0.51	0.61	0.10
Indonesia	0.28	0.33	0.05	0.19	0.27	0.08	0.29	0.29	0.00	0.08	0.27	0.19	0.11	0.19	0.08	0.29	0.33	0.04
Malaysia	0.41	0.54	0.13	0.58	0.65	0.07	0.32	0.38	0.06	0.11	0.44	0.33	0.11	0.20	0.09	0.41	0.54	0.13
Philippines	0.18	0.27	0.09	0.30	0.41	0.11	0.13	0.22	0.09	0.11	0.13	0.02	0.13	0.20	0.07	0.22	0.33	0.11
Singapore	0.61	0.64	0.03	0.53	0.64	0.11	0.43	0.52	0.09	0.17	0.36	0.19	0.10	0.16	0.06	0.60	0.64	0.04
Thailand	0.33	0.49	0.16	0.46	0.48	0.02	0.45	0.47	0.02	0.14	0.32	0.18	0.12	0.26	0.14	0.44	0.52	0.08
Vietnam	0.19	0.19	0.00	0.29	0.29	0.00	0.18	0.18	0.00	0.12	0.12	0.00	0.20	0.20	0.00	0.24	0.24	0.00
NIES	0.66	0.66	0.00	0.31	0.40	0.09	0.68	0.65	-0.03	0.51	0.59	0.08	0.45	0.47	0.02	0.59	0.63	0.04
Hong Kong	0.82	0.77	-0.05	0.47	0.43	-0.04	0.23	0.11	-0.12	0.48	0.60	0.12	0.22	0.23	0.01	0.81	0.81	0.00
Taiwan	0.44	0.45	0.01	0.27	0.33	0.06	0.18	0.15	-0.03	0.04	0.37	0.33	0.42	0.47	0.05	0.38	0.38	0.00
Korea	0.47	0.48	0.01	0.15	0.27	0.12	0.22	0.20	-0.02	0.38	0.41	0.03	0.38	0.43	0.05	0.45	0.47	0.02
China	0.51	0.52	0.01	0.19	0.35	0.16	0.57	0.54	-0.03	0.00	0.00	0.00	0.31	0.31	0.00	0.46	0.52	0.06
Japan	0.39	0.39	0.00	0.19	0.29	0.10	0.43	0.41	-0.02	0.31	0.30	-0.01	0.00	0.00	0.00	0.42	0.41	-0.01
<b>Machinery &amp; transport (SITC 7)</b>																		
East Asia	0.93	0.93	0.00	0.61	0.76	0.15	0.65	0.80	0.15	0.51	0.68	0.17	0.29	0.50	0.21	0.67	0.74	0.07
ASEAN	0.66	0.86	0.20	0.87	0.87	0.00	0.70	0.74	0.04	0.53	0.63	0.10	0.28	0.53	0.25	0.63	0.79	0.16
Indonesia	0.19	0.38	0.19	0.48	0.35	-0.13	0.14	0.45	0.31	0.07	0.38	0.31	0.05	0.22	0.17	0.17	0.37	0.20
Malaysia	0.62	0.81	0.19	0.71	0.78	0.07	0.58	0.74	0.16	0.37	0.62	0.25	0.30	0.40	0.10	0.66	0.69	0.03
Philippines	0.41	0.68	0.27	0.40	0.66	0.26	0.41	0.69	0.28	0.10	0.55	0.45	0.26	0.60	0.34	0.50	0.75	0.25
Singapore	0.73	0.86	0.13	0.70	0.78	0.08	0.68	0.70	0.02	0.56	0.58	0.02	0.31	0.53	0.22	0.73	0.81	0.08
Thailand	0.50	0.69	0.19	0.74	0.69	-0.05	0.55	0.64	0.09	0.23	0.69	0.46	0.24	0.47	0.23	0.50	0.68	0.18
Vietnam	0.29	0.29	0.00	0.27	0.27	0.00	0.19	0.19	0.00	0.09	0.09	0.00	0.35	0.35	0.00	0.31	0.31	0.00
NIES	0.79	0.88	0.09	0.66	0.70	0.04	0.75	0.85	0.10	0.50	0.68	0.18	0.31	0.50	0.19	0.70	0.76	0.06
Hong Kong	0.79	0.83	0.04	0.64	0.58	-0.06	0.67	0.57	-0.10	0.49	0.70	0.21	0.23	0.40	0.17	0.80	0.90	0.10
Taiwan	0.66	0.78	0.12	0.46	0.65	0.19	0.43	0.50	0.07	0.16	0.62	0.46	0.31	0.48	0.17	0.54	0.68	0.14
Korea	0.63	0.74	0.11	0.39	0.70	0.31	0.58	0.58	0.00	0.41	0.54	0.13	0.34	0.49	0.15	0.52	0.56	0.04
China	0.50	0.56	0.06	0.46	0.52	0.06	0.52	0.55	0.03	0.00	0.00	0.00	0.25	0.40	0.15	0.46	0.53	0.07
Japan	0.26	0.50	0.24	0.25	0.46	0.21	0.26	0.46	0.20	0.25	0.45	0.20	0.00	0.00	0.00	0.26	0.44	0.18
<b>Other manufactured goods (SITC 8)</b>																		
East Asia	0.82	0.79	-0.03	0.62	0.74	0.12	0.62	0.52	-0.10	0.28	0.28	0.00	0.31	0.34	0.03	0.57	0.69	0.12
ASEAN	0.68	0.78	0.10	0.70	0.76	0.06	0.60	0.64	0.04	0.26	0.40	0.14	0.36	0.49	0.13	0.48	0.57	0.09
Indonesia	0.32	0.39	0.07	0.09	0.27	0.18	0.33	0.56	0.23	0.07	0.26	0.19	0.17	0.14	-0.03	0.13	0.12	-0.01
Malaysia	0.54	0.75	0.21	0.53	0.67	0.14	0.48	0.67	0.19	0.18	0.41	0.23	0.43	0.54	0.11	0.42	0.57	0.15
Philippines	0.44	0.62	0.18	0.36	0.59	0.23	0.42	0.44	0.02	0.21	0.19	-0.02	0.20	0.50	0.30	0.18	0.34	0.16
Singapore	0.61	0.63	0.02	0.51	0.56	0.05	0.55	0.51	-0.04	0.20	0.33	0.13	0.41	0.44	0.03	0.72	0.76	0.04
Thailand	0.47	0.51	0.04	0.41	0.59	0.18	0.47	0.47	0.00	0.23	0.31	0.08	0.26	0.37	0.11	0.26	0.36	0.10
Vietnam	0.38	0.38	0.00	0.39	0.39	0.00	0.30	0.30	0.00	0.26	0.26	0.00	0.31	0.31	0.00	0.29	0.29	0.00
NIES	0.72	0.61	-0.11	0.53	0.62	0.09	0.66	0.64	-0.02	0.33	0.33	0.00	0.30	0.38	0.08	0.48	0.72	0.24
Hong Kong	0.59	0.56	-0.03	0.54	0.58	0.04	0.56	0.62	0.06	0.33	0.31	-0.02	0.34	0.43	0.09	0.60	0.77	0.17
Taiwan	0.49	0.52	0.03	0.41	0.42	0.01	0.33	0.40	0.07	0.05	0.31	0.26	0.37	0.34	-0.03	0.29	0.45	0.16
Korea	0.34	0.56	0.22	0.52	0.52	0.00	0.49	0.64	0.15	0.43	0.42	-0.01	0.20	0.29	0.09	0.27	0.59	0.32
China	0.23	0.30	0.07	0.16	0.39	0.23	0.22	0.32	0.10	0.00	0.00	0.00	0.19	0.23	0.04	0.16	0.23	0.07
Japan	0.26	0.29	0.03	0.32	0.43	0.11	0.31	0.32	0.01	0.08	0.15	0.07	0.00	0.00	0.00	0.43	0.42	-0.01

Note: The intra-industry trade (IIT) index is computed by using trade data based on 3-digit SITC classification. The definition of IIT index is given in the main text.

<sup>6</sup> Intra-industry trade index (IIT) is computed as

$$IIT = 1 - \frac{[\sum \sum \sum |X_{ijk} - M_{ijk}| \div (X_{ijk} + M_{ijk})]}{2}$$
where  $X_{ijk}$  represents exports from industry  $i$  by country  $j$  to country  $k$ , and  $M_{ijk}$  represents corresponding import values. The greater the degree of intra-industry trade, the value of IIT is greater.

with their trade with the rest of the world as well as their trade with other East Asian economies. These trends are particularly notable for the machinery trade (SITC7). IIT index for East Asia with its trade with the world in machinery products was 0.74 in 2000-04, after an increase from 0.67 in 1990-94. The level of the IIT index for machinery products is greater when compared to the cases for chemicals (SITC 5), materials (SITC 6) or other manufactured products (SITC 8). Intra-industry trade is especially active for intra-East Asia trade in machinery, as the IIT index for intra-East Asia trade is as high as 0.93 for the two periods under study<sup>7</sup>.

Wide variations can be observed for the IIT indices among different East Asian economies. Malaysia, Philippines, Singapore, Thailand, Hong Kong, Taiwan, and Korea registered high IIT index for their machinery trade with East Asian economies, while Indonesia, Vietnam, China, and Japan had limited degree of intra-industry trade. These country patterns of the degree of intra-industry trade observed for machinery trade are similar for other products.

Two types of intra-industry trade may be identified. One is horizontal intra-industry trade, where products of similar characteristics in quality and price but with different design and other characteristics are traded. Such trade may occur between the countries with similar income levels, where consumers have similar taste but they also have demand for variety. The other type is vertical intra-industry trade, under which products of different quality and price are traded. An example of such trade involves standard color TVs and hi-definition TVs, which are of different quality and price. As such, vertical intra-industry trade tends to take place between developing and developed countries, where factor prices are very different.

Between these two types of intra-industry trade, a large part of intra-industry trade in East Asia can be characterized as vertical type. Table 10 reports the results of the analysis to classify intra-regional trade in East Asia into three types, two types of intra-industry trade and inter-industry trade (or one-way trade)<sup>8</sup>. The results show that the share of intra-industry trade increased notably from 1990 to 2004, consistent with the earlier finding on the IIT index. For intra-industry trade, a large portion is vertical intra-industry trade, although both horizontal and vertical types increased over time<sup>9</sup>.

---

<sup>7</sup> It should be noted that IIT tends to increase when one increases the level of aggregation in terms of the number of countries under one group such as East Asia rather than individual countries. It also tends to increase when one increases the level of product aggregation, say from SITC 3 digit to SITC 2 digit.

<sup>8</sup> See Fukao et.al (2003) for the classification of three types of trade. 6-digit HS classification is used for the analysis.

<sup>9</sup> This finding is consistent with Fukao et.al (2003).

Table 10 Intra-Industry Trade within East Asia

Year	Inter- industry trade	Horizontal intra- industry trade	Vertical intra- industry trade
1990	42.5	3.3	54.2
1991	40.8	3.7	55.5
1992	23.8	11.7	64.5
1993	34.6	14.1	51.3
1994	33.0	13.7	53.3
1995	31.8	14.1	54.2
1996	31.0	15.4	53.6
2000	27.4	16.1	56.5
2001	25.5	14.0	60.5
2002	21.6	19.9	58.5
2003	23.4	16.4	60.3
2004	21.3	15.1	63.5

*Note: aggregation is based on 6-digit HS1988*

*Computed using method proposed by Fukao, Ishido, and Ito (2003)*

*Source: UN-COMTRADE*

Some examples of vertical intra-industry trade are shown in Table 11, where unit-export prices of selected products are compared for East Asian economies. The figures show the pattern where unit prices and the level of economic development of the exporting countries are closely related. Unit export prices of the products from developed economies such as Japan are significantly higher than those from developing economies such as China.

A large share of vertical intra-industry trade in intra-regional trade in East Asia reflects substantial diversity in the level of economic development among the East Asian economies and the development of regional production network under which parts and components with different quality and characteristics are actively traded.

Table 11 Unit Export Prices of Selected Products from East Asian Economies

	Woven fabrics of synthetic filament yarn				Woven fabrics >=85% synthetic staple			
	1990-92	1993-95	1999-2001	2002-04	1990-92	1993-95	1999-2001	2002-04
China	0.7	1.1	0.7	0.8	0.6	0.7	0.5	0.5
Hong Kong		0.8	0.7	4.5		1.2	0.9	5.5
Indonesia	13.1	10.8	8.9	4.8	9.3	8.5	8.2	3.1
Japan	19.1	20.3	18.4	16.4	16.9	19.7	18.0	15.1
Korea	8.9	10.0	8.8	6.6	7.9	7.6	7.4	5.7
Malaysia	0.4	1.0	3.9	0.3	2.5	1.7	0.8	1.0
Philippines				2.5			5.5	3.3
Singapore	1.1	2.4	1.1	1.0	1.1	1.3	1.2	0.9
Thailand	0.8		6.9	4.0	0.8	2.0	10.7	5.9
Taiwan				4.7				4.6
	Mens or boys shirts knitted/crocheted				Women or girls blouse knitted/crocheted			
	1990-92	1993-95	1999-2001	2002-04	1990-92	1993-95	1999-2001	2002-04
China	2.3	2.5	2.1	2.3	2.0	2.4	1.9	2.0
Hong Kong		7.1	7.1	7.0		6.6	6.3	5.9
Indonesia	14.8	15.9	16.7	10.9	15.6	16.4	16.5	12.7
Japan	60.6	109.4	127.3	119.9	45.7	115.5	129.2	105.5
Korea	17.4	18.2	20.5	17.8	18.1	18.4	21.0	19.5
Malaysia	15.8		12.6	6.3	8.0		12.9	4.4
Philippines				11.5				10.7
Singapore	5.1	6.1	6.2	5.3	3.6	3.6	3.8	3.9
Thailand	4.5	5.3	6.4	5.4	4.0	4.3	4.5	4.3
Taiwan				17.3				17.4
	Footwear with leather, plastic soles (HS 6403)				Record players, other sound systems (HS 8519)			
	1990-92	1993-95	1999-2001	2002-04	1990-92	1993-95	1999-2001	2002-04
China	6.0	5.7	5.2	5.3	5.6	11.1	13.6	18.5
Hong Kong		10.9	11.1	11.2		17.0	22.0	19.5
Indonesia	12.9	13.9	15.8	13.7	6.3	29.3	21.6	18.7
Japan	25.9	37.3		31.7	70.4	91.4	101.0	90.0
Korea	18.9	19.1	17.5	15.3	16.5	21.6	32.3	43.0
Malaysia	7.3	7.0	4.2	0.3	24.8	42.3	50.2	70.1
Philippines			13.8	10.4			57.1	97.2
Singapore	8.7	12.6	18.4	9.4	46.3	65.3	62.0	83.0
Thailand	10.1	11.9	13.4	10.8	17.0	43.3	5.1	24.8
Taiwan				17.8				22.1

Note: Unit export values are computed by using 5 digit HS classification.

## II.6. Active Intra-regional Trade in Machinery Parts

One notable characteristic of intra-regional trade in East Asia is increasing and high importance of trade in machinery parts. This observation is supported by the figures in Table 12. For office and telecommunications, electrical appliances and road vehicles, the share of parts in intra-East Asian trade increased from 1990-94 to 2000-04, although the magnitude of the shares differ among the products. Although the share of parts in textile/apparel trade is also high as that for road vehicles, it declined over time. Among the machinery sectors, the share of parts is highest for electrical appliances,

Table 12 Parts Trade for East Asian Economies: Share of Total (%)

Exporting Regions	Export Destinations															
	East Asia		ASEAN		NIES		China		Japan		US		EU		World	
	90-94	00-04	90-94	00-04	90-94	00-04	90-94	00-04	90-94	00-04	90-94	00-04	90-94	00-04	90-94	00-04
Office and telecommunications equipment: (SITC 759 + 764) / (SITC 75+76)																
East Asia	58.2	66.7	65.3	76.4	47.6	61.5	70.8	80.7	49.4	45.8	41.0	43.8	38.2	43.7	44.5	54.2
ASEAN	56.9	62.3	68.7	76.2	39.0	54.9	73.7	64.7	42.6	43.5	33.7	39.1	24.8	38.4	38.3	49.2
NIES	69.4	75.0	65.0	81.1	69.3	73.3	79.5	81.7	56.5	51.6	41.3	56.6	36.2	52.3	46.9	64.9
China	39.0	56.6	44.1	72.1	36.5	58.5			51.1	42.3	40.2	34.8	32.7	36.5	37.1	46.2
Japan	53.3	71.7	60.6	74.0	50.0	61.1	42.9	88.5			46.0	42.1	47.9	43.8	48.1	51.6
Electrical & Apparatus: (SITC 771+772+773+776) / SITC 77																
East Asia	81.2	85.4	84.3	88.1	79.0	84.6	68.5	83.8	86.7	83.1	73.1	69.7	64.7	70.0	74.2	79.3
ASEAN	87.1	91.8	85.6	89.8	87.5	95.1	69.2	90.3	89.8	90.3	90.7	93.1	87.8	93.7	86.6	91.6
NIES	82.3	87.2	87.3	91.8	83.8	88.9	68.4	84.6	85.1	83.4	67.9	69.1	56.5	68.0	71.5	80.9
China	56.3	72.2	63.2	76.2	52.4	72.4			77.4	68.2	33.9	37.0	27.6	35.8	47.2	55.9
Japan	79.4	80.2	81.7	84.9	78.5	77.5	69.0	77.9			68.7	60.2	59.3	59.6	71.3	73.1
Road vehicles: SITC 784 / (SITC 722+781+782+783+784)																
East Asia	48.7	53.9	45.0	48.8	63.2	58.4	20.6	46.4	94.9	92.7	21.5	19.5	13.2	18.8	23.3	23.6
ASEAN	67.7	78.1	58.3	68.5	56.7	89.0	64.9	86.0	91.4	87.3	97.7	98.3	19.0	40.2	55.8	58.5
NIES	30.0	44.2	32.2	32.4	44.0	60.9	21.2	39.0	93.3	92.2	33.5	14.9	15.7	10.8	26.4	21.5
China	97.7	88.3	79.2	79.1	98.4	63.6			99.1	99.2	95.6	95.7		92.3	92.8	83.5
Japan	42.4	50.7	43.6	47.2	45.6	55.1	18.4	50.9			20.2	18.2	12.7	18.5	20.2	20.8
Textiles and Apparel: SITC 65 / SITC (65 + 84)																
East Asia	62.6	56.0	84.9	79.8	64.4	56.9	91.1	83.0	21.8	18.5	14.1	16.6	21.7	23.8	44.5	43.8
ASEAN	63.3	62.5	73.1	74.8	77.8	71.2	94.0	91.1	29.1	37.2	9.2	6.3	23.0	18.5	32.7	29.8
NIES	75.4	76.2	91.2	86.9	93.3	88.5	90.8	80.0	19.5	22.9	10.7	14.4	13.8	16.9	47.2	53.4
China	37.3	32.4	76.3	62.3	40.8	42.6			23.1	15.4	24.0	25.4	31.4	29.0	35.5	33.5
Japan	93.6	93.6	97.0	97.0	92.2	84.2	94.3	98.3			82.7	85.7	82.0	85.1	91.3	92.5

which is followed by office and telecommunications equipment and then by road vehicles. The importance of parts in intra-East Asian trade can be found by a comparison with trade with the US and the EU. One finds that East Asia's exports have lower (higher) share of parts (finished products) in its trade with the US and the EU compared to that with East Asia.

The pattern of intra-East Asian trade in parts differs by the products and by the economies. For electrical appliances approximately 80 percent of East Asia's exports take the form of parts and the remaining 20 percent of finished products regardless of their export destinations. High share of parts in electrical appliances may be attributable to high shipping cost, as white goods, a large portion of traded electrical appliances, are bulky and heavy. However, one exception is China in that the share of finished products in the exports of electrical appliance is high, especially for its exports to developed countries, possibly reflecting very competitive (low) prices of Chinese products..

A similar trading pattern of China's electrical appliances trade can be found for East Asia's trade in office and telecommunications and textiles/apparel. East Asian economies import parts from other East Asian economies and export finished products to developed countries.

Our findings on the pattern of trade in parts and finished products in office and telecommunications, electric appliances, and textile/apparel suggest the presence of triangular trade. Under the triangular trade parts produced by Japan and the NIES are exported to China and ASEAN countries to be assembled as finished products, which in turn are exported to North America and Europe. To examine this relationship, the triangular trade index is computed for the selected products.<sup>10</sup> The results in Table 13 show that triangular trade increased from 1990-94 to 2000-04 for many products. Among the products machinery products are found heavily engaged in triangular trade.

East Asia's trade pattern in road vehicles is different from the patterns observed for electronics or textiles (Table 12). Similarly to the case for office and telecommunications equipment, and electrical appliances, the share of parts in intra-East Asian trade is increasing, but unlike these products finished products account for a large share road vehicle exports from Japan and the NIES. Unlike the case for office and telecommunication equipment or textiles/apparel, almost all of Japan's imports in road vehicles from East Asia are parts and not finished products. This finding indicates a lack of competitiveness in assembling automobiles in East Asian developing economies

---

<sup>10</sup> Triangular trade index is defined as: [(Export of intermediate goods from Japan & NIES to China and ASEAN) ÷ (Export of intermediate goods from Japan & NIES to the world)] x [(Export of finished goods from China and ASEAN to the EU, US & Canada) ÷ (Export of finished goods from emerging EAs to the World)]

Table 13 Triangular trade index

Products	1990-94	2000-04
Manufacturing	0.103	0.173
Chemicals	0.053	0.092
Wood, paper, & furnitures	0.065	0.131
Metal	0.059	0.168
Power gntr	0.054	0.081
Indstral & metal wrking	0.065	0.099
Office & telecm	0.025	0.164
Electrical	0.014	0.211
Autos	0.337	0.244
Textiles & garment	0.055	0.133

Note: For definition of triangular trade index, see the main text.

Source: Author's computation

vis-à-vis Japan. However, with an improvement in technical capability, East Asian developing economies may improve competitiveness and successfully export finished products to Japan, just like the cases of other machinery products.

The findings in this section indicate developing East Asia's role as a world factory for electronics and electric machinery and textiles, as they produce finished products by assembling the parts and components supplied by developed and developing economies and sell the finished products in the world market.

### III. Foreign Direct Investment and Foreign Trade: Increasing Role of Multinational Corporations in International Trade

#### III.1. Changing Patterns of FDI Inflows in East Asia

We saw earlier that foreign direct investment inflows to East Asia increased rapidly and remarkably since the mid-1980s. Several notable characteristics, which have implications on trade patterns in East Asia, can be found for the recent FDI inflows to East Asia.

First, as to the sources of FDI inflows, increasing intra-regional orientation can not be found, unlike the case for international trade (Table 14). Out of eight countries, for which the data on the sources of FDI inflows are available, only three countries, Indonesia, Thailand, and Korea, saw the increase in the share of East Asia as a source of FDI inflows. Wide variations in the importance of East Asia as a source of FDI inflows among East Asian economies should also be noted. Unlike the pattern observed for international trade, where intra-regional trade accounted for approximately 40-60 percent of total trade for all the East Asian economies, dependence on intra-regional



Table 14 Sources of FDI Inflows to East Asian Developing Economies (%)

	China (actualized)		Indonesia (Approved)		Malaysia (Approved)		Philippines (BOP)		Singapore (committed)		Thailand (BOP)		Korea (Approved)		Taiwan (Approved)	
	1995-99	2000-04	1995-99	2000-04	1995-99	2000-04	1995-99	2000-04	1995-99	2000-04	1995-99	2000-04	1995-99	2000-04	1995-99	2000-04
World	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
East Asia	73.1	61.6	38.3	41.7	45.4	36.4	48.5	37.5	29.0	21.6	52.0	99.1	26.3	26.5	34.8	31.0
Japan	8.3	8.6	14.7	9.7	18.6	11.6	25.4	24.3	29.0	21.6	26.5	42.1	8.8	13.5	17.2	15.2
East Asia ex Japan	64.8	52.9	23.6	32.0	26.8	24.9	23.1	13.3	0.0	0.0	25.5	57.0	17.6	13.0	17.7	15.8
China	0.0	0.0	0.1	10.2	0.7	4.4	2.7	0.0	0.0	0.0	0.0	0.5	0.2	2.9	0.0	0.0
Korea	3.6	6.7	2.9	3.1	3.2	4.5	1.6	0.1	0.0	0.0	0.9	1.2	0.0	0.0	0.5	1.4
Taiwan	7.4	6.2	4.8	0.7	7.7	4.2	2.6	0.2	0.0	0.0	3.6	5.2	0.1	1.0	0.0	0.0
Hong Kong	45.8	34.1	2.9	3.2	0.5	0.8	8.8	1.4	0.0	0.0	9.4	9.0	2.4	1.2	6.2	3.1
Singapore	6.1	4.2	6.9	9.6	14.2	9.8	6.2	10.8	0.0	0.0	10.6	37.7	4.8	2.3	7.5	8.8
Indonesia	0.2	0.3	0.0	0.0	0.5	0.4	0.0	0.1	0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.0
Malaysia	0.8	0.6	4.5	4.9	0.0	0.0	1.2	0.6	0.0	0.0	0.5	1.2	10.0	5.4	0.3	2.4
Philippines	0.3	0.4	0.1	0.2	0.0	0.3	0.0	0.0	0.0	0.0	0.1	1.9	0.0	0.0	3.1	0.0
Thailand	0.6	0.4	1.3	0.2	0.0	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Vietnam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cambodia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Brunei	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Myanmar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Laos	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
US	8.5	8.8	4.0	1.7	29.7	21.2	20.6	19.1	45.3	42.4	20.4	2.2	31.3	31.5	24.9	16.6
EU	7.7	7.0	24.0	17.0	9.1	30.3	18.7	4.8	23.2	30.8	17.3	-0.2	29.5	21.6	7.5	17.0

Note: The EU includes Italy, UK, the Netherlands, France and Germany. In the case of Singapore, the EU indicates Europe.  
Source: Country data sources.

FDI ranges from 99 percent for Thailand for 2000-04 to 22 percent for Singapore for 2000-04.

Second, somewhat similar to the pattern found for international trade, machinery sector, especially electrical and electronic sector received substantial FDI in many East Asian economies (Table 15). In particular, the share of electric and electronics is high in Taiwan, where more than a half of FDI inflows in manufacturing were in that sector. The low share in Thailand is largely due to a negative FDI value, or withdrawal of FDI, in the electric and electronics sector in recent years. Despite a declining trend in Thailand, a large amount of FDI inflows in electric and electronic sector in East Asia since the mid-1980s has led to a substantial increase in international trade in that sector, which we confirmed earlier.

Table 15 Sectoral Distribution of FDI Inflows (%)

	Malaysia (Approved)		Thailand (BOP)		Korea (Approved)		Taiwan (Approved)	
	1995-99	2000-04	1995-99	2000-04	1995-99	2000-04	1995-99	2000-04
Manufacturing	100	100	100	100	100	100	100	100
Food	2.5	3.5	7.3	7.3	11.9	4.4	3.2	3.4
Textiles	2.6	1.9	4.2	2.6	1.3	0.9	2.8	1.3
Wood	8.2	8.0	a	a	11.3	0.9	0.5	1.6
Metals	8.3	9.6	20.2	13.6	3.6	5.1	12.2	6.9
Chemicals	33.0	17.1	9.3	10.2	18.9	18.5	12.6	10.0
General machinery	2.2	1.7	25.9	32.2	8.7	13.2	3.1	5.3
Electric machinery	35.4	43.1	26.9	11.9	29.6	35.9	56.9	61.9
Transport machinery	2.9	6.5	b	b	8.8	12.6	5.3	4.0
Others	4.9	8.4	10.9	22.3	5.5	8.4	3.4	5.5
Manufacturing share of total	na	na	39.6	53.5	49.4	36.4	48.6	35.0

Note: For Thailand Wood (a) is included in others and transport machinery (b) is included in general machinery  
Source: Country data sources

### III.2. Foreign Trade by MNCs

Multinational corporations (MNCs) have had huge impacts on East Asian economies through various forms including generating production, fixed investment and employment. Among those activities, their impacts on foreign trade are substantial<sup>11</sup>. For example, the share of MNCs' exports in China's exports increased from 29 percent in 1994 to 55 percent in 2003, while the corresponding share for imports increased from 46 to 56 percent<sup>12</sup>. Although similar information for many other East Asian economies is not available, the contributions of MNCs for many East Asian economies' trade

<sup>11</sup> On the impacts of FDI on trade, see, for example, Urata (2001), Kawai and Urata (1998, 2004).

<sup>12</sup> China's Statistical Yearbook, various years.

appear substantial, considering their increased position in East Asia and their well-developed global trading networks. In light of these observations, it is important to investigate the trading patterns of MNCs in East Asia, in order to deepen understanding of the changing trade patterns in East Asia. Because of the limited availability of necessary information, we examine the patterns of trade by Japanese MNCs.

Asian affiliates of Japanese MNCs have strong export orientation, when compared to the affiliates in other parts of the world, while import orientation of Asian affiliates is similar to those in other parts of the world. In 2001 the share of exports in total sales for the Asian affiliates in manufacturing sector is 52 percent, significantly higher than 14 percent for the affiliates in North America, while the shares of imports in total procurements for the affiliates in Asia and North America are similar at 54 and 50 percent, respectively<sup>13</sup>.

Among different sectors, trade orientation is particularly high for the machinery sectors with the highest orientation registered by the electronics sector. Indeed, in the electronics sector 70 percent of total sales are destined overseas, while 70 percent of total procurements come from overseas.

Several trade patterns, which were found in the earlier analysis of foreign trade in East Asia above, can also be found in Japanese MNCs' trade pattern. First, one observes an increase in the importance of intra-regional trade in East Asia for Japanese MNCs' trade. The share of exports to Asia (Japan and other Asia combined) in total exports in manufacturing increased slightly from 79.6 percent in 1992 to 82.4 percent in 2001, and the corresponding share for the imports rose from 90.9 to 95.5 percent (Table 16). These increases in the shares are remarkable since the degrees of intra-regional dependence in both exports and imports for the Asian affiliates of Japanese MNCs' were already very high in the early 1990s.

Several interesting changes are observed at sectoral levels. High shares of Japan in both exports and imports of Asian affiliates in textiles are observed. This appears to reflect the strategy of Japanese textile producers, which use Asia as a production base for the Japanese market. A substantial increase in the share of exports to Asia is found for transport machinery at the expense of exports to North America, probably reflecting increased importance of Asian market. A shift in the importance of import source from Japan to other Asia is found for electric and electronics machinery. This shift is probably caused by improved competitiveness of electric and electronic parts produced in other Asian economies.

---

<sup>13</sup> METI, Kaigaij Jigyo Katsudo Kihon Chosa [A Comprehensive Survey of Overseas Activities of Japanese Firms] no. 32, 2004.

Table 16 Trading Patterns of Asian Affiliates of Japanese Firms

Exports	1992					2001				
	Exports to					Exports to				
	Total Asia	Japan	Other Asia	North America	Europe	Total Asia	Japan	Other Asia	North America	Europe
Manufacturing Total	79.6	46.6	33.0	10.9	5.9	82.4	47.2	35.1	8.9	5.1
Food	58.1	49.1	9.1	5.7	3.7	83.3	38.4	44.9	5.6	4.4
Textiles	60.4	32.3	28.0	16.4	15.3	83.4	59.1	24.3	9.3	6.4
Wood and Pulp	95.4	94.8	0.6	4.8	0.0	88.0	72.4	15.6	6.1	5.9
Chemical Products	94.9	13.9	81.0	1.1	0.6	88.3	25.7	62.6	2.9	6.3
Iron and Steel	73.8	14.5	59.3	20.7	6.2	83.9	13.1	70.9	12.8	1.9
Nonmetallic Products	98.9	58.3	40.6	0.3	0.0	93.2	37.4	55.8	2.5	0.8
General Machinery	74.3	50.2	24.0	4.5	20.9	87.8	61.7	26.2	3.7	2.6
Electric and Electronics Machinery	85.1	50.1	35.0	9.8	4.1	82.4	50.5	31.9	10.6	4.0
Electric Machinery	na	na	na	na	na	68.6	42.8	25.8	20.7	6.5
Electronics Machinery	na	na	na	na	na	86.4	52.7	33.7	7.6	3.3
Transport Machinery	36.5	23.0	13.5	52.7	6.8	72.3	24.0	48.3	8.4	11.9
Precision Instruments	85.1	82.1	3.0	8.2	6.0	92.2	69.8	22.4	5.2	2.2
Coal and Petroleum Products	0.5	0.0	0.5	99.5	0.0	95.5	71.1	24.4	0.0	2.3
Other Manufacturing	70.1	43.9	26.2	12.1	13.1	82.2	62.7	19.5	11.8	4.4
Imports	1992					2001				
	Imports from					Imports from				
	Total Asia	Japan	Other Asia	North America	Europe	Total Asia	Japan	Other Asia	North America	Europe
Manufacturing Total	90.9	73.6	17.3	3.5	1.0	95.5	64.4	31.1	2.1	1.2
Food	97.9	16.1	81.8	1.1	0.4	77.5	32.9	44.6	9.0	0.9
Textiles	58.2	37.8	20.4	7.9	2.4	77.0	60.3	16.7	5.1	14.8
Wood and Pulp	82.8	81.0	1.8	5.5	11.7	84.0	62.5	21.5	3.0	4.0
Chemical Products	71.3	59.1	12.2	12.9	4.5	83.6	43.0	40.6	12.0	3.0
Iron and Steel	98.0	66.6	31.4	0.0	0.0	98.5	86.6	11.9	0.0	1.3
Nonmetallic Products	43.8	26.1	17.6	1.1	1.1	84.8	53.3	31.5	4.6	4.4
General Machinery	95.9	93.7	2.2	3.3	0.8	98.9	88.5	10.4	0.8	0.3
Electric and Electronics Machinery	97.9	73.7	24.3	1.9	0.2	97.7	54.3	43.3	0.8	0.4
Electric Machinery	na	na	na	na	na	98.5	55.6	43.0	0.4	0.9
Electronics Machinery	na	na	na	na	na	97.5	54.0	43.4	0.8	0.3
Transport Machinery	95.3	93.0	2.3	3.8	0.8	95.7	88.2	7.5	3.0	0.8
Precision Instruments	97.1	91.5	5.6	2.9	0.0	99.5	84.5	15.0	0.1	0.4
Coal and Petroleum Products	85.1	51.4	33.8	14.9	0.0	91.6	4.1	87.5	2.3	0.6
Other Manufacturing	81.4	66.4	15.0	9.7	5.1	94.8	72.7	22.1	1.1	3.7

Note: The figures indicate the share of sales to (procurements from) the respective regions in total sales (procurements).

Source: Computed from METI, Kaigaijigyo Katsudo Kihon Chosa, No. 5 and No. 34, [Comprehensive Survey of Overseas Affiliates of Japanese Firms], 1994 and 2004.

Second, one can detect the emergence of triangular trade in electric and electronics products involving Asian affiliates of Japanese MNCs,' under which parts are imported from Asian economies including Japan to be assembled for finished products, which in turn are exported to North America and the EU.

Considering a large increase in trade volume by the Asian affiliates of Japanese MNCs' from 1992 to 2001, two observed notable changes above must have contributed to an increase in intra-regional trade and triangular trade involving East Asia.

A large portion of trade conducted by Asian affiliates of Japanese firms take the form of intra-firm trade, trade between MNC's parent firm in Japan and its affiliates in

Table 17 Intra-firm Trade by Asian Affiliates of Japanese Firms: 2001 (%)

	Exports to				Imports from			
	Japan	Other Asia	North America	Europe	Japan	Other Asia	North America	Europe
Manufacturing Total	96.0	70.2	73.8	80.9	46.7	65.9	98.9	93.9
Food	78.7	66.6	73.8	21.8	52.3	24.2	100.0	100.0
Textiles	89.8	59.1	90.9	97.9	52.2	85.2	100.0	100.0
Wood and Pulp	82.8	100.0	--	--	100.0	100.0	--	--
Chemical Products	77.1	50.5	92.8	74.4	74.6	87.4	100.0	100.0
Iron and Steel	86.6	27.9	100.0	--	81.9	100.0	--	--
Nonmetallic Products	97.8	65.4	100.0	100.0	54.7	87.8	81.1	100.0
General Machinery	98.7	91.8	98.9	100.0	59.1	61.6	100.0	97.1
Electric Machinery	98.3	75.8	51.7	81.5	27.7	29.8	67.1	56.6
Electronics Machinery	95.5	80.8	80.3	84.8	44.3	72.6	100.0	94.9
Transport Machinery	99.5	29.8	99.7	72.9	46.4	83.4	100.0	95.9
Precision Instruments	99.5	93.7	92.3	99.4	50.9	89.2	79.0	100.0
Coal and Petroleum Product	100.0	99.4	--	100.0	--	78.9	100.0	--
Other Manufacturing	98.4	78.2	96.1	74.1	29.4	77.9	98.6	100.0

Note: The figures indicate the share of intra-firm transactions in total transactions.

Source: METI, Kaigaijigyo Katsudo Kihon Chosa, No. 34, [Comprehensive Survey of Overseas Affiliated Japanese Firms], 2004.

Asia or between overseas affiliates. For manufacturing as a whole, more than 70 percent of Asian affiliates' exports are destined to their affiliated firms regardless of destinations. The share of intra-firm exports in total exports is particularly high at 96 percent for their exports to Japan. This is understandable as there is a strong linkage between the affiliates and their parent firms. The importance of intra-firm transaction is less for the Asian affiliates' imports from Japan and other Asian economies, when compared to the importance for their exports. In the case of Asian affiliates' imports from Japan, a slightly less than a half of them come from their parent and other affiliated firms.

Coupled with an observation that 74 percent of exports of Japanese MNCs' parent office are destined to their overseas affiliates and 56 percent of their imports are from their overseas affiliates, our findings on Japanese MNCs' trade and intra-firm trade in Asia appear to indicate that Japanese MNCs have developed their own production and distribution network in Asia by fragmenting their production process into several sub-processes and by locating them in a country where a sub-process can be conducted at the least cost. Furthermore, our findings about a high share of intra-firm trade in Japanese MNCs' trade indicate closed nature of production and distribution network developed by Japanese MNCs.

#### IV. Changing Policy Environment: Liberalization of Trade and FDI policies<sup>14</sup>

The factors behind the notable expansion in foreign trade and FDI inflows in East Asia fall into two groups, one concerning domestic factors and the other concerning external factors. The most important domestic factor was the liberalization of both trade and FDI regimes. In addition, a favorable macroeconomic environment, reflected in relatively stable price levels, predictable and stable business environment and supporting institutions for private sector activity, relatively well-developed infrastructure, together with an abundant supply of well-educated, low-wage labor contributed to the expansion of exports and FDI inflows.

As for the external factors, the substantial realignment of exchange rates, particularly the yen-dollar exchange rate in the mid-1980s, was crucial. It should also be noted that the appreciation of the currencies of the NIEs against the US dollar in the late 1980s promoted FDI outflows from the NIEs to other East Asian countries. In addition, remarkable technical progress in information technology facilitated trade and FDI by reducing the cost of communications. Finally, increased competition among MNCs, which resulted partly from liberalization and deregulation in various sectors in many countries of the world, promoted their global activities, thereby expanding trade and FDI. The remaining of this section examines liberalization in trade and FDI policies in East Asia, which contributed to rapid expansion of trade and FDI in East Asia.

##### IV.1. Unilateral Liberalization

In the 1980s and 90s, East Asian economies embarked on unilateral liberalization of trade and FDI policies and deregulation in domestic economic activities as part of more comprehensive structural reform policies. Such policy changes were induced partly by their commitments to the World Bank and the IMF for obtaining economic assistance and largely by the realization on the part of East Asian economies that liberalization and deregulation would promote economic growth. Liberalization of trade and FDI regimes led to the expansion of exports and inward FDI because it shifted the incentives from import-substituting production to export production and increased the attractiveness of these economies to foreign MNCs.

East Asian economies unilaterally liberalized their import regimes by lowering tariff rates and non-tariff barriers from the early 1980s through the early 2000s (Table 18). The notable exceptions were Hong Kong and Singapore, which had adopted virtually free trade regime for a long time. Many East Asian economies had high tariff rates in the late 1980s and early 1990s. Among nine East Asian economies shown in the

---

<sup>14</sup> This section extends Urata (2005a)

table Japan and Singapore are the only two countries, whose average tariff rates were lower than 10 percent. China, Thailand and the Philippines imposed particularly high tariff rates. Since then all the economies pursued liberalization policies. China and the Philippines reduced their tariff rates dramatically so that their respective average tariff rates came down to less than 10 percent by the early 2000s. Other economies carried out liberalization as well, but their magnitude of tariff cuts are less dramatic. In spite of substantial reduction in tariff rates, some economies still maintain relatively high tariff rates. The average tariff rates for Korea and Thailand are around 15 percent in the early 2000s. It should be noted that primary sector is relatively more protected than manufacturing sector, as the average tariff rates for primary products are higher than those for manufactured products in all the economies in the table except Malaysia and Singapore.

Table 18 Trade Liberalization in Selected East Asian Economies

		All products			Primary products		Manufactured products		Ad valorem equivalent of non-tariff barriers
		Binding Coverage	Unweighted averages	Import-weighted averages	Unweighted averages	Import-weighted averages	Unweighted averages	Import-weighted averages	
China	1992		40.4	32.1	36.1	14.1	40.6	35.6	
	2004	100	9.8	6.0	10.0	5.6	9.7	6.0	1.5
Indonesia	1989		19.2	13.0	18.2	5.9	19.2	15.1	
	2003	96.6	6.4	5.2	8.0	3.1	6.1	5.8	0.5
Japan	1988		4.2	3.6	8.3	4.4	3.5	2.7	
	2004	99.6	2.9	2.4	5.3	3.9	2.4	1.6	1.6
Korea	1988		18.6	14.0	19.3	8.3	18.6	17.0	
	2002	94.4	15.5	9.5	20.9	19.0	7.8	5.0	0.0
Malaysia	1988		14.5	9.7	10.9	4.6	14.9	10.8	
	2003	83.7	7.3	4.2	4.5	2.1	7.8	4.6	1.7
Phillipines	1988		28.3	22.4	29.9	18.5	27.9	23.4	
	2003	66.8	4.5	2.6	5.7	5.0	4.2	2.0	0.4
Singapore	1989		0.4	1.1	0.2	2.5	0.4	0.6	
	2003	69.8	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Thailand	1989		38.5	33.0	30.0	24.3	39.0	35.0	
	2003	75.0	14.0	8.3	16.4	4.4	13.5	9.3	0.3
Vietnam	1994		14.8	20.6	20.9	46.7	13.9	13.1	
	2004		13.7	13.7	18.1	16.7	12.9	12.5	

Source: World Bank, World Development Indicators 2005

In addition to trade liberalization in the forms of reduction in tariff rates and non-tariff barriers, several policies adopted by East Asian countries had similar effects to trade liberalization, promoting exports. One is duty drawback system, which returns tariffs paid on the imported parts and components, which are used for the production of exports, to the producers. This system has virtually the same effect as free trade for the

producers of exported products. Another is export processing zones (EPZs), or free trade zones (FTZs), in which exporters or producers of export products can take advantage of free trade on imported inputs. Many EPZs offer various incentives to foreign producers such as income tax holidays, in order to attract export-oriented FDI. Many East Asian countries established EPZs and FTZs in the 1980s and 1990s after seeing the success in Taiwan and Korea in the 1960s and 1970s. It should also be noted that trade liberalization promoted inflows of FDI with an export motive.

Policies toward FDI inflows started to be liberalized in the mid-1980s and liberalization of FDI policies has continued since then, because the East Asian economies began to realize that FDI inflows would promote economic growth. Although it is difficult to quantify the restrictiveness of an FDI regime, it is clear that many East Asian economies have liberalized their policies toward FDI inflows since the mid-1980s<sup>15</sup>. Restrictions on FDI take various forms, including restrictions on market access, most-favored-nation treatment, and national treatment. Many East Asian economies reduced restrictions on market access by reducing the number of sectors and industries on the negative list and by relaxing the limits on foreign equity ownership. Among them, Indonesia, Korea, Malaysia, the Philippines, and Thailand adopted substantial FDI liberalization measures in an effort to attract foreign investors. Furthermore, recognizing the important contribution that FDI may make toward economic growth, a number of economies introduced incentives such as tax breaks to attract FDI. Indeed, there has been keen competition among the countries in the region to attract FDI by reducing barriers and providing incentives.

#### IV.2. Liberalization under Regional Framework

Liberalization of trade and FDI also progressed in regional contexts in the 1990s. The members of the ASEAN started the ASEAN Free Trade Area (AFTA) process in 1992 to make ASEAN a competitive region for exports and for attracting FDI. The 1992 agreement provided for the liberalization of tariff and non-tariff measures under the Common Effective Preferential Tariffs. The target year for achieving tariff and non-tariff liberalization was originally set for 2008, but was later moved forward to 2002. The AFTA has been in effect among the original five ASEAN members—Indonesia, Malaysia, Singapore, Thailand and the Philippines—since January 2002 when the tariff rates were reduced to 0-5 percent, though the exclusion list

---

<sup>15</sup> Japan PECC (2002) examined the impediments to FDI in APEC economies, and found that many East Asian economies reduced the number and the level of impediments by liberalizing FDI policies.



is long and individual country circumstances vary. Furthermore, Vietnam is to comply with the same tariff standards by 2003, Laos and Myanmar by 2005, and Cambodia by 2007. By 2010 ASEAN is expected to become a complete free trade area free from tariffs with the exception of CLMV members, which are given later deadlines. FDI liberalization in the ASEAN has been underway after the creation of the ASEAN Investment Area (AIA) in 1998, which provides coordinated investment cooperation and facilitation programs, market access, and national treatment of all industries. But some ASEAN members continue to maintain sizeable sensitive and exclusion lists from FDI liberalization.

Another regional framework that promoted trade and FDI liberalization in East Asia is the Asia-Pacific Economic Cooperation (APEC) forum. This trans-regional forum, which was established to promote economic growth in the region, includes not only East Asian economies but also economies in North and South America and Oceania. One important characteristic of APEC is its inclusion of China and Taiwan as members. Indeed, APEC was the only international economic forum in which both China and Taiwan pursued trade and FDI liberalization before they became the members of the World Trade Organization (WTO) in 2002.<sup>16</sup> Following the Bogor declaration in 1994 calling for full liberalization of trade and FDI by 2010 for developed-economy members and by 2020 for developing-economy members, APEC members agreed to prepare and implement individual action plans specifying near- and medium-term liberalization measures. Peer pressure has played a crucial role in the implementation of liberalization schemes. All APEC members have made significant progress toward freer trade and FDI regimes and they also helped both China and Taiwan to join the WTO.

#### IV.3. Liberalization under Multilateral Framework

Turning to the multilateral level, the Uruguay Round of multilateral trade negotiation under the GATT started in 1986 and ended in 1994. Although the negotiations lasted eight years, twice as long as was targeted, the Uruguay Round made substantial progress toward liberalizing trade and FDI. The achievements include: a reduction in tariff rates; framework agreements on trade in services, on intellectual property rights and on trade-related investment measures; a timetable for phasing out all quantitative restrictions on trade including those on textiles under the Multi-Fiber Arrangement (MFA); first steps toward bringing agriculture more firmly under a multilateral discipline; a stronger dispute settlement mechanism; and the establishment

---

<sup>16</sup> They are also members of the Asian Development Bank.

of the WTO. Though it is difficult to estimate the impact of these achievements individually, there is no doubt that the GATT/WTO has promoted trade and FDI liberalization in East Asia.

Earlier we observed a dramatic reduction in tariff rates by China. It should be noted that China liberalized its trade regime substantially in order to join the WTO and it has committed itself to liberalize trade further after joining the WTO.

Since the establishment of the WTO in 1995, it took as long as six years to start a new multilateral negotiation. The long delay for the start of the new round was mainly due to the differences in the views toward multilateral trade liberalization between developed and developing members. The Doha Development Agenda (DDA), the first round under the WTO, started in 2001 but it has not entered real negotiation yet because of the differences in opinions on the contents of DDA not only between developed and developing members but also within the respective groups.

#### IV.4. Bilateral and Regional Framework: Recent Surge of FTAs in East Asia

East Asia was not active in the formation of regional trade agreements (RTAs), which include FTA and customs union, until recently (Table 19)<sup>17</sup>. Indeed, ASEAN Free Trade Area (AFTA) was the only major FTA until Japan and Singapore enacted Japan–Singapore FTA (formally named a New Age Japan-Singapore Economic Partnership Agreement, JSEPA) in 2002<sup>18</sup>. However, the situation changed dramatically in recent years. Many economies in East Asia began to form FTAs with the countries not only in the region but also outside the region.

Besides AFTA, ASEAN as a group as well as its members individually have become active in FTA discussions with other countries in recent years. One of the FTAs involving ASEAN that has received most attention recently is that with China. ASEAN

---

<sup>17</sup> In the GATT/WTO, regional trade agreements (RTAs), which violate one of its basic principles of non-discrimination, are permitted under GATT Article XXIV with several conditions, which include liberalization of substantially all the trade of the members, not increasing trade barriers on non-members, and completing the RTA process within ten years. For developing members, more lenient conditions are applied under the enabling clause. An FTA is considered to be a shallow form of regional integration, because it only removes tariff and non-tariff barriers among the members, while a customs union is a deeper integration, as it adopts common external tariffs on non-members, in addition to the removal of tariff and non-tariff barriers on trade among the members.

<sup>18</sup> AFTA was discussed in an earlier section. For discussions on FTAs in East Asia, see for example, Aggarwal and Urata (2006), Urata (2005b), and Pangestu and Gooptu (2004).

Table 19 Major FTAs Involving East Asian Economies (as of April 2006)

In Action	In Negotiation	Under Study
Bangkok Treaty (1976)	China-Thailand*	China-India
AFTA(1992)	China-Australia	Japan-Australia
Singapore-New Zealand (2001)	China-New Zealand	Japan-India
Japan-Singapore (2002)	China-Chile	Korea-ASEAN
Singapore-Australia (2003)	Japan-ASEAN	Korea-Australia
Singapore-EFTA (2003)	Japan-Indonesia	Korea-New Zealand
Singapore-US (2004)	Japan-Korea	Korea-Thailand
Korea-Chile (2004)	Japan-Malaysia*	Korea-US
China-Hong Kong (2004)	Japan-Thailand	ASEAN-India
China-Macau (2004)	Japan-Philippines	ASEAN-US
Taiwan-Panama(2004)	Korea-ASEAN	ASEAN-CER
Japan-Mexico (2005)	Korea-Singapore*	Malaysia-EU
Thailand-Australia (2005)	Malaysia-Australia	Malaysia-India
Thailand-New Zealand (2005)	Malaysia-New Zealand	Philippines-US
China-ASEAN(2005)	Singapore-Canada	Singapore-Chile
India-ASEAN(2005)	Singapore-Mexico	Singapore-Taiwan
	Singapore-India*	
	Singapore-Sri Lanka	
	Singapore-Qatar*	
	Singapore-Peru	
	Singapore-Panama	
	Singapore-Kuwait	
	Singapore-Brunei-Chile-NZ	
	Thailand-India*	
	Thailand-US	
	Thailand-Peru*	
	Thailand-EFTA	
	Hong Kong-New Zealand	

Note: '\*' indicates conclusion of the negotiation.

Source: Country sources

and China enacted FTA in goods trade in July 2005 and they are currently negotiating FTA in services trade. ASEAN is currently also negotiating FTAs with Japan, Korea and others. Several ASEAN members have become active in establishing bilateral FTAs. Singapore enacted many FTAs with countries such as New Zealand, Japan, Australia, the USA, the EFTA, and India and began negotiations with countries including India. Thailand has also become active in establishing FTAs, as it has implemented FTA with Australia and is currently under negotiations with the USA, Japan and many others. Malaysia signed FTA with Japan and it agreed to begin negotiations with several economies including the US. Both the Philippines and Indonesia are negotiating FTA with Japan separately.

Compared to ASEAN countries in Southeast Asia, the economies in Northeast Asia including China, Japan, Korea, and Taiwan had not been active in FTAs until recently. However, China, Japan and Korea have become very active in FTAs. China implemented FTA with ASEAN, Hong Kong, Macau, and it is negotiating FTAs with over 20 countries. Japan enacted FTA with Singapore and Mexico. It has signed or is very close to sign FTAs with Malaysia and Thailand, and it is currently in negotiations with ASEAN, Indonesia, the Philippines, Korea, and Chile. Korea implemented FTAs with Chile and Singapore and is in negotiation with Japan, ASEAN and others. It is scheduled to begin negotiations with the US.

An idea of FTA covering East Asian countries has emerged. At the Leaders' summit meeting of ASEAN+3 (China, Japan, and Korea) in 1998 the leaders decided to set up East Asia Vision Group to study long term vision for economic cooperation. The group has presented the leaders with recommendations including the establishment of East Asia FTA. Currently, the Expert Group, which was set up at the recommendation of ASEAN+3 Economic Ministers, is studying the possibility of East Asian FTA, comprising of ASEAN+3.

Various reasons can be considered behind the recent surge of FTAs in East Asia. First, rapid expansion of FTAs in other parts of the world has made East Asian economies realize the importance of establishing FTAs in order to maintain and expand their export opportunities. Indeed, the number of FTAs reported to the GATT/WTO by its members started to expand sharply since the early 1990s and the pace of the expansion accelerated in the mid-1990s when the WTO was established. Second, a stalemate of the negotiations under the DDA turned the attention of the WTO members with an interest in trade liberalization to FTAs. Third, the Asian financial crisis in 1997-98 prompted East Asian economies to be aware of the need for regional cooperation such as FTAs in order to avoid another crisis. Fourth, rivalry among East Asian economies over gaining a leadership role in the region has activated their FTA strategies.

One notable characteristic of FTAs in East Asia is their comprehensiveness in coverage. As such, some of the FTAs established in East Asia are termed as Economic Partnership Agreement (e.g. Japan-Singapore EPA, JSEPA), or Closer Economic Partnership Arrangement (e.g. China-Hong Kong CEPA), and others. These new types of FTAs typically include facilitation of foreign trade, liberalization and facilitation of foreign direct investment (FDI), and economic and technical cooperation, in addition to trade liberalization, which is included in traditional FTAs. It may be worth noting that the basic philosophy of these new types of FTAs is similar to that of Asia Pacific

Economic Cooperation (APEC) forum, whose three pillars are (1) liberalization and (2) facilitation of foreign trade and foreign investment, and (3) economic and technical cooperation.

Many FTAs in East Asia are quite new and therefore their impacts may not have been fully materialized. However, a number of evidences on the impacts of FTAs in the form of trade expansion have been reported. For example, bilateral trade between China and Thailand has been reported to have increased notably after the enactment of an early harvest program under China-ASEAN FTA.

Although FTA may bring benefits in the form of trade expansion to FTA members, several possible negative impacts have been pointed out by researchers, business people, policy makers and others. First, some FTAs that are established in East Asia are of low quality in that a substantial number of commodities and/or important commodities are excluded from trade liberalization. Critics argue that because of low quality, FTAs will not generate expected trade expansion effect, but they only create distortions in the market. Second, proliferation of FTAs with different rules of origin is likely to give rise to the spaghetti bowl effect, which would reduce trade volume by creating impediments to trade. Third, an increased interest in FTAs is likely to have a negative impact on WTO negotiations by diverting interests and negotiating resources away from the WTO.

## V. Concluding remarks

This paper began with observing rapid expansion of foreign trade and foreign direct investment in East Asia, which played an important role in achieving successful economic development in the region.

The subsequent analysis revealed the dramatic changes in trade patterns of East Asian economies in various aspects. First, intra-regional trade expanded faster than extra-regional trade, resulting in an increase in intra-regional dependency. Second, composition of trade shifted from non-manufacturing to manufacturing, especially to machinery products. Among machinery products, electronic (office and telecommunication equipment) and electric products increased their importance. Third, intra-industry trade expanded faster than inter-industry trade. Within intra-industry trade, a dominant portion is in the form of vertical intra-industry trade although horizontal intra-industry is also increasing. Fourth, trade in parts account for a large part of total trade (trade in parts and finished products) and the share is increasing. This pattern reflects increasing extent of division of labor inside East Asia as East Asia has become a factory for the world. Fifth, all these changes in trade patterns observed above appear to

have resulted from active involvement of multinational corporations (MNCs) in foreign direct investment and foreign trade, as MNCs took an advantage of business opportunity arisen from freer trade and FDI environment, resulting from trade and FDI liberalization policies adopted by East Asian economies. As such, these notable features of trade in East Asian were generated by market forces. Focusing on increasing intra-regional trade, observers have described such development as market-driven regionalization.

However, market-driven regionalization seems to be giving way to institution-driven regionalization, as a large number of attempts have been made to establish regional preferential agreements in the form of free trade agreement (FTA). An interesting and important question to be asked is whether FTAs would lead to further promotion of the trends and patterns realized so far and to achieve economic growth.

The impacts of FTA on trade among FTA members so far appear positive, being consistent with outcome projected by the simulation analysis using economic models. Indeed, many studies of the possible impacts of FTAs by using computable general equilibrium (CGE) models indicate positive impacts on trade and economic growth of the members. One would predict further development of the recent patterns of foreign trade in East Asia as FTAs lead to larger and freer trading environment.

Despite these positive impacts of FTAs, concerns have been raised about possible negative impacts, which may be caused by the proliferation of FTAs with different rules and contents. It is also important to emphasize the possible negative impacts on non-members.

Recognizing that global trade liberalization is optimum in terms of economic welfare for all the economies in the world, policy makers and researchers have to devise the scenario and policy to move from regional trade agreements such as FTAs to global trade liberalization. In this regard, it is important to make sure that existing and future FTAs be consistent with GATT/WTO rules, although these rules themselves have to be improved so as to successfully turn FTAs into global free trade.

## References

Vinod K. Aggarwal and Shujiro Urarta eds. (2006) *Bilateral Trade Agreements: Origins, evolution, and implications*, Routledge, New York.

Japan PECC (Pacific Economic Cooperation Conference) (2002) *An Assessment of Impediments to Foreign Direct Investment in APEC Member Economies*, Tokyo.

Lall, Sanjaya (2000) "The Technological Structure and Performance of Developing Country Manufactured Exports," *Oxford Development Studies*, 28 (3), pp. 337-69.

Ng, Francis and Alexander Yeats (2003), *Major Trade Trends in East Asia: What are their Implications for Regional Cooperation and Growth?* Policy Research Working Paper 3084, The World Bank

Fukao, Kyoji, Hikaru Ishido, and Keiko Ito (2003) "Vertical Intra-Industry Trade and Foreign Direct Investment in East Asia," RIETI Discussion Paper Series 03-E-01, Research Institute of Economy, Trade and Industry.

Kawai, Masahiro and Shujiro Urata (1998) "Are Trade and Direct Investment Substitutes of Complements? An Empirical Analysis of Japanese Manufacturing Industries," in H.Lee and D.Roland-Holst eds., *Economic Development and Cooperation in the Pacific Basin: Trade, Investment and Environmental Issues*, Cambridge University Press, Cambridge, U.K., pp. 251-293.

Kawai, Masahiro and Shujiro Urata (2004) "Trade and Foreign Direct Investment in East Asia," in Gordon de Brouwer and Masahiro Kawai, *Exchange Rate Regimes and East Asia*, RoutledgeCurzon, London, pp. 15-102

Pangestu, Mari and Sudarshan Gooptu (2004) "New Regionalism: Options for China and East Asia," in Homi Kharas and Kathie Krumm eds., *East Asia Integrates*, The World Bank, Washington, D.C., pp. 79-99.

Petri, Peter A. (1993) "The East Asian trading bloc: An analytical history," in

J.A.Frankel and M. Kahler, eds., *Regionalism and Rivalry: Japan and the United States in Pacific Asia*, Chicago University Press, Chicago, pp. 21-48.

Urata, Shujiro (2001) "Emergence of an FDI-Trade Nexus and Economic Growth in East Asia," in Joseph Stiglitz and Shahid Yusuf, eds., *Rethinking the East Asian Miracle* (Washington, DC: World Bank), Oxford University Press, New York, pp. 409-459.

Urata, Shujiro (2005a) "East Asia's Multi-Layered Development Process: The Trade-FDI Nexus," Kiichiro Fukasaku, Masahiro Kawai, Michael G. Plummer and Alexandra Trzeciak-Duval, eds., *Policy Coherence Towards East Asia: Development Challenges for OECD Countries*, OECD, Paris, pp.347-410..

Urata, Shujiro (2005b) "Free Trade Agreements: A Catalyst for Japan's Economic Revitalization," in Takatoshi Ito, Hugh Patrick, and David E. Weinstein, eds., *Reviving Japan's Economy*, MIT Press, Boston, pp.377-410.

Yeats, Alexander (1998) "What Can Be Expected from African Regional Trade Arrangements," *Policy Research Working Paper*, No. 2004, World Bank.