

## Chapter 2

# **Development of *De Facto* Economic Integration in East Asian Trade**

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## **INTRODUCTION**

### **1.1. Purpose of study**

East Asia has achieved rapid growth in trade during the world economic expansion in recent decades. Its intraregional trade, most especially, has shown a remarkable performance. This study aims to examine and illustrate characteristics and features of trade in East Asia, and to contribute to the consideration on evolving trade and industrialization pattern. The study serves as a starting point for further discussion into the deepening economic integration as stimulated by political efforts (de jure integration) and into the development and current state of the de facto integration in trade.

### **1.2. Research questions**

This study aims to answer three major questions. First, what pattern (or goods) has caused the rapid expansion of trade in East Asia? To answer the question, long-term trade data classified by production stage are reviewed and insights concerning the nature of goods are derived. Second, is such trade pattern in East Asia different from that of other regions such as the North Americas or the European Union (EU)? The answer to this is important because if the leading trade pattern for de facto integration is different from that of other areas, this would mean the efforts for further integration of East Asia may have different requirements. Finally, can such trade pattern be extended to all countries in spite of the development gap?

### **1.3. Main findings**

Findings show that among all regions, East Asia has expanded the most and achieved remarkable economic integration in trade. Such expansion of East Asia's intraregional trade is led by the manufactured goods, particularly parts and components, as a result of crossborder production sharing in the machinery industry.

The study also shows that the main trade partner of East Asia on parts and components has shifted from the United States to regional members, especially ASEAN and China. This implies that the integration of East Asia has been driven by the production side through parts-and-components trade. Such trade pattern is unique and differentiates East Asia from other areas, especially the EU.

East Asia has a strong tendency as exporter of final goods to nations outside the region, which may make East Asia easily influenced by the world economy. Countries that are into parts-and-components trade (in other words, those participating in cross-border production sharing) have been gradually expanding in the region, which may suggest that these regional members have grown to improve their production capacities needed for international activities. The less developed countries of ASEAN also seem to start engaging in parts and component trade, although their trade amounts are not large at this stage. Based on previous observations, the opening up of a country for international activities such as production sharing seems to offer it a significant chance for economic development. Each member country of East Asia has its own role and contribution to the region, although parts-and-components trade is one of the effective options. Aside from this option, others supply natural and energy resources to member-countries. Still others import final goods, including those produced by such production sharing. Those contributions are not constant all throughout but dynamically changing.

### **1.4. Section organization**

In the next sections, this paper presents an overview of the world trade development then shifts back to the pattern in intraregional trade in East Asia as

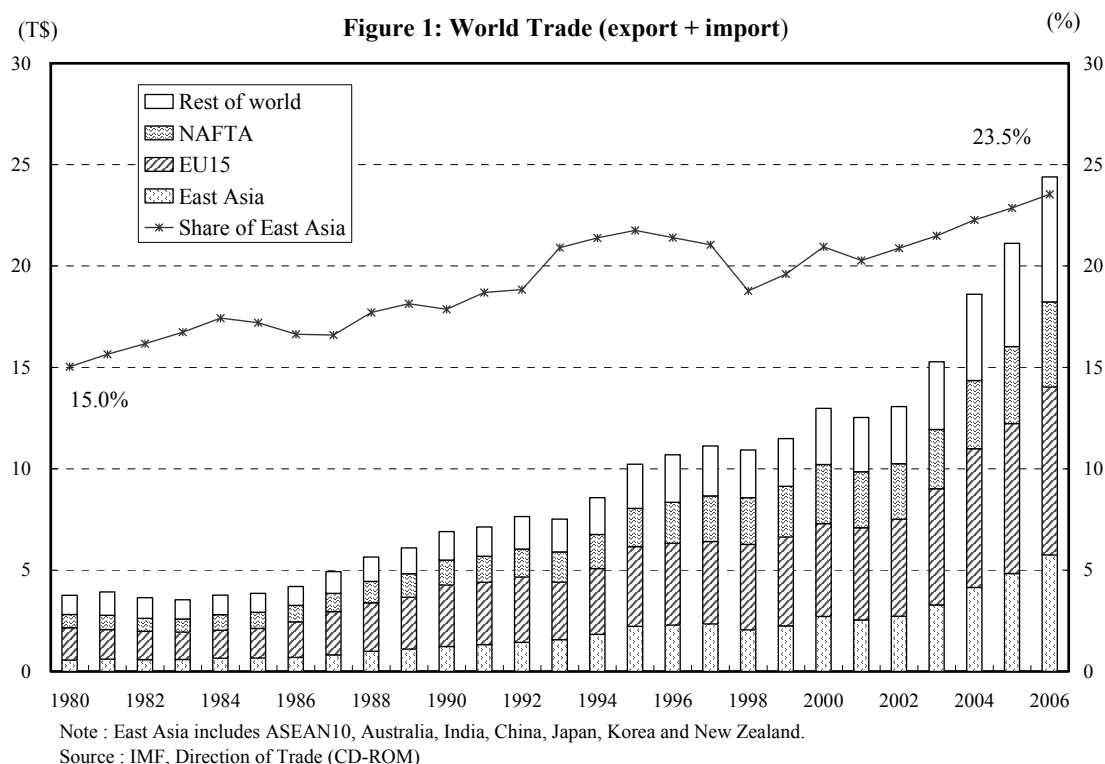
compared with other regions. The trade characteristics of individual countries in East Asia will also be dissected. The final section presents conclusions and policy implications.

## **2. OVERVIEW OF WORLD TRADE**

### **2.1. World trade development**

Figure 1 indicates the total values of world trade together with the regional breakdown. World trade increased from US\$3.8 trillion in 1980 to US\$24.4 trillion in 2006. Therefore, from 1980 to 2006, one sees an expansion of about 6.5 times. The growth, however, was not the same across economic regions. The trade value of East Asia<sup>1</sup> (ASEAN10, Australia, India, China, Japan, Korea and, New Zealand) grew by about 10 times, from US\$0.6 trillion to US\$5.7 trillion during the same period, while that of NAFTA grew 6.5 times, which is similar to the world average. The trade value of EU15 grew by only 5.2 times, which is less than the average. One can therefore say that East Asia is the most active group with the highest growth in trade.

Figure 1 also shows that East Asia's share in world trade increased from 15.0 percent in 1980 to 23.5 percent in 2006 as a result of rapid growth. On the contrary, EU15 decreased its share from 42.5 percent to 34.0 percent while NAFTA remained at almost the same share: from 17.3 percent to 17.2 percent for the same periods.

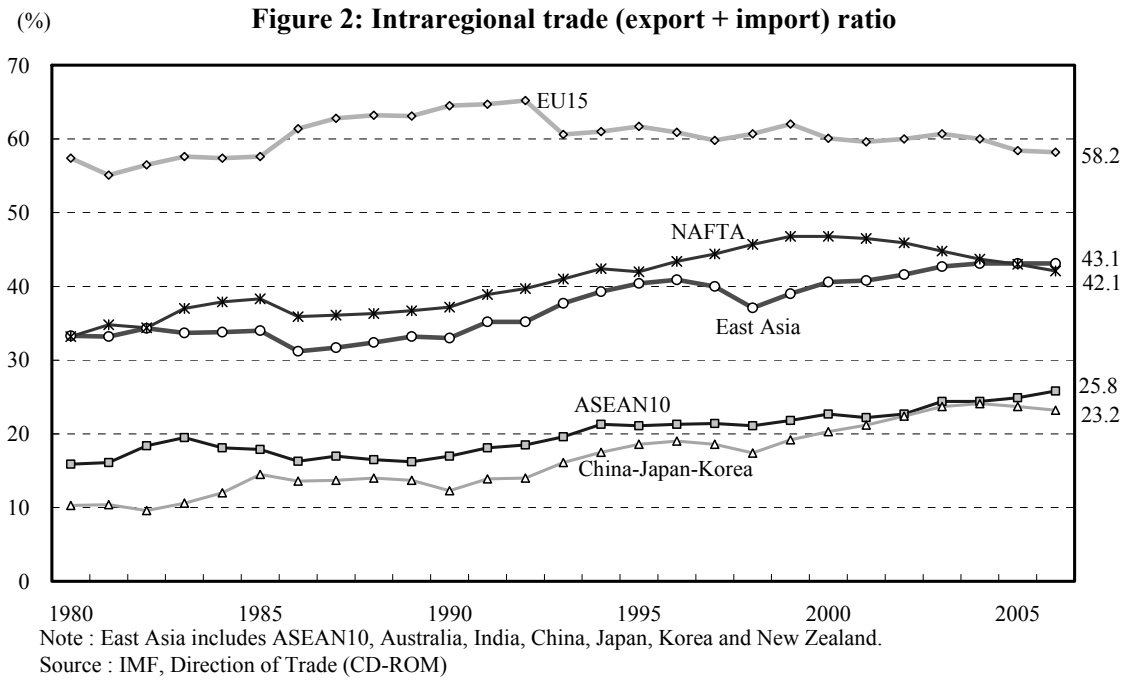


## 2.2. Intra-regional trade of economic regions

After looking at the growth of East Asia's trade, it is now time to examine East Asia's level of integration in terms of trade, in comparison to that of other economic regions such as the EU and NAFTA. For the assessment, the intra-regional trade ratio, one of the major indicators for integration in trade, is used. The aim here is to determine how strong relationship there is among regional trade partners.

Figure 2 shows the historical development of intra-regional trade ratio for several areas. Patterns of ratios are seen to differ among regions during the period involved. The intra-regional ratio of East Asia started increasing in the middle of the 1980s and sustained this in spite of the tentative decline during the Asian financial crisis. The ratios also increased for other groups such as ASEAN10 and China-Japan-Korea although these were much lower than East Asia's. On the contrary, the intra-regional trade ratio of NAFTA increased up to around year 2000, and started declining slowly after that. The ratio of EU15 remained almost at the same level after the mid 1990s. If one is to compare the current level of ratios among major economic regions, East Asia

(43.1) exceeds NAFTA (42.1) although lower than that of the EU (58.2). Based on these observations, one can say that East Asia has been advancing its economic integration in terms of trade.



### 3. CHARACTERISTICS OF TRADE PATTERN INSIDE EAST ASIA

#### 3.1. Change of main trading goods inside East Asia

In terms of trade patterns within East Asia, it is interesting to find out what type of trade pattern or trade goods caused the expansion of intraregional trade. For these, trade data, which indicate the nature of goods classified by production stage, are used for the study.

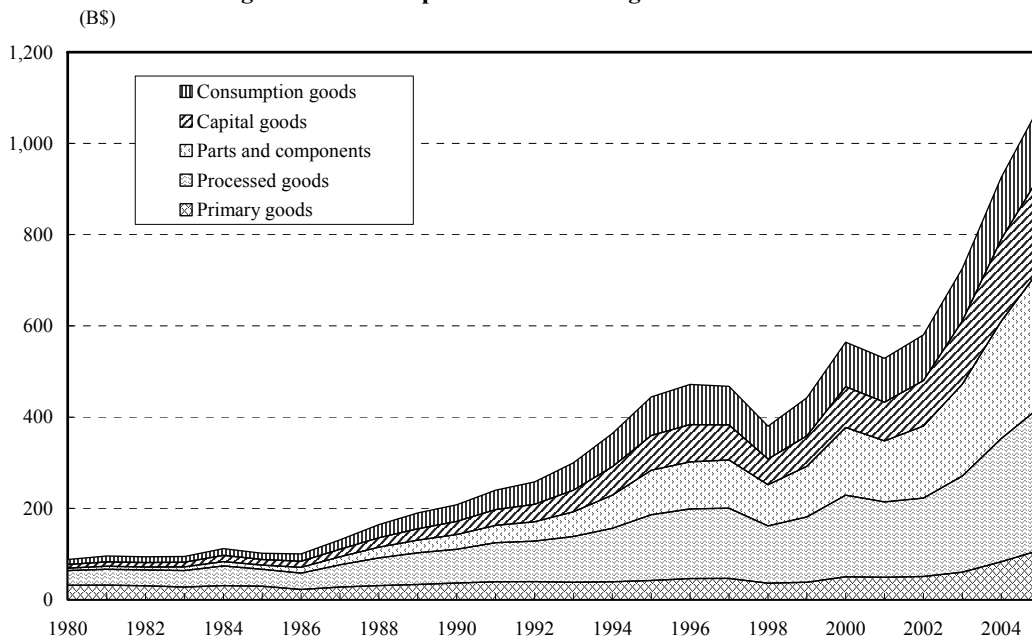
Figure 3 shows the development of intraregional trade values by production stage<sup>2</sup>. Notice that the expansion of intraregional trade is the result of industrialization of East Asia. While the trade value of primary goods remains almost at the same level, those of

the other four types of goods (namely, processed goods, parts and components, capital goods, and consumption goods)---all of which are classified as “manufactured goods”--- have expanded tremendously.

Figure 4 indicates the trend in the trade share of five types of goods. A sharp decline in share of primary goods in intraregional trade is coupled by a shift to manufactured goods, although the primary goods shows a small share increase recently partly because of rising prices of commodities.

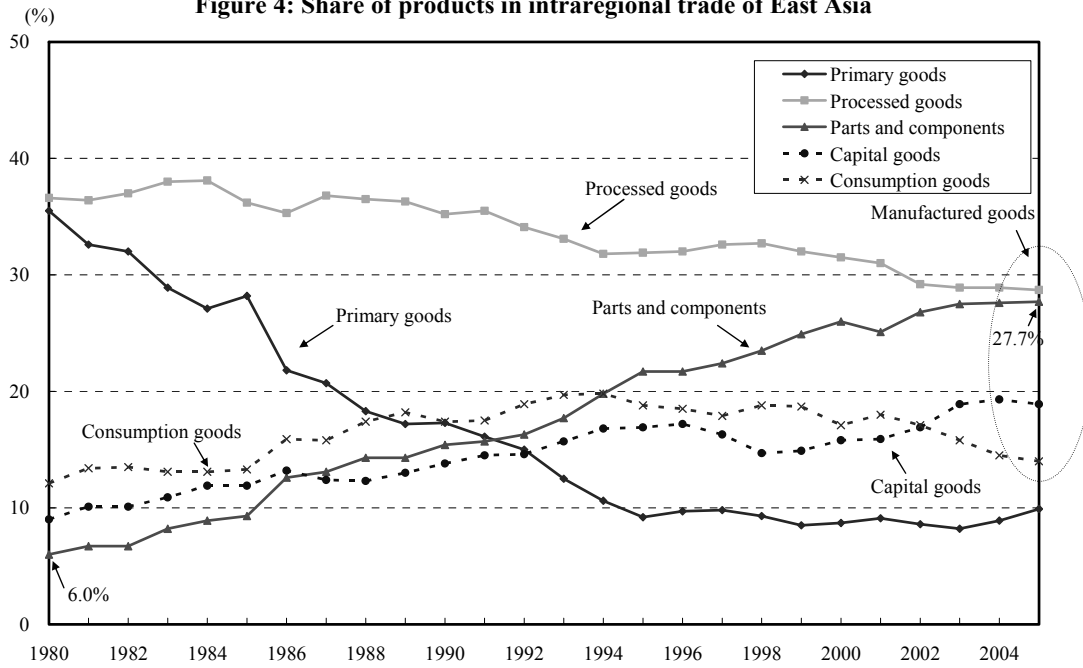
On the other hand, the expansion is not in the same manner among the four types of manufactured goods. The share of parts and components, which looks like the main driving force for expansion in intraregional trade, has a sharp upward trend. It increased more than 20 points, from 6.0 percent in 1980 to 27.7 percent in 2005. The share of capital goods also increased.

**Figure 3: Value of products in intraregional trade of East Asia**



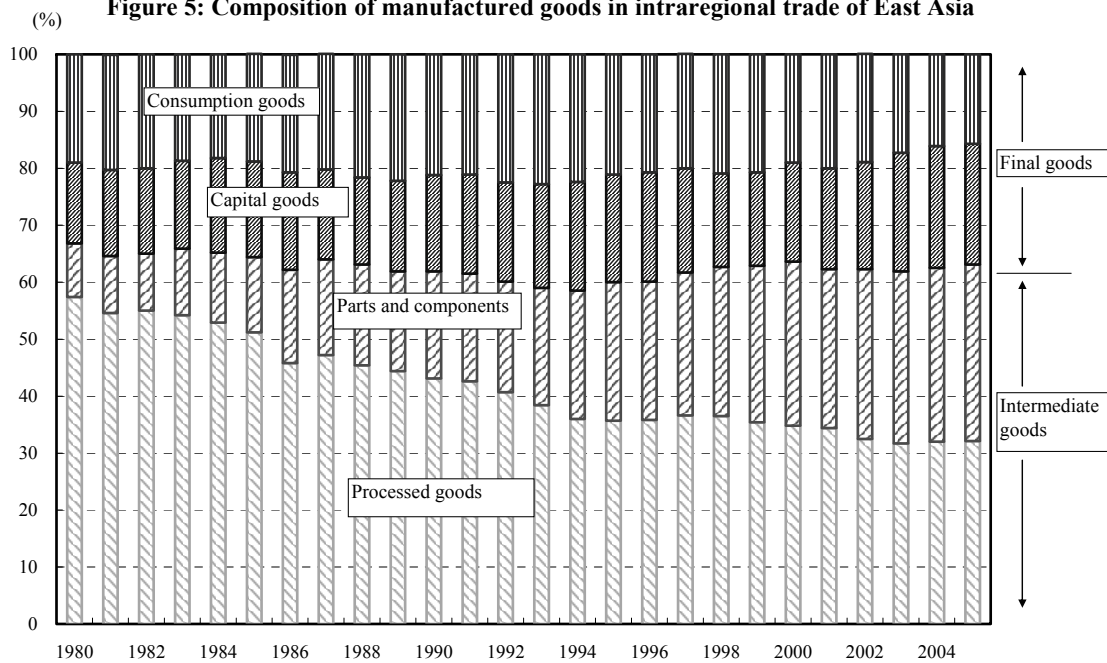
Note : The values of trade goods are measured by import value on US dollar basis.  
 Source : Original data came from UN Comtrade database. Compiled by IDE.

**Figure 4: Share of products in intraregional trade of East Asia**



Note : The values of trade goods are measured by import value on US dollar basis.  
 Source : Original data came from UN Comtrade database. Compiled by IDE.

**Figure 5: Composition of manufactured goods in intraregional trade of East Asia**



Note : The values of trade goods are measured by import value on US dollar basis.  
 Source : Original data came from UN Comtrade database. Compiled by IDE.

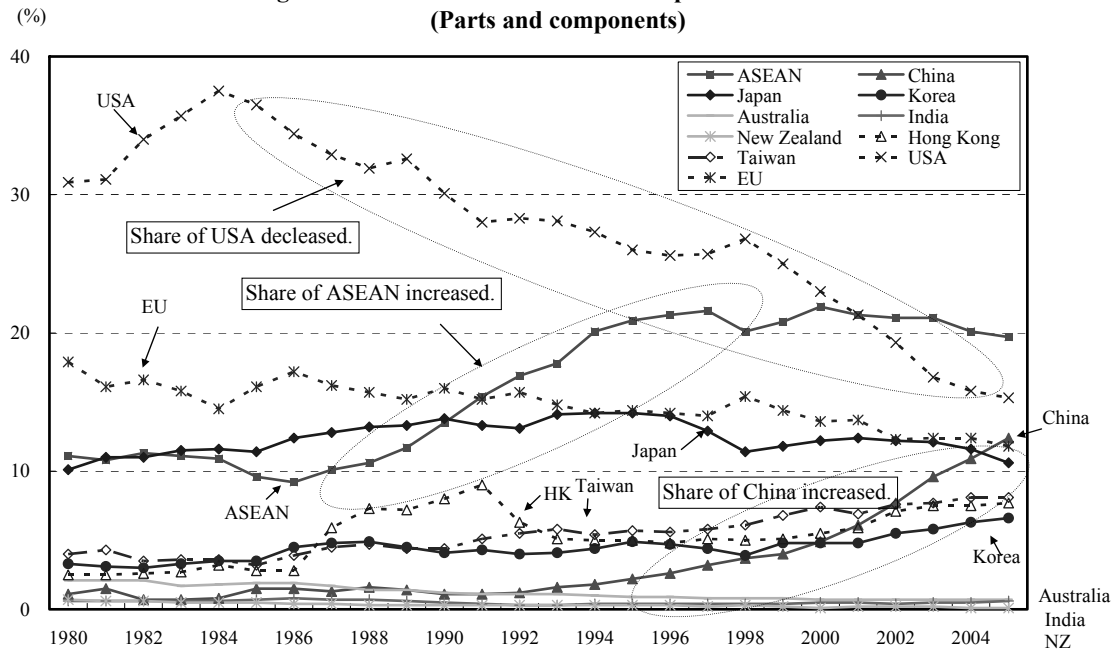
With regard the composition of manufactured goods, Figure 5 illustrates that the share of intermediate goods has not changed much. Again, parts and components has expanded its share, while processed goods has decreased among the intermediate goods. This suggests two possibilities. One possibility is that transactions of machinery have expanded in intraregional trade of East Asia. Another is that the production processes are divided across different locations in various countries, and trade of parts and components surged between those production blocks, along with production sequence. This phenomenon, known as the cross-border production sharing (or fragmentation), occurs when the locations have different advantages (such as different factor prices) for a certain production process and the trade costs between locations are reasonable. The diversity of countries in East Asia, together with trade liberalization, seems to offer a significant chance for development of cross-border production sharing. The increase in share of capital goods and the more striking growth of parts and components than capital goods may support both possibilities.

### **3.2. Trade partner of parts and components**

Now that parts and components has been acknowledged above as the key product category for expansion in intraregional trade, one can continue to ask: Is parts and component the driving force that strengthens integration in trade? The next table focuses specifically on this product category.

Figure 6 showed the share of trade partners with regard to parts and components. Note that the main trade partner shifted drastically from the United States to the neighboring countries in East Asia. The ASEAN increased its share remarkably during latter half of the 1980s and first half of the 1990s. China crept its way in the 1990s. The figure concludes that ASEAN and China got more importance than the United States from the 1980s to 2005. It may also imply that even countries with relatively low income can play an active part in this activity.

**Figur 6: Trade share of East Asia with partner countries  
(Parts and components)**



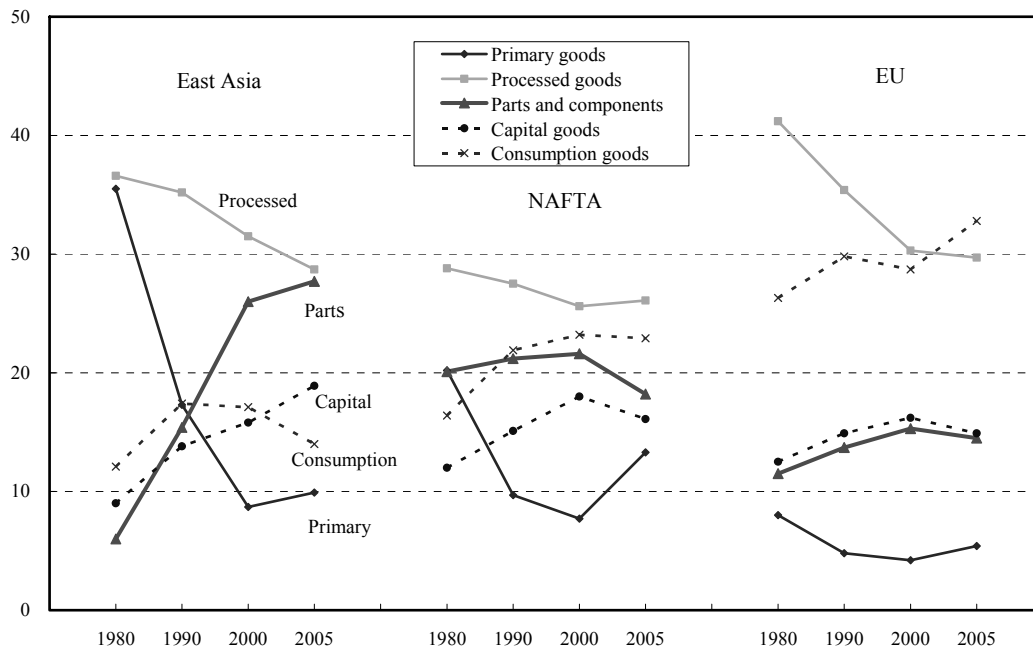
Note : Trade include both export and import.  
Source : Original data came from UN Comtrade database. Compiled by IDE.

### 3.3. Contrast of trade pattern against NAFTA and EU

Next, is such trade pattern in East Asia different from the patterns of other regions such as NAFTA or EU?

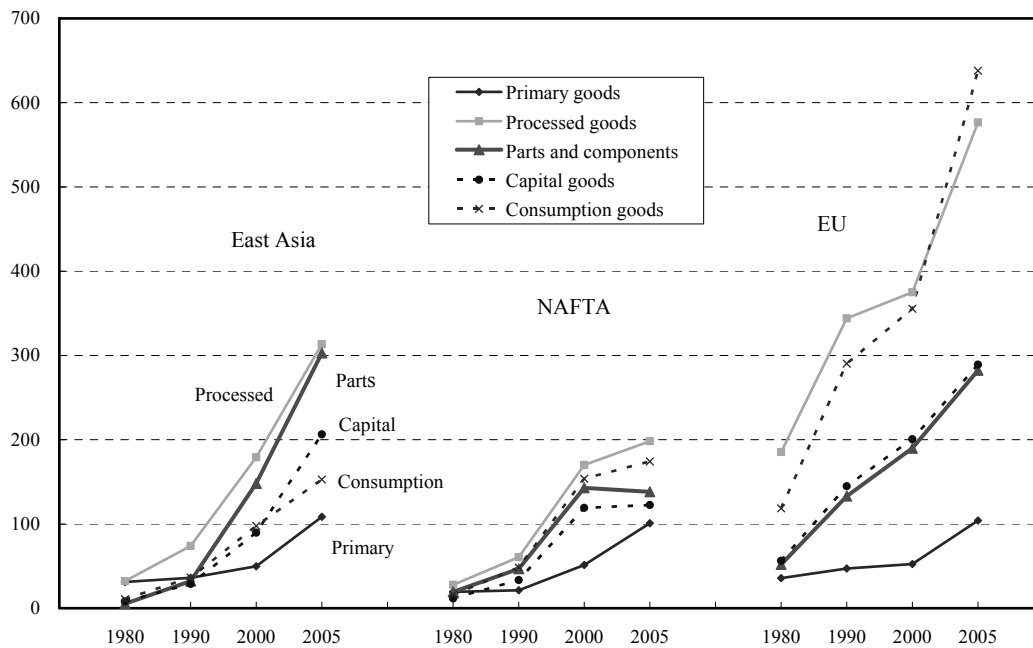
Figure 7 compares the share of parts and components in intraregional trade across three regions. Once more, East Asia has climbed rapidly to a level higher than those of NAFTA or EU. This trade feature of East Asia shows a clear contrast, especially with EU, whose largest share of goods is classified as consumption goods. One can conclude that East Asia is characterized by parts-and-components transactions.

**Figure 7: Share of trade goods in intraregional trade**



Note : The values of trade goods are measured by import value on US dollar basis.  
Source : Original data came from UN Comtrade database. Compiled by IDE.

**Figure 8: Value of trade goods in intraregional trade**



Note : The values of trade goods are measured by import value on US dollar basis.  
Source : Original data came from UN Comtrade database. Compiled by IDE.

Figure 8, meanwhile, indicates that the import value of parts and components of East Asia exceeded NAFTA in 2000 and EU in 2005. This trade pattern is unique when comparing not only with developed regions but with developing regions such as South America as well. For example, the share of parts and components in intraregional trade of MERCOSUR (composed of Argentina, Brazil, Paraguay and Uruguay) is only 12.7 percent as against 27.7 percent of East Asia in 2005.

### 3.4. Trade with those outside the region

After looking into the intraregional trade in East Asia, the next step here is to review the features of East Asia's trade with those outside the region.

Figure 9: Share of trade goods (East Asia → Outside)

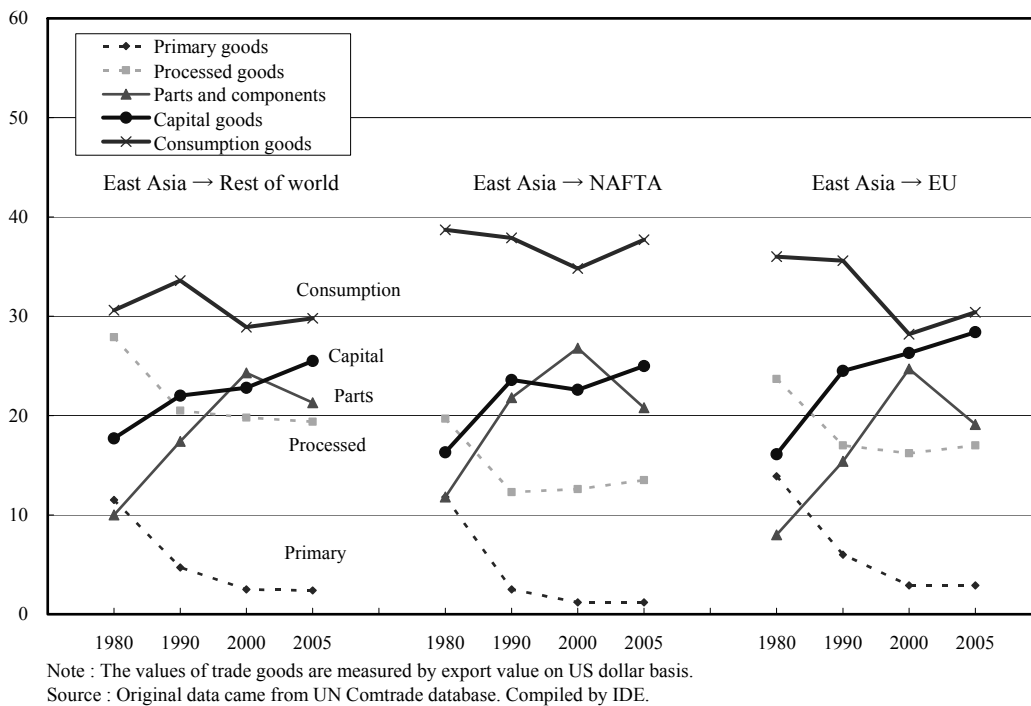


Figure 9 shows the share of East Asia's trade goods exported to the rest of the world. A large portion of export from East Asia to countries outside the region is composed of final goods (i.e., consumption goods and capital goods), which is a stark contrast to the situation in its intraregional trade. In the case of exports to the rest of the

world, the largest category, consumption goods, holds around 30 percent in 2005 and the second, capital goods, is 25 percent and rising. East Asia seems to export final goods, assembled by cross-border production sharing in the region, to outside the region, earning for itself the monicker, “factory of the world”. Around 70 percent to 80 percent of total exports of final goods was sold outside in the 2000s. East Asia may heavily rely on outside countries such as those of NAFTA and the EU for the final demand. This implies how East Asia is easily influenced by the world economy. In this required, East Asia might consider to go the way of self-reliance for the sake of economic stability as well as domestic welfare.

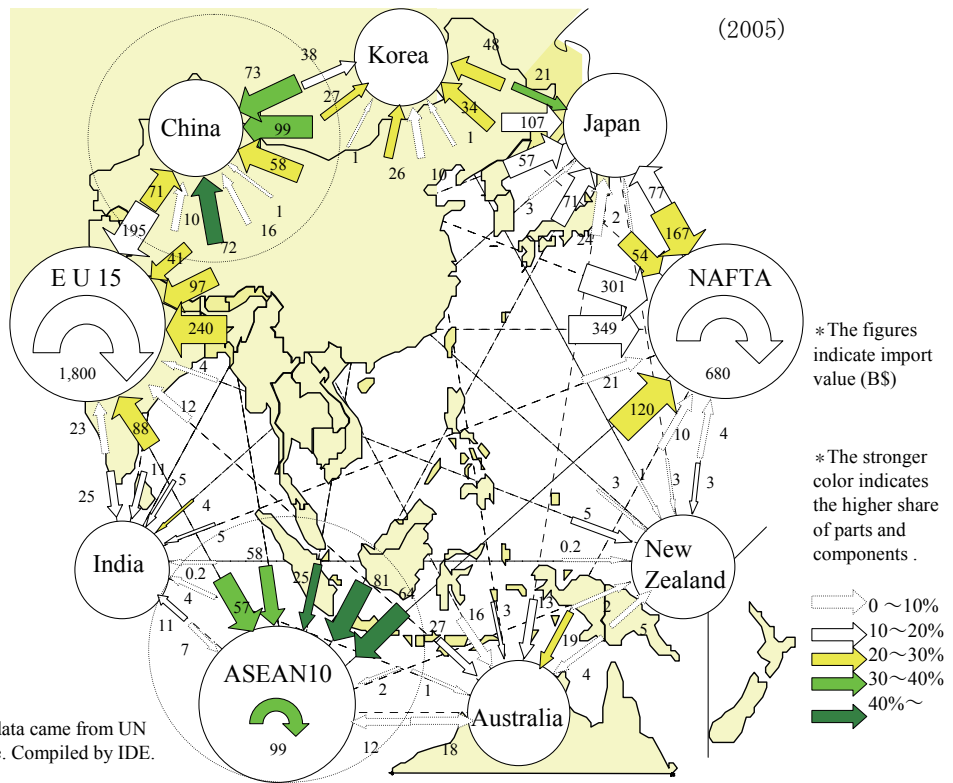
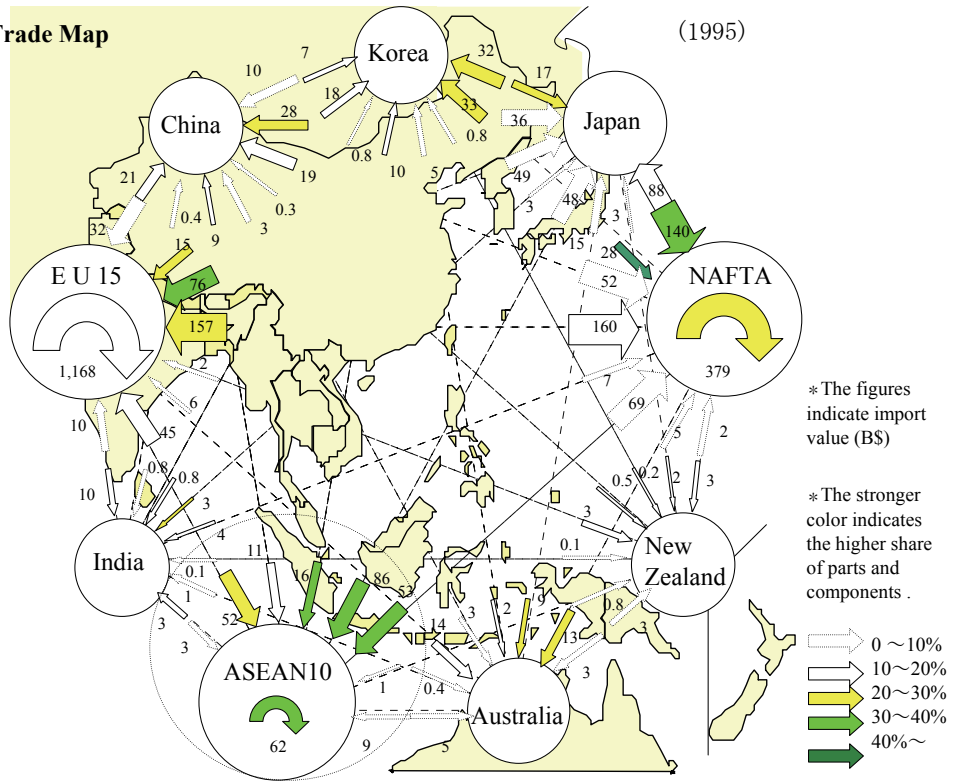
#### **4. DEVELOPMENT OF TRADE OF INDIVIDUAL COUNTRY**

##### **4.1. Expansion of engaging countries in parts-and-components trade**

The previous sections looked into the trade pattern of East Asia as a region. Now, will findings be the same if one were to examine the case of its member-countries?

Figure 10 shows the sites where parts and components have a large share in trade and how such has expanded in East Asia gradually. At first, ASEAN was engaged in active import of parts and components from Japan and Korea in 1995. Later, China joined the activities and became another center of parts and components business. It got more complicate from hereon. Both ASEAN and China started to export parts and components as well as import. On the other hand, Japan and Korea expanded their parts and component import. It began to look like ASEAN and China started their assembly process as part of production sharing (fragmentation) and more. They expanded production by gathering a wide variety of related factories in their locations as well as expanding production capacity of individual players. Such process of gathering, called *agglomeration*, occurred together with fragmentation. Those countries accumulated both assemblers and parts suppliers. As a result, mutual trade of parts and components expanded in East Asia.

Figure 10: Trade Map



Source : Original data came from UN Comtrade database. Compiled by IDE.

## **4.2. Contribution of individual countries in East Asia**

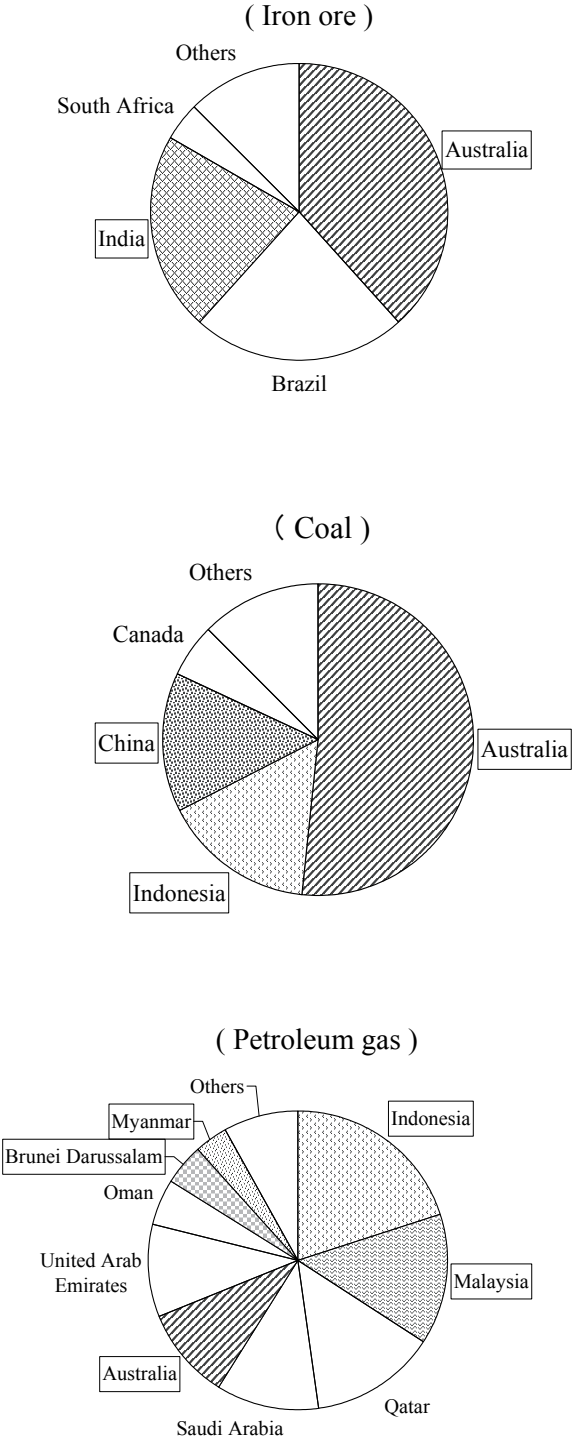
Parts and component trade is a vital driving force in East Asia's trade expansion and deepening economic integration. As mentioned earlier, its geographic reach had gradually spread around the region. However, some countries are not as active in parts-and-component trade. Does it mean trade integration is not fully achieved? Well, parts and component trade is not the only way toward integration. Each country may have a different role and contribution to intraregional trade.

While ASEAN, China, Japan, and Korea are actively engaged in parts-and-components trade, East Asia also heavily engages in export to countries outside the region, which makes East Asia easily influenced by the world economy. How about the demand situation inside the region? Figure 10 also shows that relatively high-income countries such as Japan, Korea, Australia, and New Zealand contribute to intraregional trade as importers of final goods.

The recent rise in oil and other commodity prices is a frequent reminder of how important a stable supply of essential resources is. Figure 11 shows situations where a large portion of East Asian imports for energy and natural resources is supplied by regional members. In the case of iron ore, Australia is the biggest supplier to East Asia, whose share is one-third of total import, followed by Brazil and India. Also, half of total import of coal comes from Australia, followed by Indonesia and China. Around half of the region's petroleum gas is supplied by regional members such as Indonesia, Malaysia, Australia, Brunei Darussalam, and Myanmar.

Note, however, that this export and import relation is far from static; in fact, the situation is dynamically changing.

**Figure 11: Main exporters of energy and resources to East Asia**



Note: Figures are calculated by import values of East Asian countries. Here, East Asia includes Australia, China, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand.  
 Source: Global Trade Information Services Inc., World Trade Atlas database.

### 4.3. Current status inside ASEAN

The ASEAN's share in intraregional trade of parts and components is tremendously high: almost 40 percent in 2005. However, one may ask: Is such level of involvement even among all ASEAN countries, including the less developed members?

Figure 12: Imports of parts and components (2005)

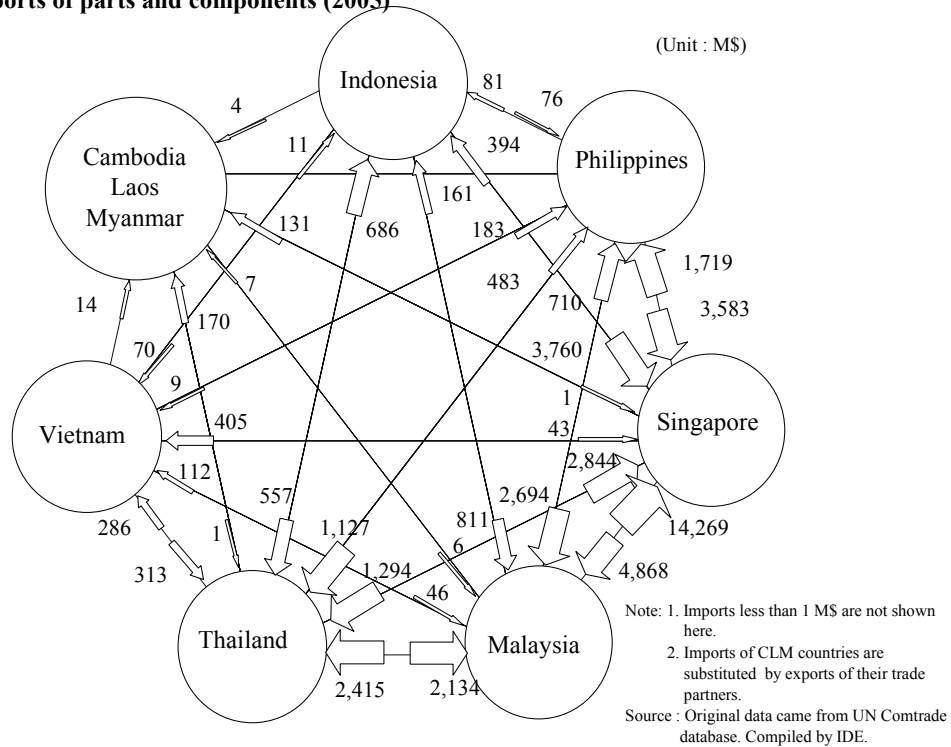


Figure 12 illustrates the import flow of parts and components inside ASEAN. Many ASEAN members such as Indonesia, Malaysia, Philippines, Singapore, and Thailand import large quantity of parts and components mutually, but how about the rest of the region? Vietnam seems to be already involved in the parts-and-components business, which implies that it is already part of the international production network. Meanwhile, Cambodia, Laos, and Myanmar have just started to take part, although their import values are not high at this stage. Nonetheless, opening up a country to international trade allows for economic development.

## **5. CONCLUSIONS AND POLICY IMPLICATIONS**

Transactions on parts and components for the machinery industry have a significant role in intraregional trade, which is reflected by the cross-border production sharing in East Asia. Such is a characteristic unique to East Asia, although the region's heavy dependence on other regions' demand for final goods may be another matter. The expansion of such trade, together with the increase in the number of participating member-countries, has promoted economic integration in East Asia. The less developed countries in East Asia also seem to benefit from the trade, although at a much smaller scale.

What all these show is that participation in and utilization of an international production network can offer a significant chance for economic development as well as integration. The current efforts at trade liberalization should be continued and strengthened.

This study is limited to trade issues and does not yet examine the potential factors that promote or prevent such trade in East Asia. Future research may therefore wish to focus on investment and other related issues aside from trade. Empirical studies may need to look into trade and industrial data such as bilateral trade value (or share) of parts and components, size of economy, level of tariff rate, engagement in free trade agreements, improvement of infrastructure, expansion of supporting industry, and level of factor prices. Such future research may be similar and related to the studies on determinants of FDI flows, especially on influence of policy measures, using the gravity model analysis (Hattari and Rajan (2008), Sasatra Sudsawasd (2008), conducted under ERIA project). It is expected to show how lower trade barriers and better business environments can offer bigger chances of success in international production sharing.

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## **APPENDIX: Data and methodology**

This study used the United Nation's COMTRADE database on Broad Economic Categories (BEC). The BEC data help the analysis focus on the type of trade goods in terms of production process. However, the available time-span of COMTRADE data is short: its data are available on and after 1995 only. The Institute of Developing Economies (IDE) recalculated SITC data to BEC format to get a long-term series (1980-2005).

Analysis is carried out by focusing on five types of trade goods classified by production stage, and using the BEC codes<sup>3</sup>. Table 1 and Table 2 show the relation between five types of trade goods and BEC code.

**Table 1: Classification of Trade Goods by Production Process.**

1. Primary goods
  - 111 Food and beverages, primary, mainly for industry
  - 21 Industrial supplies nes, primary
  - 31 Fuels and lubricants, primary
2. Intermediary goods
  - (1) Processed goods
    - 121 Food and beverages, processed, mainly for industry
    - 22 Industrial supplies nes, processed
    - 32 Fuels and lubricants, processed
  - (2) Parts and components
    - 42 Parts and accessories of capital goods (except transport equipment)
    - 53 Parts and accessories of transport equipment
3. Final Capital goods
  - (1) Capital goods
    - 41 Capital goods (except transport equipment)
    - 521 Transport equipment, other, industrial
  - (2) Consumption goods
    - 112 Food and beverages, primary, mainly for household consumption
    - 122 Food and beverages, processed, mainly for household consumption
    - 51 Transport equipment, passenger motor cars
    - 522 Transport equipment, other, non-industrial
    - 61 Consumption goods nes, durable
    - 62 Consumption goods nes, semi-durable
    - 63 Consumption goods nes, non-durable

**Table 2: BEC code and production process**

BEC Code	Item	Production process				
		Primary goods				
		Processed goods				
		Parts & components				
		Capital goods				
		Consumption goods				
1	Food and beverages					
11	Food and beverages, primary					
111	Food and beverages, primary, mainly for industry	○				
112	Food and beverages, primary, mainly for household consumption					○
12	Food and beverages, processed					
121	Food and beverages, processed, mainly for industry		○			
122	Food and beverages, processed, mainly for household consumption					○
2	Industrial supplies nes					
21	Industrial supplies nes, primary	○				
22	Industrial supplies nes, processed		○			
3	Fuels and lubricants					
31	Fuels and lubricants, primary	○				
32	Fuels and lubricants, processed		○			
321	Fuels and lubricants, processed, motor spirit					
322	Fuels and lubricants, processed (other than motor spirit)					
4	Capital goods (except transport equipment), and parts and accessories thereof					
41	Capital goods (except transport equipment)				○	
42	Parts and accessories of capital goods (except transport equipment)			○		
5	Transport equipment, and parts and accessories thereof					
51	Transport equipment, passenger motor cars					○
52	Transport equipment, other					
521	Transport equipment, other, industrial				○	
522	Transport equipment, other, non-industrial					○
53	Parts and accessories of transport equipment			○		
6	Consumption goods nes					
61	Consumption goods nes, durable					○
62	Consumption goods nes, semi-durable					○
63	Consumption goods nes, non-durable					○
7	Goods nes					

## NOTES

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1. East Asia includes ASEAN10 (Brunei Darussalam, Indonesia, Cambodia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam) plus Australia, India, China, Japan, Korea, and New Zealand in this paper unless mentioned otherwise. NAFTA includes Canada, Mexico and United States. The EU includes Austria, Belgium, Denmark, Germany, Greece, Finland, France, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and United Kingdom (15-country basis). Although the official members of each region (East Asia, ASEAN, NAFTA and EU) may change across periods, the calculation is conducted on the same country basis.
2. Depending on data availability, figures of some countries may be estimated or excluded. For example, the data on China (1980-1983) and Brunei Darussalam (1995, 1996, 1999, 2000, 2004, and 2005) are not included. Data on Laos and Myanmar are substituted by their trade partners'. Data on Cambodia and Vietnam for the years not covered by the COMTRADE database are also substituted by those of their partners. Data are not provided if both the figures for the country in question and that of its partner are both unavailable. Finally, the figures on recent years may be tentative.
3. This transformation method (type of trade goods by production process and BEC code) is used in some literature such as METI (2005), METI (2007), Gaulier, Lemoine and Unal-Kesenci (2006).