A structure of international division of labor in Asia-Pacific region -An empirical study using IDE international IO tables-

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Summary

In the modern economy, every now and then a commodity passes through several countries during the stage of processing. This reflects the progress of the international division of labor where value-added will be generated in the region that participated in the division of labor responding to the role. But the structure seems to have considerably changed recently in accordance with a change in an international environment including the rapid growth of China.

It is necessary to see domestic economy and international trade by industry simultaneously in order to get a bird's-eye view of the international division of labor structure. However, there was no such statistics that provide information for both on a common standard basis. In this situation IDE, Institute of Developing Economies, launched to compile international input-output tables in the Asia Pacific region in 1975 and then it has published such three IO tables as 1985, 1990, and 1995 that include China as an endogenous country. And BOJ, Bank of Japan, last year estimated an extended table for the year 2000 since BOJ has an interest in recent trade trend in the Asia Pacific region. Taking this opportunity, we tried to review historical change in the division of labor in this region.

It is confirmed that Japan and the United States, which were hitherto known as comparatively autarky economies, are still on the same trend. On the other hand, the value-added acquisition rate to the home country (home production rate) tends to decrease in the most of East Asian nations. Moreover, it is surprising to note that they have strengthened dependence on Rest of the World rather than intra-dependency in the East Asian region. In a word, the income of East Asia leaking beyond the border has been getting larger. At the current situation, it seems a little premature to regard East Asian region as an independent economic bloc.

Key Words
International Division of labor, Asia Pacific region, International input-output table, Value-added acquisition rate, Home production rate

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1 Introduction

ASEAN summit was held in Vientiane in November 2004 where “Vientiane action plan” was adopted. This plan declared that ASEAN aims for further unity and would abolish the import duty of all products by 2015. The ASEAN+3 conference with Japan, China, and South Korea held at the same time decided to have “East Asian summit” in 2005 in Kuala-Lumpur in order to aim for foundation of “East Asia Economic Community", and disclosed that China and ASEAN would start Free Trade Agreement (FTA) negotiation. It seems that a sense of unity of East Asia will become stronger[1].

For Japan, East Asian region is quite important both as part suppliers and product markets. Even though a commodity is labeled “Made in Japan”, it is extremely rare that the whole production process is finished in Japan. Taking computers and household appliances as examples, it often happens that a semi-finished product is made in ASEAN and some parts of that are made in China. Thus in the modern economy, every now and then a commodity passes through several countries during the stage of processing. This reflects the progress of the international division of labor and where value-added will be generated in the region that participated in the division of labor responding to the role.

It is necessary to see domestic economy and international trade by industry simultaneously in order to get a bird's-eye view of the international division of labor structure. However, there was no such statistics that provide information for both on a common standard basis. In this situation IDE, Institute of Developing Economies, launched to compile international input-output tables in the Asia Pacific region in 1975 and then it has published such three IO tables as 1985, 1990, and 1995 that include China as an endogenous country. And BOJ, Bank of Japan, last year estimated an extended table for the year 2000 since BOJ has an interest in recent trade trend in the Asia Pacific region. Taking this opportunity, we tried to review historical change in the division of labor in this region.

As we will see later, we confirmed that Japan and the United States, which were hitherto known as comparatively autarky economies, are still on the same trend. The value-added acquisition in the USA is almost flat but on a slight declining trend of 96.3% in 1985 to 95.1% in 2000 and that in Japan is also almost flat but on a slight rising trend of 94.0% in 1985 to 96.2 % in 2000. On the other hand, the value-added acquisition to the home country tends to decrease in the most of East Asian nations. The most striking is Malaysia’s value-added acquisition rate that declined from 86% in 1985 to 80% in 2000. Those in China, Philippines, and Thailand declined from approximately 95% in 1985 to around 85% in 2000. Moreover, it is surprising that they have become more dependent on Rest of the World (ROW) rather than mutually

intra-dependent in East Asian region. In a word, the income of East Asia leaking beyond the border has been getting larger. At the current situation, it seems a little premature to regard East Asian region as an independent economic bloc.

2 Overview of Growth and Trade in the Asia-Pacific region

2-1 GDP per capita

The Asia-Pacific region we deal with in this paper consists of the following 10 countries/regions; Japan, the United States, China, NIEs3 (South Korea, Taiwan and Singapore), ASEAN4 (Philippines, Malaysia, Thailand, and Indonesia). Before examining the international division of labor in this region, let us overview the economic performance in each country.

The line charts in Figure 1 show the indices of per capita GDP whose base year is 1985 in the Asia-Pacific region and we add two bar charts as of Brazil in South America and of Kenya in Africa as reference cases to the figure[2]. Comparing the values during the year 1985 to 2000, China and Korea recorded the highest growth, 2.5 times and 2.4 times, respectively. Though we could not include it in the chart due to the lack of the latest data, the per capita GDP for Taiwan also has increased as fast as Korea until 1997. As far as growth pattern in the time-series, Korea and Taiwan have kept relatively constant growth since 1980s whereas China started to make rapid growth in 1990s. Most ASEAN countries have also increased per capita GDP smoothly, even though not as much as Korea, Taiwan and China. For example, per capita GDP for Thailand, Malaysia and Indonesia became 2.1, 1.8 and 1.6 times respectively, during the period from 1985 to 2000. But in 1997 and 1998, when Asia Currency Crisis broke out, many ASEAN countries, in particular, Korea, Thailand, and Indonesia were given grave impact on their economy.

Despite smooth growth of most of those Asian countries, Philippines did not gain as much growth as other countries. GDP per capita for Philippines became only 1.2 times during the same 15-year-period. Since even such industrialized country as the USA and Japan recorded 1.4-time growth, we might as well have a pessimistic view about Philippine economy. However, the situations in Brazil and Kenya give us another point of view. Indeed Philippine economic growth was the lowest in the Asia-Pacific region, but surprisingly, the growths of Brazil and Kenya is even worse than Philippines'. This fact, on the other hand, reveals that how rapidly Asia-Pacific region has grown since 1980s.

2-2 Trend of Import and Export

In this section, we will examine the trade trend[3]. Figure 2 is a scatter diagram showing the relationship between the share of export and import in GDP. Most of the samples are located around the forty-five degree line. This proportional relationship between the two variables shows that economic growth in the East Asia

has closely been related with trade. However, the ratios of trade to GDP are different between developed countries (Japan and USA) and the others. Singapore has the highest ratio, then the second and the third are Malaysia and Taiwan respectively, followed by Thailand, Philippines and Korea. As to the time-series change, the ratio is on the increasing trend in most of the Asian countries, particularly in Malaysia. On the other hand, in Japan and USA, the trade ratios to GDP are about 20 percent, not only much smaller than that in the other Asian countries but more stable.

Next, let us review the composition of export and import. Figure 3 shows the share of intermediate goods in export. Taking a look at the share by country, it is prominently high in Indonesia and Malaysia, reflecting the fact that the two countries are oil producers. However the share of intermediate goods for those countries has declined because of recent diversification of export commodities. For other East-Asian countries except Japan and Korea, the share of intermediate goods is relatively stable through time. In contrast with those countries, the share of intermediate goods for Japan and Korea has clearly gone up by 10 points from approximately 20% in 1985 to 30% in 1995. It seems that such change has been caused by enlargement of demand of parts and semi-finished products from East-Asian countries in accordance with the recent increasing trend in foreign direct investment in those countries. In our view, those movements are regarded as development of international division of labor.

Figure 4 shows the share of intermediate goods in import. The country with the lowest share in 1985 is the United States (47.8%), which is abundant in natural resources. In the same period Japan and Korea have the highest share of intermediate goods in import, that is, 85% and 81%, respectively. This is because trade pattern of both countries were so called “processing trade” which means exporting finished-products while importing primary goods such as natural resources. However, the share of intermediate goods for the two countries has declined, especially for Japan it fell by around 20%, from 84.6% in 1985 to 65.7% in 1995. Here we can also confirm that the trade pattern has changed due to increase in foreign direct investment and so on as we saw in Figure 3.

3 Model

3-1 Total value-added coefficient and total import coefficient

The aim of this paper is to grasp how the structure of international division of labor has changed in the Asia-Pacific region. We regard international division of labor as “distribution of the value-added among countries.” In other words, if we define “international division of labor rate”, we think that the most suitable explanation would be a share by each country in acquisition of the value-added that is

contained in final-products. Therefore, in this paper "international division of labor rate" means "the value-added acquisition rate" by each country. This idea is originally derived from the concepts of "total value-added coefficient" and "total import coefficient" usually used in IO analysis. Thus, at first, let us explain those two coefficients.

Total value-added coefficient is an ultimate amount of value-added in one unit of final demand, and total import coefficient is an ultimate amount of import in one unit of final demand. The following two supply-demand balance equations hold for domestic goods and imported goods respectively in the input output tables of non-competitive import type.

$$\mathbf{x} = \mathbf{A}^{\mathbf{d}}\mathbf{x} + \mathbf{f}^{\mathbf{d}} \tag{1}$$

$$\mathbf{m} = \mathbf{A}^{\mathbf{m}}\mathbf{x} + \mathbf{f}^{\mathbf{m}} \tag{2}$$

In the equation, $\mathbf{x}$ and $\mathbf{m}$ are respectively vectors of domestic outputs and imports, $\mathbf{A}^{\mathbf{d}}$ and $\mathbf{A}^{\mathbf{m}}$ are respectively matrices of domestic input coefficient and import input coefficient, and $\mathbf{f}^{\mathbf{d}}$ and $\mathbf{f}^{\mathbf{m}}$ are vectors of final demands for domestic goods and imported goods. Solving equation (1) with domestic output $\mathbf{x}$ gives the equilibrium output determination equation as follows:

$$\mathbf{x} = (\mathbf{I} - \mathbf{A}^{\mathbf{d}})^{-1}\mathbf{f}^{\mathbf{d}}. \tag{3}$$

The inverse matrix in the right side of equation (3) is called Leontief's inverse matrix, the j-th column of the matrix shows how much the production of each industry is ultimately induced when the final demand for j-th industry increases by one unit. Therefore, by pre-multiplying Leontief's inverse matrix by the value added ratio vector, we get the amount of the value-added generated directly and indirectly in one unit of final demand for each industry.

$$\boldsymbol{\tau}^{\mathbf{d}} = \mathbf{v}(\mathbf{I} - \mathbf{A}^{\mathbf{d}})^{-1} \tag{4}$$

The equation (4) can be rewritten as equation (5) using a diagonal matrix with value-added ratio and an aggregation row vector, $\boldsymbol{\iota}$, whose elements are all one. This is "total value-added coefficient."

$$\boldsymbol{\tau}^{\mathbf{d}} = \begin{bmatrix} 1 & \cdots & 1 \end{bmatrix} \begin{bmatrix} v_1 & & 0 \\ & \ddots & \\ 0 & & v_n \end{bmatrix} (\mathbf{I} - \mathbf{A}^{\mathbf{d}})^{-1} = \boldsymbol{\iota}\hat{\mathbf{v}}(\mathbf{I} - \mathbf{A}^{\mathbf{d}})^{-1} \tag{5}$$

On the other hand, the amount of imports required directly and indirectly by one unit of final demand for each industry also can be obtained by pre-multiplying Leontief's inverse matrix by the import IO coefficient matrix. This is "total import coefficient."

$$\boldsymbol{\tau}^{\mathbf{m}} = \begin{bmatrix}\mathbf{1} & \cdots & \mathbf{1}\end{bmatrix}\mathbf{A}^{\mathbf{m}}(\mathbf{I}-\mathbf{A}^{\mathbf{d}})^{-1} = \boldsymbol{\iota}\mathbf{A}^{\mathbf{m}}(\mathbf{I}-\mathbf{A}^{\mathbf{d}})^{-1} \tag{6}$$

Here, let us confirm the sum of "total value-added coefficient" and "total import coefficient" is equal to one. Not surprisingly, the sum of domestic input coefficients, import input coefficients, and the value-added ratio in each column is equal to one.

$$\boldsymbol{\iota}(\mathbf{A}^{\mathbf{d}} + \mathbf{A}^{\mathbf{m}} + \hat{\mathbf{v}}) = \boldsymbol{\iota} \tag{7}$$

We can get $\boldsymbol{\iota}(\mathbf{A}^{\mathbf{m}} + \hat{\mathbf{v}}) = \boldsymbol{\iota}(\mathbf{I} - \mathbf{A}^{\mathbf{d}})$ by little modification, which then give us the following equation.

$$\boldsymbol{\iota}(\mathbf{A}^{\mathbf{m}} + \hat{\mathbf{v}})(\mathbf{I} - \mathbf{A}^{\mathbf{d}})^{-1} = \boldsymbol{\iota} \tag{8}$$

The left side of equation (8) is the same as the sum of equation (5) and (6), therefore, the sum of "total value-added coefficient" and "total import coefficient" is one. This means that the value of final goods is completely divided into domestic value-added part and import part. Furthermore, the former part corresponds to "home production rate" and the latter part "import rate." We will see those in the next section.

3-2 The difference among three types of home production rate

In this section, let us confirm three types of home production rate: self-sufficient home production rate, direct technological home production rate, and value-added home production rate.

The term of "self-sufficient rate" is often seen in newspapers. Self-sufficient rate (*SSR*) is the share of the domestic production in total demand. SSR of rice in Japan, for instances, is almost 100% and that of crude oil is almost 0%. Taking the *i*-th industry as an example, total demand in the domestic market is the summation of domestic production x_i and import m_i, $x_i + m_i$. Then, SSR_i, is defined as follows:

$$SSR_i = x_i / (x_i + m_i) \tag{9}$$

We also hear the term of "local content ratio" these days, mainly in the context of argument on Free Trade Agreement. Local content ratio (LCR) is the share of domestic input in the total input in a production process. In practice, there are two cases for calculation of local content ratio; one is the case that the total input includes value-added, and the other does not. In the case where value-added is included, the local content ratio of *j*-th industry, LCR_j, is expressed as follows.

$$LCR_j = (\sum_i x_{ij}^d + V_j) / x_j \tag{10}$$

Here, V_i is the value-added of j-th industry, x_{ij}^d is domestic goods input from i-th industry to *j*-th industry. This ratio can be called "direct technological home production rate" (*DTHPR*) since this reflects technological relations on the production side where a certain amount of raw material or labor force is required to produce a certain amount of output. Unlike self-sufficient rate, *DTHPR* of rice in Japan, for example, is much less than 100% since certain amounts of imported materials are used to produce rice, and that of crude oil is much more than 0% since certain amount of domestic labor forces is used in Japanese crude-oil miners though it is very small.

One problem of local content ratio is that it focuses only on "direct" relation between domestic input and total input. However, domestically produced input can not be produced without indirectly imported parts or materials. Paying attention to this respect, we can define "value added home production rate" (*VAHPR*) as the share of ultimate domestic input in the total input. This criterion is explained as follows. Generally, input in a production process is divided into such three categories as domestic goods, imported goods and value-added. But the production of the domestic goods again requires the same three kinds of above-mentioned input: domestic goods, imported goods and value-added. Thus, infinite repetition of this division will ultimately result in dichotomy of input: ultimate imported input and ultimate value-added. What this means is that "ultimate domestic input" is equivalent to "ultimate value-added."

Now, let us confirm that *VAHPR* is equivalent to total value-added coefficient. As we saw in the previous section, total value-added coefficient of *j*-th industry is the amount of value-added generated ultimately by increase in one unit of final demand for *j*-th industry. Thus, overall value-added coefficient shows the ultimate amount of value-added included in one unit of output, which is exactly the same as *VAHPR*. In the following section, we will use the term "home production rate" as the meaning of "value-added home production rate", and define it as equation (5).

3-3 Value-added International Division of Labor Rate

In this section, we define "international division of labor rate" which is an extended version of total value-added coefficient and total import coefficient we explained in section 3-1. Though several types of definitions for international division of labor rate are proposed, we in this paper adopt the above mentioned "ultimate acquisition rate of value-added." Therefore, we call this index "value-added international division of labor" to distinguish from other types.

The basic tool for dealing with international division of labor is international input-output tables. Let us consider a table with *n*-sectors and *r*-endogenous areas. Then, international division of labor rate for endogenous areas is defined as follows:

$$\mathbf{T} = \hat{\mathbf{v}}(\mathbf{I} - \mathbf{A})^{-1} \tag{11}$$

where $\hat{\mathbf{v}} = \begin{bmatrix} \mathbf{v_1} & 0 & 0 \\ 0 & \ddots & 0 \\ 0 & 0 & \mathbf{v_r} \end{bmatrix}$, $\mathbf{v_k} = [v_k^1 \quad \cdots \quad v_k^n] \quad (k = 1, \cdots, r)$

$\mathbf{T}$ is a $(r \times nr)$ matrix, and each row shows division of labor rate for a corresponding country. In international input-output tables, an input coefficient matrix $\mathbf{A}$ becomes a large square matrix of $(nr \times nr)$, showing not only domestic intermediate transaction but also international intermediate input/output among endogenous countries. $\hat{\mathbf{v}}$ is a diagonal block matrix of $(r \times nr)$ whose diagonal elements are row vectors of corresponding country's value-added rate.

Next, international division of labor rate for exogenous area (Rest of the World; ROW) is expressed as follows:

$$\boldsymbol{\tau}_{\mathbf{R}} = \mathbf{a}_{\mathbf{R}}(\mathbf{I} - \mathbf{A})^{-1} \tag{12}$$

In this equation, $\mathbf{a}_{\mathbf{R}}$ is a $(1 \times nr)$ row vector with input coefficient from ROW. Equation (12) shows leakage rate of value-added to ROW.

As the sum of total value-added coefficient and total import coefficient always become one, the column sum of international division of labor rate defined by equation (11) and (12) always becomes one.

3-4 Total input international division of labor rate

Hasebe(2002) proposes a different type of index to measure international division of labor. Hasebe(2002) adopts the following definitions and names "total input international division of labor rate":

for endogenous areas: $\mathbf{JA}(\mathbf{I} - \mathbf{A})^{-1}$ (13)

for exogenous areas: $\mathbf{a}_{\mathbf{R}}(\mathbf{I} - \mathbf{A})^{-1}$ (14)

Here, $\mathbf{J}$ is a $(r \times nr)$ aggregation matrix defined as $\mathbf{J} = \begin{bmatrix} \iota & 0 & 0 \\ & \ddots & \\ 0 & 0 & \iota \end{bmatrix}$.

As for the division of labor rate for exogenous areas, equation (14) is the same as equation (11). As for endogenous areas, equation (13), each column sum in the matrix represents only the amount of production indirectly induced by one unit of final demand for corresponding industry of corresponding country, because $\mathbf{A}(\mathbf{I} - \mathbf{A})^{-1}$ is equivalent to $(\mathbf{I} - \mathbf{A})^{-1} - \mathbf{I}$. Thus each column of $\mathbf{JA}(\mathbf{I} - \mathbf{A})^{-1}$ shows how much input is required to produce one unit of final goods[4].

Let us summarize the difference between the "total input international division of labor rate" by Hasebe(2002) that is one of the major previous researches which

shares the same interest with us and the "value-added international division of labor rate" that we apply in this paper. Total input criterion focuses on intermediate goods required in each production process, in other words, value-added is not recognized as a part of inputs. On the other hand, our value-added criterion places emphasis on income distribution as a result of international trade, in other words, value-added is the key input factor in each production process.

4 Results

In the following sections, we will show the results of calculations of international division of labor rate in the Asia-Pacific region. The data source is Asian International Input-Output Table published by Institute of Development Economies for the years 1985, 1990 and 1995. We also use an extended table for the year 2000 estimated by Takagawa and Okada(2004).

4-1 International division of labor rate by 1 sector tables

Table 1 shows a macro "value-added international division of labor rate", which is defined as each county's ultimate acquisition rate of value-added that is generated in transboundary production process. The "own acquisition" in the table is own acquisition rate of value-added, and corresponds to home production rate. (We will basically use the term of "home production rate" hereafter. In general, the higher home production rate becomes, the more autonomous the economy becomes.

Now, let us take a look at the results. The United States and Japan record the highest home production rate, marking more than 90% through the whole period. As for change over time, the United States' home production rate has a slightly declining trend from 95.3% in 1985 to 93.7% in 2000 whereas that of Japan is on a slightly upward trend from 91.2% in 1985 to 94.9% in 1995. Although Japan's home production rate dropped a little in 2000, it remained at the level of more than 94% and has exceeded the United States' since 1995.

Following Japan and the United States, China and Indonesia form the second highest group which home production rates have kept more than 80% through the whole period. This is because the two countries are abundant in natural resources, and value-added leakage to overseas due to the import of raw materials is relatively small. Though China's home production rate was high enough to be over 90% in the first half of the period (1985 and 1990), it decreased to around 87% in the second half of the period (1995 and 2000). This downward trend would be considered that it reflects the increasing amount of import due to rapid inflow of foreign capital since 1990s.

Philippines, Thailand, Taiwan and Korea form a middle group whose home production rates are approximately between 75% and 85%. Taiwan and Korea's home production rate hover at around 75% and 80% respectively with relatively flat

movements, meanwhile Philippines and Thailand's are on the declining trend.

The most striking is the drastic decrease in Malaysia's home production rate; it fell from around 75% in the first half of the period to 66% in 1995, then further went down to 53% in 2000. Singapore has recorded the lowest home production rate, less than 60%, except for that in 2000. Singapore and Malaysia, as we saw in Figure 2, have the common feature such that the ratios of export and import in GDP are extremely high. Singapore has an entrepot economy that strongly depends on trade, for which the ratios of both export and import to GDP have exceeded 100%. As for Malaysia, the ratios of export and import have been rising year by year. Though Malaysia is a country to adopt export-oriented development policy like Asia NIEs to achieve high GDP growth, it still does not have an economic structure where it keeps the value-added at home.

As we saw in the above, the Asian countries excluding Japan, Indonesia and Singapore have decreased the home production rate for recent 15 years as a whole. Next, let us review the trends from the perspective of "value-added leakage rate to ROW (Rest of the World)", which means the share of value-added leaking to ROW and is referred to as "Leakage to ROW" in the table.

Our calculation shows that the United States and Japan's leakage to ROW is relatively small. The leakage rate for the United States has moderately upward trend, from 3.7% in 1985 to 4.9% in 2000. For Japan, on the other hand, the leakage rate is on a downward trend: 6.0%, 4.5%, 3.3% and 3.8% in the years 1985, 1990, 1995 and 2000 respectively. Although Japan and the United States have the opposite trend, the leakage rates for both countries have stably remained at low level.

In contrast with the above two countries, many other Asian countries show relatively high leakage rate to ROW with a rising trend. Especially for Malaysia, the leakage rate once dropped from 14% in 1985 to 11% in 1990, but since then, it rose up to 20% in 2000. Philippines, Thailand and China's leakage rate have also risen by the range from 5% to 15%. Although those for Taiwan and Korea are not showing a clear rising trend, they have remained at the level between 10% and 15%. As for Singapore, the leakage rate is on a declining trend: around 25% in the first half of the period whereas 17% in the second half. Nevertheless, it's still higher than most of other countries.

Here, for the purpose of examining the independency of the Asian region as an economic block, let us see "Share of East Asia in total value-added outflow" in the table that shows the share of value-added acquired by other East Asian countries in total value-added flowing out from a particular country. (We hereafter call it "share of East Asia".)

According to the figures, the overall trends seems to be ambiguous; the share of East Asia for Malaysia and Philippines continued to rise through the whole period, meanwhile, that for other countries show the rise and fall. As for Japan, it was only

20% or less, which means that 80% of the value-added outflow from Japan was not acquired by the other East Asian countries but by the United States and ROW. The highest value of East Asia, 48.7%, was that for Singapore in 1995, which means more than half of the value-added outflow from Singapore went outside the East Asian region. For other country among Asia NIEs, Taiwan, the share of East Asia increased by about 10%, from 23.1% in 1985 to 32.6% in 2000, nevertheless the ratio of value-added outflow outside the East Asia region remained at the level of around 70%. As for Korea, being stable between 27% and 30% through the whole period, it was almost as high as Taiwan in 2000.

4-2 International division of labor rate by three sector tables

In the previous section, we calculated the international division of labor rate based on one-sector tables. Here, we apply the same calculation to three-sector tables that consist of primary, secondary and tertiary industry[5]. In the following, we focus only on secondary industry because exports of industrial products have been a crucial driving force to achieve high growth for East Asian countries. If otherwise not specified, all descriptions in the following are about secondary industry.

The calculation results based on three-sector tables are on table 2 whose format is the same as table 1 other than the number of sector.

First, let us check the home production rate. As far as Japan and the United States are concerned, the overall trends are about the same as the case of 1 sector; both Japan and the United States' home production rate are marking around 90%, which have been higher than most of the others, and Japan has exceeded the United States since 1995. Indonesia and China are in the second highest group, followed by Philippines whose home production rate hit 84% in 1985. As for the others, the home production rates were low, stayed between only 40% and 80%. For Singapore, the home production rate rose from 39.7% in 1985 to 46.7% in 2000. However, it would be still low enough since it means more than half of value-added in manufacturing leaked out of the home. Furthermore, Philippines, Thailand and Taiwan's home production rate have declined through the whole period. As for Malaysia and Korea, the home production rate hit the highest in 1990, but since then, they have decreased.

Next, let us confirm how much value-added leaked to ROW. Figure 5, which original data is on Table 2, shows value-added leakage rate to ROW in manufacturing. The results are similar to those with 1 sector; the United States and Japan's value-added leakage rates are relatively low, and those of most of the East Asian countries are high, with upward trends. Though Singapore exceptionally decreased the leakage rate, it's still at the high level.

Figure 6 shows the share of East Asia in total value-added outflow. As a whole, the share of East Asia did not necessarily increase. As for Malaysia and

Philippines, the shares of East Asia decreased in 2000, though those calculated by 1-sector tables continued to increase through the whole period. Malaysia declined from 42.8% in 1995 to 37.8% in 2000 and so did Philippines from 34.4% to 24.0% during the same period.

Table 3 shows intra-dependency for manufacturing in the Asia-Pacific region by time series. The row cells for a particular country are value-added acquisition rates of that particular country from corresponding countries. For example, the cell, 80.96%, for Indonesia in column and Indonesia in row for the year 2000 means Indonesia's value-added acquisition rate from Indonesia, in short, indicating Indonesia's home production rate. Similarly, each diagonal cell shows the home production rate of a corresponding country, and those cells are framed in heavy line. The cell, 0.48%, for Indonesia in column and Malaysia in row for the year 2000 means Malaysia's value-added acquisition rate from Indonesia for manufacturing is 0.48%. In other words, 0.48% of value-added leaked to Malaysia out of Indonesia. Similarly seeing the table, it turns out, for example, that the value-added leakage rate from Indonesia to ROW for manufacturing is 12.34%[6].

Here, let us turn to the United States for a while. The United States' home production rate in 2000 was 88.55% and the leakage rate to ROW was 8.99%. This means that a large amount of value-added outflow leaked to ROW. Actually, the column cells for the United States show that most Asian countries' value-added acquisition rate from the United States are less than 1%, and Japan's is 1.14% at most. In sum, most of value-added from the United States' manufacturing is not acquired by the East Asian countries but probably by NAFTA members (Canada and Mexico), as Matsumura and Fujikawa(1998) pointed out.

We can also examine the time-series change of the international division of labor rate from the table. The shaded cells on the table show that value-added leakage has a rising trend. Taking Korea's value-added acquisition from Japan as an example, it was 0.21% in 1985, 0.26% in 1990, 0.30% in 1995 and 0.36% in 2000, showing Japan's value-added leakage to Korea has slightly increased. The same relation with Japan is observed in Thailand. This means Japan has strengthened the dependency on Korea and Thailand little by little, even though the degree of dependency is still low. On the other hand, the amount of Japan's value-added leakage to the United States is large as compared with those to the East Asian countries, though the leakage rate to the United States has declined. It seems to be appropriate to conclude generally that a large amount of Japan's value-added for manufacturing leaks to the United States and ROW, rather than stays within the East Asian region.

We also find some interesting features about other East Asian countries. Let us summarize them as follows.

1) A large amount of value-added is acquired by ROW rather than by the East Asian

countries excluding Japan. Japan and the United States have also acquired value-added from the East Asian countries at high levels.

2) Korea, one of the major nations among Asia NIEs, follows the above two countries, acquiring a certain amount of value-added. Although the value-added acquisition rate from Philippines, Singapore and China fell a little in 2000, the acquisition rate from the East Pacific region including Japan and the United States is on a rising trend through the whole period.
3) As for Singapore, the level of value-added leakage to Malaysia is as high as that to the United States because of the geographical closeness.
4) Thailand and Taiwan have decreased the home production rate and increased the value-added leakage to ROW. At the same time, they slightly increased the value-added leakage to the other East Asian countries. China also has the same trends as Thailand and Taiwan.

As we saw in the above, the trends of value-added movement are different among the East Asia countries; some countries, like Thailand and Taiwan, increased the amount of value-added leakage to the Asia-region little by little, and other countries, like Korea, increased the amount of value-added acquisition from the Asia-region. As a whole, however, we can conclude that, for many East Asian countries, a large amount of value-added has leaked to ROW and the United States. As far as Japan is concerned, it has not provided a large amount of value-added to the other East Asian countries, though receiving much value-added from them.

Finally, let us briefly review Hasebe(2002) that also calculated the international division of labor rate based on “Asian International Input-Output Table” for the years 1985, 1990 and 1995 compiled by IDE. His procedure is a little different from us such that he used 24-sector tables and calculated “total input international division of labor rate.” However, the main findings are almost the same as ours; Japan and the Unite States have relatively higher home production rate than the other Asia-countries; ASEAN and NIEs countries, as a whole, strengthened dependency on Japan, the United States and ROW, though some of them increased the home production rate. In addition, he pointed out those movements were more significant in the sectors of machinery, metal products and chemicals.

Actually, we didn’t calculate value-added international division of labor by using more than 3-sector tables. But if we did, we might obtain a similar conclusion with Hasebe(2002) such that the East Asian countries increased the degree of dependency on the United States and ROW, rather than intra-dependency within the East Asian region.

5 Concluding Remarks

Since 1980s, the East Asian nations have achieved high economic growth by

means of attracting foreign direct investment from industrial countries including Japan and the United States. Meanwhile as we confirmed in the previous sections, for the East Asia nations, home production rate in terms of "value-added acquisition" is not high as compared with that for Japan and the United States. Furthermore, the East Asian countries have increased the degree of dependency on the United States and ROW rather than the degree of intra-dependency in the Asian region.

As we described in section 1, Japan's recent movements to construct economic partnership with East Asian nations are discussed in line with the conclusion of FTA. Cabinet Office(2004), for example, estimates the economic effects of the conclusion of FTA (trade liberalization by eliminating tariffs) among Japan, China, Korea and ASEAN, using Global Trade Analysis Project (GTAP) model, and confirmed its benefit for consumers[7]. Ministry of Economy, Trade and Industry (METI) also points out the importance of regional economic integration, referring to some studies showing that the establishment of partnerships between Japan and Asian countries would bring various forms of economic benefits to the participants[8]. Recently, Japanese government takes the active initiative and promotes external economic policy aiming at the establishment of East Asian economic communities. Japan seems to have the intention to facilitate economic reforms, revitalize the economy and establish a position as a leader of East Asian nations by making economic partnerships including the conclusions of FTA.

Although it is important to establish economic communities among East Asian nations in order to develop East Asian economy, we could not have a very optimistic view about its possibility. Hasebe(2002) concluded "it would still be unwise to regard East Asian economy as 'independent' or 'self-circulating' economy immediately" based on his estimation results. Our conclusion is similar to Hasebe's: Most of East Asian countries have decreased the home production rate, and a large amount of their value-added has not remained within East Asian region. Therefore, it would still be premature to regard East Asia region as an independent economic community.

Recently, aiming at further development, economic integration within East Asian region is discussed in the framework of ASEAN or AFTA. But we must clear some hurdles in order to achieve sustainable economic growth for East Asian regions or ASEAN members[9]. As for effective measures to realize sustainable growth, many suggestions have been proposed, mainly from the viewpoint of revitalizing economy in the wake of Asian economic crisis. Aoki(2003), for example, mentions that ASEAN members should seek for improvement in technological innovation ability, and in order to fulfill it, they should try to increase the efficiency of investment and production. Urata(2004) also points out what East Asian nations should tackle includes effective utilization of fund, proactive approach to information technology, and stabilization of currencies[10]. Once Krugman(1994) asserted that East Asia's

growth pattern had been “input-driven” and this type of growth (input-driven growth) would not be sustainable[11]. It can be said that Aoki(2003) and Urata(2004) suggest, in line with Krugman’s, that East Asian nations should change their growth pattern from “input-driven growth” to “efficiency-driven growth” in order to achieve sustainable growth. Because East Asian nations have had “input-driven” economic structures so far, they have leaked their value-added outside the region as we showed in the previous sections. Thus, it’s crucial, for East Asia’s sustainable growth, to transform the “input driven” structures into “efficiency driven” ones in which a large amount of value-added remains inside the region.

In addition to the above-mentioned, East Asian nations have many challenges to overcome such as mobility of labor force, establishment of social security system, and prevention of global environmental deterioration[12]. While Japan has been in economic slump since 1990s, it is still one of the largest industrial powers. Japan has served various technology and economic cooperation to East Asian region through direct investment and Official Development Assistance (ODA) so far, and furthermore, it will play more important roles in economic development for the East Asian region; its strong leadership will be required. According to its degree of responsibility, Japan should conduct the policy toward East Asian regions consistently that contributes to sound economic development and establishment of East Asian economic community.

Data Appendix

A-1 International Input-Output Table

Japan is a major provider of International Input-Output Tables. In Japan there are two major bases which have compiled International IO Tables; one is IDE (Institute of Developing Economies) and the other is METI (Ministry of Economy, Trade and Industry).

It was IDE that launched to compile International IO Tables first. In 1970 IDE preliminarily compiled a small-scale International IO Table for Japan, Korea, Taiwan, Philippine, India, Pakistan, the United States and EC for 1963. After this pioneering work, as shown in Table 4, IDE has continuously reported International IO tables as a series of “Statistical Data Series”. In 1982, integrating bilateral IO tables between Japan and other countries, IDE published “International Input-Output Table for ASEAN Countries, 1975” which has 8 endogenous countries (Japan, Thailand, Malaysia, Singapore, Philippines, Indonesia, Korea and the United States). Furthermore, in 1992 and 1998, adding Taiwan and China to the above-mentioned 8 countries, IDE compiled “Asian International Input-Output Table” for 1985 and 1990 respectively. Since the publication of the table for 1995, IDE has stopped compilation of bilateral tables and continued to publish only “Asian International

Input-Output Table". IDE has already started to estimate that for 2000 to be published in March 2006.

"Asian International Input-Output Table" is a powerful and indispensable tool to analyze the structure of international trade and production among the Asian countries. However, a long compilation time (usually 5 years or more) makes it impossible to analyze recent events by using fresh IO data. If you want to use recent data, you need to somehow estimate an extended table for yourself by a RAS method. But it would be questionable whether the estimated table would be accurate enough to tolerate the analysis. In short, we have a trade-off between quickness and accuracy. It was Takada and Okada(2004) that broke through the difficulty. They succeeded to estimate an extended Asian International IO table that is likely to meet both quickness and accuracy by developing a new RAS method of "Trade-RAS method" which uses trade data as well as input coefficients. In actual, Takada and Okada(2004) confirmed the Trade-RAS method showed higher performance than ordinary RAS methods by estimating the IO table for 1995, which had been published already. We highly appreciate their study and express special thanks to them for providing us with the extended table.

A-2 Industry Classification

The original IO tables we used are "Asian International Input-Output Table" (7 sectors) for 1985, 1990 and 1995 compiled by IDE, and the extended Asian International IO table for 2000 (19 sectors) estimated by Takada and Okada(2004). We readjusted those tables to 3-sector aggregated ones with the common industry classification. Table 5 shows the correspondence of industry classification for the original and aggregated tables.

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Endonotes

1 Recently Japanese government researches not only FTA(Free Trade Agreement) but also EPA(Economic Partnership Agreement. See websites of METI or JETRO, http://www.meti.go.jp/policy/trade_policy/index.html or http://www.jetro.go.jp/biz/wto_fta/

2 Source: Penn-World Table (http://pwt.econ.upenn.edu/php_site/pwt61_form.php)

3 Data in this section is based on Asian International Input-Output Tables compiled by IDE. GDP is the total value-added. Intermediate export means the off-diagonal row-sum and intermediate import means the off-diagonal column-sum. As for those of final goods, we did the same manipulation.

4 Unlike value-added international division of labor defined in equation (11) and (12), the column sum of equation (13) and (14) is not equal to one. Thus, in order to get shares for each country the figures calculated in equation (13) and (14) should be normalized.

5 See Appendix A-2.

6 The diagonal elements and the bottom row elements are the same as home production rate and leakage rate to ROW respectively in table 2.

7 See Cabinet Office(2003), Section 3 in Chapter 3.

8 See Ministry of Economic, Trade and Industry(2003), Chapter 4.

9 Kawata(2002) pointed out some problems on Common Effective Preferential Tariff (CEPT) of AFTA. The trade based on CEPT scheme is still small partly because trading firms do not recognize the advantages or do not know the procedures to apply for CEPT and partly because the procedure to apply for certificates of origin is complicated.

10 As for currency unification, see Kamata(2002) and Ohno and Fukuda(2003).

11 See Krugman, P.(1994).

12 As for mobility of labor force and environmental issues, see Imai(2004) and Takenaka(2004).

Table1 International Division of Labor (based on one sector tables) (Unit:%)

	Own acquisition				Leakage to ROW				Share of East Asia in total value added outflow			
	1985	1990	1995	2000	1985	1990	1995	2000	1985	1990	1995	2000
Indonesia	90.9	88.6	89.3	90.0	5.2	7.3	6.6	6.9	29.8	29.1	29.6	24.4
Malaysia	75.0	77.3	66.0	53.2	14.2	10.7	15.0	20.2	34.3	42.0	43.8	46.6
Philippines	89.7	82.7	80.8	78.2	5.4	9.4	9.7	11.5	28.5	32.3	35.8	38.8
Singapore	52.6	51.1	56.6	58.4	24.9	24.5	16.6	17.1	38.7	37.6	48.7	46.2
Thailand	84.9	78.6	77.5	73.5	8.9	10.5	10.5	14.5	33.6	41.3	42.3	35.2
China	92.4	90.5	86.6	86.5	4.8	6.4	8.4	9.4	27.8	22.1	29.1	24.2
Taiwan	76.1	76.3	74.6	73.7	14.5	12.9	13.3	14.0	23.1	28.0	33.6	32.6
Korea	78.6	81.2	81.6	75.6	11.8	9.9	10.0	14.5	27.4	28.4	29.9	29.0
Japan	91.2	93.4	94.9	94.2	6.0	4.5	3.3	3.8	17.6	16.6	18.8	20.6
USA	95.3	94.8	93.7	93.7	3.7	4.2	4.8	4.9	19.6	18.3	23.4	22.4

Note: East Asia means the nine countries/regions excluding the USA.

Table2 International Division of Labor (based on three sector tables) (Unit:%)

		Own acquisition				Leakage to ROW				Share of East Asia in total value added outflow			
		1985	1990	1995	2000	1985	1990	1995	2000	1985	1990	1995	2000
Indonesia	Primary	98.0	97.3	97.5	97.5	1.2	1.9	1.7	1.9	24.4	24.2	23.3	17.7
	Secondary	84.7	81.7	84.1	81.0	8.4	11.6	9.4	12.3	31.2	29.4	31.4	27.7
	Tertiary	94.7	92.9	93.9	93.1	3.8	4.9	4.5	5.4	18.8	24.6	20.1	16.9
Malaysia	Primary	90.9	89.9	88.2	89.4	5.2	4.5	5.7	5.5	33.8	44.1	40.5	36.9
	Secondary	65.4	67.7	59.0	54.2	18.9	15.9	18.6	23.1	35.3	40.1	42.8	37.8
	Tertiary	83.2	88.4	84.5	83.3	12.4	5.6	7.4	8.7	21.2	38.4	38.2	34.7
Philippines	Primary	95.4	92.4	93.0	93.7	2.2	3.7	3.3	4.1	33.4	34.8	36.0	23.7
	Secondary	84.2	75.0	71.9	73.0	7.9	14.1	14.7	17.7	29.9	30.3	34.4	24.0
	Tertiary	94.3	90.1	88.3	89.8	3.6	5.2	6.0	7.1	22.0	34.1	36.0	21.7
Singapore	Primary	68.0	59.1	65.1	65.2	14.7	21.7	14.9	14.9	46.6	35.1	43.6	44.6
	Secondary	39.7	38.5	44.9	46.7	30.6	29.1	20.3	21.6	40.0	39.6	49.8	46.8
	Tertiary	76.6	71.7	74.0	74.8	16.0	18.2	12.6	12.5	24.7	26.9	39.9	39.0
Thailand	Primary	90.9	89.8	88.9	87.1	5.4	5.5	5.9	7.7	32.5	37.2	35.9	31.4
	Secondary	79.1	70.5	69.3	63.8	12.3	14.4	14.3	19.7	33.6	40.9	42.3	35.1
	Tertiary	90.5	89.8	90.8	88.6	5.8	5.7	5.0	7.1	31.0	35.8	36.0	30.0
China	Primary	96.6	95.2	92.8	92.6	2.3	3.4	4.8	5.4	18.0	15.2	21.2	18.3
	Secondary	89.4	87.7	83.3	84.1	6.7	8.3	10.3	11.0	27.9	22.1	29.9	24.3
	Tertiary	96.4	94.9	91.3	91.6	2.3	3.4	6.0	6.3	26.5	21.7	23.9	19.7
Taiwan	Primary	84.6	85.3	83.4	80.3	9.9	8.5	9.6	11.2	20.8	26.4	29.6	29.8
	Secondary	68.0	67.2	62.2	55.7	19.1	16.8	18.3	21.3	23.5	30.4	36.5	36.3
	Tertiary	91.1	87.7	88.2	86.9	6.4	8.4	8.3	9.0	16.4	17.1	20.4	20.9
Korea	Primary	91.5	92.2	92.0	88.7	4.7	4.6	4.9	7.7	25.3	25.0	24.7	20.7
	Secondary	70.4	75.2	75.0	68.7	16.0	12.7	13.0	19.2	28.5	29.8	32.2	26.2
	Tertiary	90.6	91.0	91.2	88.4	5.9	5.7	6.2	8.7	20.4	19.0	17.6	15.4
Japan	Primary	94.8	95.9	96.5	95.6	3.4	2.6	2.2	2.8	17.0	15.9	18.2	20.2
	Secondary	86.6	90.3	92.0	90.4	8.8	6.4	5.0	6.0	19.4	18.2	20.8	23.0
	Tertiary	95.9	96.5	97.2	96.9	3.1	2.6	2.1	2.4	13.4	12.0	13.4	15.2
USA	Primary	96.5	95.6	92.3	91.4	3.0	3.8	6.6	7.5	15.4	13.9	14.4	12.6
	Secondary	91.8	91.1	88.7	88.6	6.6	7.3	8.7	9.0	19.8	18.2	22.6	21.5
	Tertiary	97.8	97.0	96.1	96.0	1.8	2.5	3.0	3.1	17.3	17.0	23.0	22.0

Table3 International Division of Labor in manufacturing (Unit:%)

↓ To	From→	Indonesia	Malaysia	Philippines	Singapore	Thailand	China	Taiwan	Korea	Japan	USA
Indonesia	1985	84.67	0.60	0.53	3.64	0.18	0.15	0.70	0.98	1.05	0.21
	1995	84.13	0.72	0.78	1.55	0.37	0.29	0.89	0.71	0.38	0.08
	2000	80.96	0.65	0.54	1.45	0.32	0.40	1.11	1.02	0.55	0.08
Malaysia	1985	0.13	65.42	0.89	5.07	1.56	0.07	0.60	1.20	0.38	0.06
	1995	0.26	58.97	0.70	3.65	1.19	0.21	0.79	0.43	0.19	0.16
	2000	0.48	54.20	0.63	4.46	1.57	0.22	1.16	0.64	0.29	0.20
Philippines	1985	0.04	0.35	84.20	0.35	0.07	0.03	0.14	0.11	0.09	0.04
	1995	0.02	0.19	71.87	0.53	0.25	0.03	0.19	0.09	0.06	0.08
	2000	0.03	0.29	73.01	0.67	0.43	0.04	0.31	0.12	0.09	0.11
Singapore	1985	0.38	1.90	0.10	39.68	0.37	0.02	0.16	0.11	0.06	0.03
	1995	0.30	1.85	0.50	44.93	0.75	0.13	0.45	0.17	0.06	0.10
	2000	0.40	2.01	0.41	46.72	0.85	0.13	0.57	0.18	0.07	0.09
Thailand	1985	0.06	0.86	0.13	0.56	79.13	0.08	0.13	0.15	0.08	0.03
	1995	0.13	0.73	0.23	2.34	69.28	0.14	0.33	0.14	0.12	0.09
	2000	0.18	0.80	0.19	2.13	63.78	0.11	0.43	0.14	0.14	0.09
China	1985	0.39	0.93	1.02	6.36	0.45	89.36	0.07	0.06	0.58	0.08
	1995	0.46	0.97	0.82	1.36	0.88	83.33	1.10	1.23	0.40	0.22
	2000	0.70	1.32	0.71	1.88	1.24	84.05	1.89	1.49	0.58	0.32
Taiwan	1985	0.30	0.59	0.36	1.10	0.46	0.17	68.00	0.29	0.15	0.16
	1995	0.38	1.29	1.40	1.40	0.94	0.42	62.24	0.34	0.16	0.23
	2000	0.28	0.97	0.72	0.92	0.72	0.25	55.74	0.24	0.13	0.16
Korea	1985	0.24	0.57	0.39	0.58	0.33	0.01	0.16	70.43	0.21	0.12
	1995	0.66	1.37	1.25	2.79	0.91	0.95	1.20	75.02	0.30	0.26
	2000	0.71	1.55	0.89	2.66	1.00	0.83	1.54	68.75	0.36	0.27
Japan	1985	3.25	6.43	1.30	6.49	3.60	2.44	5.56	5.54	86.62	0.90
	1995	2.76	10.48	3.98	13.82	7.69	2.82	8.86	4.92	92.03	1.33
	2000	2.48	9.71	2.41	10.78	6.58	1.89	9.06	4.36	90.40	1.14
USA	1985	2.13	3.46	3.20	5.55	1.58	0.97	5.41	5.16	1.94	91.77
	1995	1.52	4.83	3.76	7.33	3.40	1.41	5.70	3.98	1.33	88.73
	2000	1.43	5.35	2.82	6.76	3.77	1.07	6.93	3.88	1.43	88.55
ROW	1985	8.41	18.90	7.87	30.63	12.26	6.71	19.07	15.98	8.85	6.60
	1995	9.38	18.62	14.70	20.31	14.33	10.28	18.26	12.97	4.98	8.73
	2000	12.34	23.15	17.68	21.58	19.74	11.00	21.27	19.19	5.96	8.99

Table4 Back issues of International I-O table

Institute of Developing Economies	1970	1975	1985	1990	1995
Japan-the USA	No.24				
Japan-South Korea	No.18	No.34	No.58	No.71	
Japan-Philippines	No.23		No.63	No.72	
Japan-Thailand		No.35	No.59	No.73	
Japan-Indonesia		No.33	No.57	No.70	
Japan-China			No.60	No.76	
Japan-Singapore			No.61	No.77	
Japan-Malaysia			No.62	No.79	
Japan-Taiwan			No.64	No.78	
ASEAN		No.39			
Asia			No.65	No.81	No.82

Note: the number is that of “statistical data series”

Ministry of Economy and Trade	1970	1975	1985	1990	1995
Japan-the USA			O	O	O
Japan-England			O	O	
Japan-Germany			O	O	
Japan-France			O	O	
Japan-the USA-EC-Asia			O	O	

Table5 Industry Classification

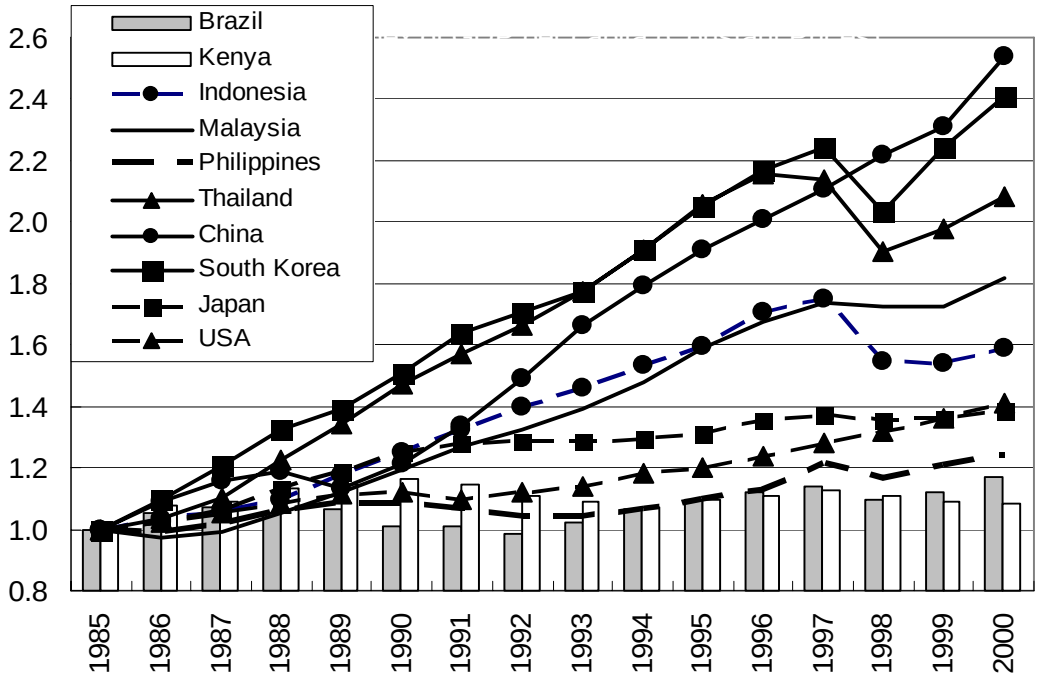
(a) ASIAN INTERNATIONAL INPUT-OUTPUT TABALE 1985, 90 and 95
by Institute of Developing Economies (IDE)

Sector	Code	Description
primary industry	001	Agriculture, livestock, forestry and fishery
primary industry	002	Mining and quarrying
secondary industry	003	Manufacturing
secondary industry	004	Electricity, gas, and water supply
secondary industry	005	Construction
tertiary industry	006	Trade and transport
tertiary industry	007	Services

(b) ASIAN INTERNATIONAL INPUT-OUTPUT TABALE 2000
by Takagawa and Okada (2004)

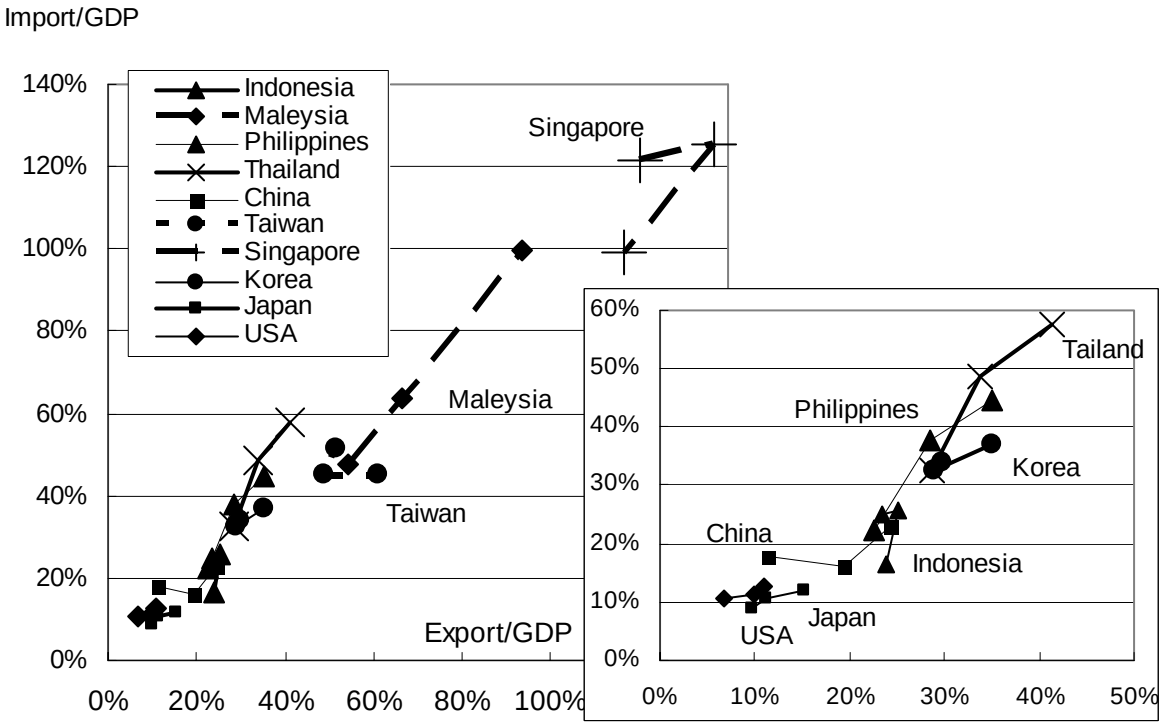
Sector	Code	Description
primary industry	001	Agriculture, livestock and forestry
primary industry	002	Fishery
primary industry	003	Mining and quarrying
secondary industry	004	Food, beverage and Tobacco
secondary industry	005	Fabrics and leather
secondary industry	006	Wooden producers
secondary industry	007	Paper, pulp and printing
secondary industry	008	Chemicals
secondary industry	009	Petroleum products
secondary industry	010	Rubber products
secondary industry	011	Non metal products
secondary industry	012	Metal products
secondary industry	013	Machinery
secondary industry	014	Transport machinery
secondary industry	015	Other manufacturing
secondary industry	016	Electricity, gas, and water supply
secondary industry	017	Construction
tertiary industry	018	Trade and transport
tertiary industry	019	Services

Figure 1 Index of GDP per capita (Constant Prices)



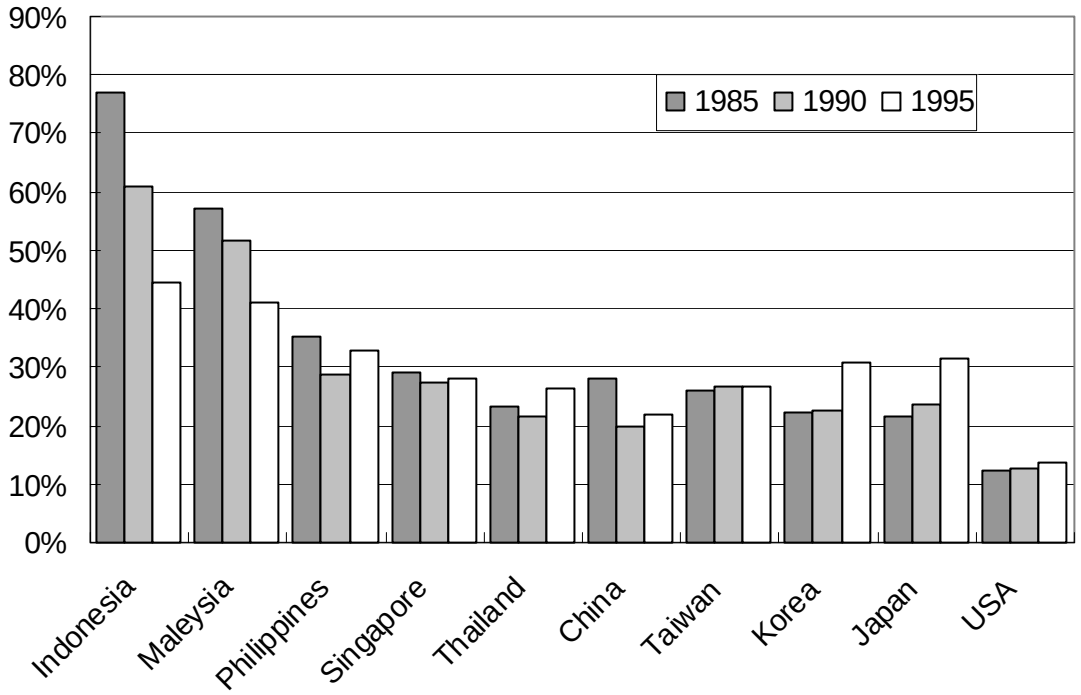
Source of Data: Penn-World Table

Figure 2 Ratio of import and export to GDP



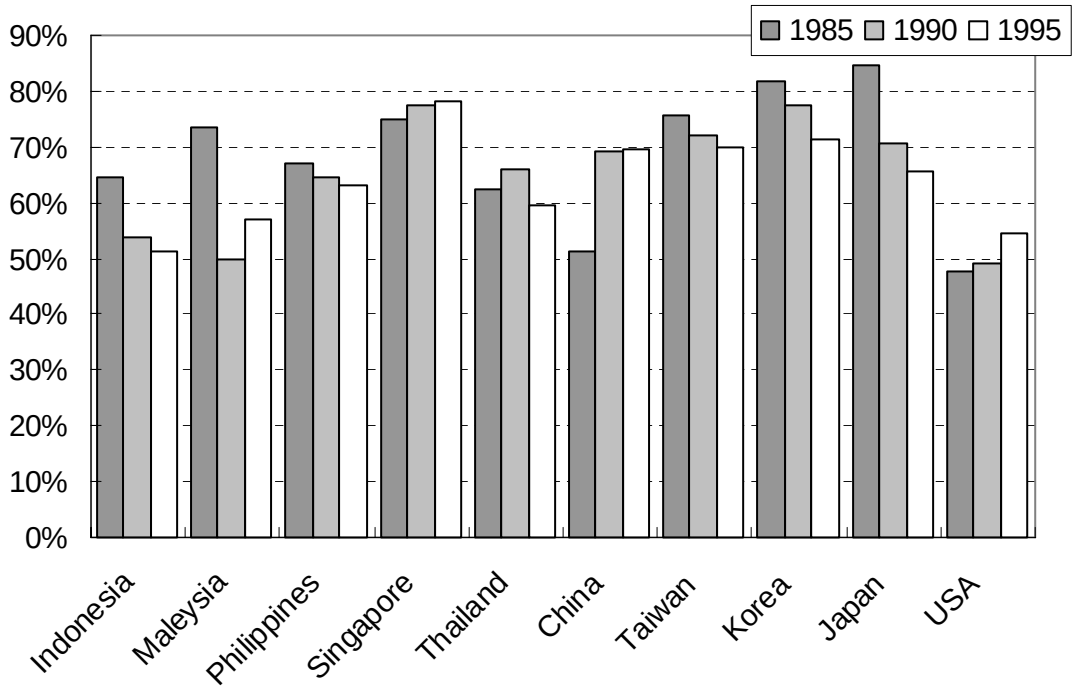
Source of Data: Asian International Input-Output Table for each year

Figure 3 Share of intermediate goods in export



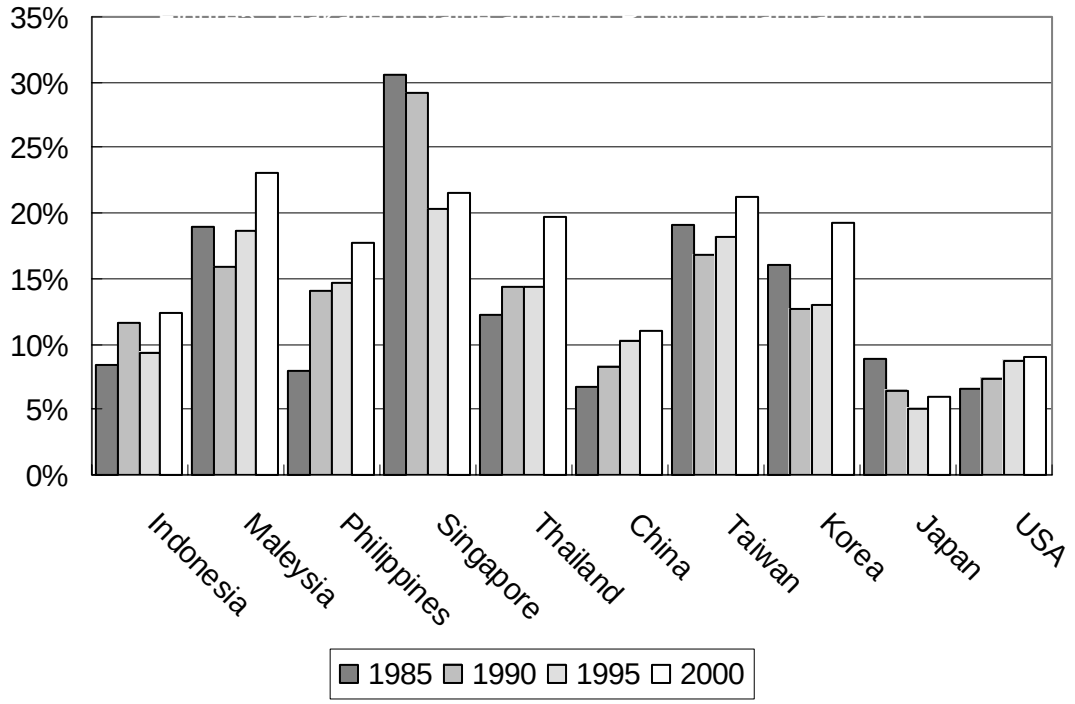
Source of Data: Asian International Input-Output Table for each year

Figure 4 Share of intermediate goods in import



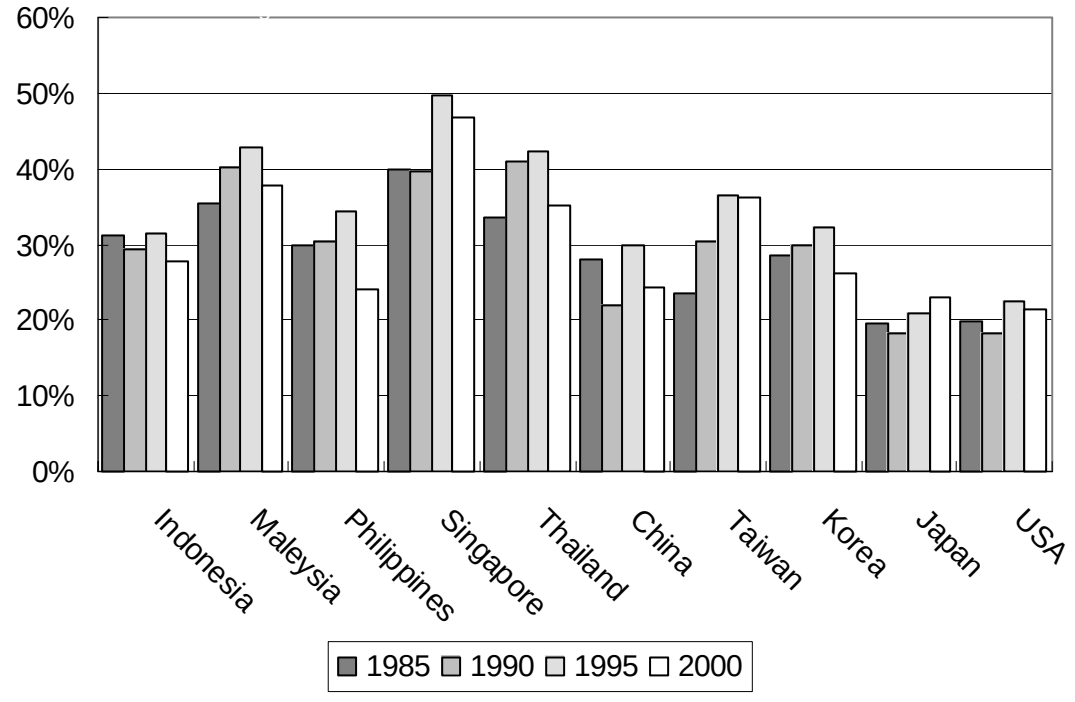
Source of Data: Asian International Input-Output Table for each year

Figure 5 Leakage of value added to ROW (in manufacturing)



Source of Data: Asian International Input-Output Table for each year

Figure 6 Share of East Asia in total value added outflow (in manufacturing)



Source of Data: Asian International Input-Output Table for each year