

# THE PATTERNS OF INTERNATIONAL SPECIALIZATION AMONG ASIAN COUNTRIES AND THE FUTURE OF JAPANESE INDUSTRY

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## INTRODUCTION

THE 1970s saw a rapid expansion of trade by the newly industrializing countries (NICs) of Asia. Indeed, the expansion was so great that the Asian region is expected to have one of the highest trade growth rates in the world in the 1980s. This rapid expansion in trade is being accompanied by changes in the commodity structures of the Asian NICs, whose export-oriented development, while fitting neatly into the global structure of comparative advantages, has at the same time been creating a more sophisticated division of labor. This new division of labor involves not only the United States, the European Community (EC), and Japan, but also the "semi-NICs" of ASEAN and China.

This study is an examination of the dynamic processes of this new division of labor. If we limit discussion just to the so-called "catching up" problem wherein the rapid increase in exports by the Asian NICs has put pressure on the export markets heretofore occupied mainly by the industrialized countries, there is the danger that we will overlook the mechanisms that are forming the broader Asian division of labor to come. As the products of the Asian NICs catch up with those of Japan, first in the U.S. market, then in the EC market, and subsequently in the Japanese market itself, they are at the same time being pursued by those of the ASEAN countries and, in turn, China. A new division of labor is thus being formed. It is extremely important that we examine the direction taken in the development of this dynamic division of labor and seek out a path to more desirable and harmonious multilateral trade relations. In doing so, it is essential to have a good overall understanding of this multi-layered division of labor that renders a number of regions mutually interdependent.

The division of labor among the countries that make up the Asian regional market has already been studied from a variety of aspects. The analyses, however, have so far not been as systematic or coherent as they might. In this study, I will examine the flow of products from the Asian NICs (the international division of labor pattern) in 1975 with particular respect to ASEAN, the United States, and Japan on the basis of the differences in factor endowment according to the neo-factor-proportion theory. The trade between the Asian NICs and Japan (the division of labor between countries of differing stages of development) in 1977, then, will be analyzed in terms of an international reflection of the

relationship between input and output in the production process. The resultant polarity in the division of labor in Asia will in future be an extremely important feature of Asian trade relations.

Finally, in order to foresee the direction Japanese industry will take in the future within the framework of this Asian division of labor, the import function for some manufactured products will be estimated and an outline of possible trends in Japanese overseas investment in the 1980s will be given.

### I. THE DIVISION OF LABOR IN ASIA: PATTERNS AND MECHANISMS

As a working framework to analyze the division of labor among a number of regions at differing levels of development, with special reference to the Asian NICs and Japan, I hypothesized the following model of an Asian division of labor.

(1) The regions involved in the Asian division of labor include the Asian NICs, Japan, the ASEAN countries, the United States, the European Community, and China. The basic model I shall use is the factor endowment model, in terms of which I clarify the pattern of this spatially multilateral, dynamic division of labor. In doing so, I take into account the differences in the stages of development among the countries involved. I shall therefore hypothesize the following regional characteristics.

Using the neo-factor-proportion theory, let us look then at the endowment of three factors: unskilled labor, skilled labor, and physical capital. It can be seen that the United States, which is the most highly developed of the regions in question, is endowed with the largest skilled labor force. Even if we use the level of R&D as suggested by advocates of the "neo-technology theory," instead of a highly skilled labor force, the United States still leads by virtue of having the richest technological resources.

Japan accumulated a large amount of physical capital during its era of high economic growth, and thus has abundant capital facilities to support its international competitive position. However, Europe (more specifically West Germany) is second after the United States in technological resources. The Asian NICs are substantially below the industrial countries in their technological level including R&D, but do have abundant and good quality unskilled labor. The ASEAN countries and China also have plentiful unskilled labor, but it is less suited to factory work than that of the Asian NICs. The ASEAN region is, however, the most richly endowed with natural resources.

That, briefly, is a basic outline of the factor endowment patterns of the regions. From the latter half of the 1970s, however, the characteristics of the regions involved have been changing as economic development progresses. Japan, like other countries that are rich in sophisticated physical capital, is gradually taking on the character of a technology-rich (high R&D) country as it makes the transition to a technology-intensive economy. At the same time, the United States is in the process of becoming a country rich in a much more limited range of "leading-edge tech-

nologies." The Asian NICs, for their part, are accumulating experience in industrialization. As they do so, they are showing a trend toward greater sophistication in their unskilled labor force as wages rise sharply. Notably the Asian NICs have also accumulated substantial capital facilities. China and the ASEAN countries have at last reached the stage where it is possible for them to mobilize their potential unskilled labor in the course of industrialization.

(2) Our next step is to group the products traded between the regions according to product characteristics.

Firstly, I group some 284 industrial products, classified under United Nations SITC three-digit categories, into unskilled labor-intensive goods, capital-intensive goods, and technology-intensive goods according to the neo-factor-proportion theory. The labor-intensive and capital-intensive goods are subdivided into *materials* with a low degree of processing and *products* with a greater degree of processing, taking into account the differences in economic development within Asia. Labor-intensive materials are resources that undergo simple processing by labor-intensive methods, while labor-intensive products pass through several additional processing stages.

Next, in order to see more clearly the technology used in each production process, I divide the products into blocks according to the technological relationship between input and output in inter-industry relations. The international division of labor should not be interpreted as simply an exchange of labor-intensive and capital-intensive goods. We cannot overlook such aspects as the international input and output among products at different processing stages (defined by the technological relationship between input and output among products at different stages of production) within a division-of-labor structure in which regions are combined into a closely interconnected economic sphere where the exchange of these goods operates just as if within one country.

In view of the problems of integrating the production processes in Japan and the Asian NICs, I have used Japan's inter-industry input-output tables to set up five basic industry blocks: metals, petrochemicals, machinery, traditional industries, and final consumer goods. These basic industry blocks are inter-linked within Japan's economic structure as follows. During the era of high economic growth there was heavy investment in the metals and petrochemicals blocks, which consequently saw a rapid increase in productivity owing to the scale economy. This increase in productivity particularly in the iron and steel sector contributed, through the input of intermediate goods, to increased productivity elsewhere, most notably in the machinery sector. It also resulted in the rapid development of heavy and chemical industries in the export sector. Higher productivity for intermediate goods in Japan has also sustained the competitiveness of exports of the Asian NICs through their trade in intermediate goods. The highly capital-intensive large-scale production sector has absorbed large amounts of capital, while the traditional industries and final consumer good sectors, on the other hand, have absorbed labor. The final consumer good sector is directly linked to households, and its growth is due to the expansion of domestic demand in the Japanese market. On the production process side, it has de-

veloped the strongest links with the petrochemical block because of technological innovations in that block's intermediate material input. Thus the expansion of domestic demand has indirectly encouraged the development of the petrochemical sector.

In order to supplement this very rough block analysis, I examined in greater detail the input-output relationship and classified commodities systematically from those most upstream (production) to those most downstream (final finished goods).

But the Asian division of labor has yet a further aspect: there is also a division of labor according to differences of quality in the manufacture of the same commodity. This is particularly true in the case of final consumer goods, where the difference in quality between those made in Asia and those produced in the industrial countries may be so large as to render it almost impossible to lump them together. It becomes possible to trace the dynamic changes in the Asian division-of-labor pattern only if we make separate categories for high-quality items produced in the industrial countries, low-priced items produced in the Asian NICs, and even lower-priced items produced in China.

(3) I would now like to describe how the product groups classified here are subject to specialization among regions with different stages of development and endowments, focusing mainly on the Asian NICs.

As indicated by the theory of factor endowments, each region basically comes to specialize in goods which are intensive in those factors abundantly available in each country. Geographically the trend toward specialization in the Asian countries, especially the NICs, begins with export of their products of specialization, i.e., labor-intensive goods, to the U.S. market where the relative difference in the "endowment of the unskilled labor" is greatest. These countries have a strong comparative advantage over Japan, due to this difference in factor endowment and therefore wrest away Japan's share of the market. Since there are limits to the growth of the U.S. market, these countries then expand their exports to the EC market, with which they also have a large factor (unskilled labor) endowment differential. Finally, having caught up with Japan in third-country markets, they enter the Japanese market itself. In geographical terms, the Asian NICs are extending their export markets from markets where the factor endowment differential is greatest, to markets where these differentials are smaller.

While industrialization is still in an immature stage, production starts from those goods that entail relatively short production processes, even in the case of labor-intensive goods. Processing industries based on imported raw materials develop in countries that are poor in domestic resources. As industrialization progresses, there is a gradual shift to the making of products that have longer production processes and involve a greater degree of processing. For example, the Republic of Korea, which has been exhibiting a specialization in the export of processed products, imports from the ASEAN countries those resources which the latter have in relative abundance. Singapore, which is geographically favored as an oil-refining base, specializes in petroleum products.

In addition to specialization in the processing of resources, industrialization

in the Asian NICs has an additional aspect: export specialization starting with final assembly production, the stage closest to household consumption. In this case, the Asian NICs rely mainly on imports of intermediate basic materials from Japan and process these into final products before reexporting them. Since the production of these intermediate basic materials benefits from the merits of scale, the smaller Asian countries have little advantage in producing these themselves and so rely on imports. In the case of some intermediate basic materials produced with large scale equipment, however, technology transfers are being made only in the form of import of capital facilities using up-to-date technology, so that in effect transfers are being made of products for which the technological levels of the regions in question are relatively close, as in the case of steel. A new pattern of trade by the Asian NICs is emerging as a result.

Japan is almost totally dependent on imports of raw materials and is losing its comparative advantage simultaneously in the most upstream and the most downstream processes. The Japanese loss of advantage takes place earlier in the case of labor-intensive goods. Generally speaking, as the more capital-intensive the goods are, the more the Asian NICs lag behind.

As industrialization progresses in the Asian NICs and the ASEAN countries, the advantage shifts gradually from the former to the lower-waged ASEAN countries in proportion to the dependence of the goods on unskilled labor; as a result, the ASEAN countries are catching up with the Asian NICs in the U.S. market.

The Asian NICs are moving toward stages of specialization in capital-intensive goods. In doing so, they try to export to the ASEAN and other developing countries which are endowed with less capital. But since the markets in these countries are small, it is only a matter of time before entry into industrial country markets becomes a problem. It is those merchandise items for which technology transfers from the industrial countries came soonest that are the first to enter the markets in the industrial countries. As investment overseas progresses, a new pattern of division of labor will emerge, and some capital-intensive goods will come to be left to Asian plants which will then export them to the U.S. and Japanese markets.

The progress of industrialization in the Asian NICs will mean increasing demand for the machinery to sustain their industrialization. They will produce an increasing amount of machinery domestically which will result in a change in the pattern of imports from Japan. The machinery industry, however, is closely interrelated with the production of a wide variety of components, and it finds difficulty in producing all these components domestically because of the limited domestic market. In this respect there are limitations which effect the effort to catch up with the developed countries. In the case of technology-intensive goods, where the level of technology involved is higher, the factor endowment gap is decisive, and the Asian NICs will become increasingly dependent on Japan as their demand for machinery grows.

While the United States will become increasingly specialized in certain leading-edge industries, U.S. exports will, on the whole, probably retreat from the low-

income, small-demand Asian market. On the other hand, not only capital-intensive goods but technology-intensive goods will take on much greater importance in Japan's exports to Asia and there will thus be progress in the integration of industries in the Asian NICs and Japan.

The increasing gap in factor endowment will encourage the entry by Asian NIC goods into the Japanese market. However, if we look at the mechanism of dynamic comparative advantage, it is apparent that this trend would be limited due to the following two aspects. Product differentiation will lead to a pattern of higher-quality goods from the industrial countries and lower-quality goods from Asia. As Japanese incomes increase, their tastes become more sophisticated. Whereas the income elasticity for higher-quality goods is relatively higher, the demand for lower-quality goods is subjected to price competitiveness in the market. The price effect tends to be depressed, however, by the complicated distribution system indigenous to Japan. Moreover, the entry of even lower priced goods from China is working to cancel out the price effect of products from the Asian NICs.

## II. DEMONSTRATION OF THE ASIAN DIVISION-OF-LABOR PATTERN: VERIFICATION OF THE NEO-FACTOR-PROPORTION THEORY

First, let us examine, according to the neo-factor-proportion theory, the division-of-labor pattern as it relates to the Asian NICs. The trade matrices for various types of merchandise, which have been grouped according to the degree of factor intensiveness, show, in terms of exports, the flows of merchandise among the Asian NICs, Japan, ASEAN, and the United States.<sup>1</sup> The degree of specialization vis-à-vis Japan shown in Table I is:

$$\frac{\text{Exports to Japan} - \text{Imports from Japan}}{\text{Exports to Japan} + \text{Imports from Japan}}$$

If the degree of specialization is positive, there is an export specialization by the country concerned vis-à-vis Japan (export surplus); if it is negative, then there is an import specialization (import surplus).

The degree of catching up vis-à-vis Japan in individual markets is expressed as an index of exports when Japanese exports are set at 100. The ASEAN market includes Malaysia, Indonesia, the Philippines, and Thailand, but excludes Singapore. I shall now summarize the points verified in Table I according to the Asian division-of-labor model.

Differences can be seen in the specialization patterns among Korea, Hong Kong, and Singapore (the Asian NICs). In the case of Korea the most prominent pattern is one of the resource processing type: raw materials are imported from the ASEAN countries for processing and reexport. Korea has already overtaken Japan in export of labor-intensive basic materials to the U.S. market, and its degree of specialization in these materials vis-à-vis Japan having first gone to

<sup>1</sup> The trade matrices here are the export figures for 1970 and 1975 in the United Nations, *Commodity Trade Statistics*.



TABLE I (Continued)  
B. Labor-Intensive Products

Export Countries	Export Markets		World	U.S.A.	Korea	Singapore	ASEAN	Japan (Degree of Specialization)
Korea	Degree of catching	1970	10.5	15.1	—	5.5	2.0	-0.23
	up vis-à-vis Japan	1975	35.5	52.7	—	14.3	8.2	0.22
	Export growth factor	1970-75	5.54	3.44	—	3.81	5.90	7.11
Hong Kong	Market share in 1975 (%)		100	38.0	—	1.3	0.9	18.2
	Degree of catching	1970	39.3	39.4	2.3	17.9	8.8	-0.71
	up vis-à-vis Japan	1975	51.4	63.3	1.8	34.1	17.0	-0.51
	Export growth factor	1970-75	2.15	1.59	2.25	2.79	2.81	3.05
Singapore	Market share in 1975 (%)		100	31.6	0.2	2.1	1.4	3.2
	Degree of catching	1970	3.4	1.0	—	—	38.4	-0.99
	up vis-à-vis Japan	1975	5.9	3.9	0.3	—	38.5	-0.94
	Export growth factor	1970-75	2.83	3.69	—	—	1.44	9.30
Thailand	Market share in 1975 (%)		100	16.8	0.2	—	26.4	1.6
	Degree of catching	1970	0.3	0.1	—	1.2	0.7	-0.98
	up vis-à-vis Japan	1975	1.3	2.1	0.1	1.9	1.0	-0.76
	Export growth factor	1970-75	8.53	30.24	—	2.35	1.95	15.31
U.S.A.	Market share in 1975 (%)		100	39.8	0.3	4.5	2.9	11.8
	Degree of catching	1970	57.1	—	17.9	10.7	27.8	-0.86
	up vis-à-vis Japan	1975	86.9	—	8.8	27.3	50.4	-0.72
	Export growth factor	1970-75	2.50	—	1.41	3.74	2.62	2.08
Japan	Market share in 1975 (%)		100	—	0.4	1.0	2.4	4.7
	Export growth factor	1970-75	1.64	0.99	2.86	1.47	1.44	—
	Market share in 1975 (%)		100	25.6	4.1	3.2	4.1	—

TABLE I (Continued)  
C. Capital-Intensive Basic Materials

Export Countries	Export Markets		World	U.S.A.	Korea	Singapore	ASEAN	Japan (Degree of Specialization)
Korea	Degree of catching	1970	1.3	0.1	—	0.7	0.6	-0.83
	up vis-à-vis Japan	1975	5.3	5.0	—	7.9	4.5	-0.77
Singapore	Export growth factor	1970-75	12.77	141.5	—	35.59	28.71	6.34
	Market share in 1975 (%)		100	10.6	—	3.2	10.1	24.9
U.S.A.	Degree of catching	1970	20.4	2.7	0.3	—	46.3	0.18
	up vis-à-vis Japan	1975	30.7	15.3	0.3	—	54.5	0.41
Japan	Export growth factor	1970-75	4.84	12.98	5.46	—	4.25	4.94
	Market share in 1975 (%)		100	5.6	0.1	—	20.9	16.8
U.S.A.	Degree of catching	1970	291.6	—	31.2	40.8	50.2	0.19
	up vis-à-vis Japan	1975	169.9	—	10.0	43.8	32.6	-0.03
Japan	Export growth factor	1970-75	1.87	—	1.44	3.23	2.35	1.47
	Market share in 1975 (%)		100	—	0.6	0.6	2.3	6.2
Japan	Export growth factor	1970-75	3.21	2.27	4.48	3.00	3.61	—
	Market share in 1975 (%)		100	11.2	10.3	2.2	11.8	—

TABLE I (Continued)  
D. Capital-Intensive Products

Export Countries	Export Markets		World	U.S.A.	Korea	Singapore	ASEAN	Japan (Degree of Specialization)
Korea	Degree of catching	1970	0.6	0.4	—	0.8	0.1	-0.96
	up vis-à-vis Japan	1975	2.0	4.7	—	—	0.6	-0.91
	Export growth factor	1970-75	11.36	20.46	—	—	16.30	7.80
	Market share in 1975 (%)		100	40.7	—	—	2.7	3.9
Singapore	Degree of catching	1970	0.7	—	—	—	7.3	-1.0
	up vis-à-vis Japan	1975	1.2	0.1	0.9	—	15.1	-0.79
	Export growth factor	1970-75	6.25	—	—	—	3.9	—
	Market share in 1975 (%)		100	0.9	—	—	55.3	1.1
U.S.A.	Degree of catching	1970	36.4	—	13.9	10.6	5.4	-0.96
	up vis-à-vis Japan	1975	34.9	—	23.9	14.3	28.7	-0.96
	Export growth factor	1970-75	3.29	—	5.61	5.47	18.13	1.92
	Market share in 1975 (%)		100	—	1.1	1.2	6.7	1.1
Japan	Export growth factor	1970-75	3.44	1.86	3.26	4.06	3.39	—
	Market share in 1975 (%)		100	17.3	1.6	2.9	8.2	—

TABLE I (Continued)  
E. Technology-Intensive Products

Export Countries	Export Markets		World	U.S.A.	Korea	Singapore	ASEAN	Japan (Degree of Specialization)
	1970	1975						
Korea	Degree of catching up vis-à-vis Japan		0.8	1.4	—	—	—	-0.91
	Export growth factor	1970-75	13.11	7.68	—	—	—	12.23
	Market share in 1975 (%)		100	32.5	—	1.0	1.7	19.6
Hong Kong	Degree of catching up vis-à-vis Japan	1970	3.4	5.9	—	8.8	2.1	-0.89
	Export growth factor	1970-75	3.0	5.4	0.2	5.5	1.7	-0.91
	Market share in 1975 (%)		100	2.88	—	3.39	2.26	1.81
Singapore	Degree of catching up vis-à-vis Japan	1970	2.4	1.4	0.3	—	20.1	-0.98
	Export growth factor	1970-75	4.9	5.2	0.3	—	17.5	-0.82
	Market share in 1975 (%)		100	8.86	2.82	—	3.08	59.82
U.S.A.	Degree of catching up vis-à-vis Japan	1970	226.0	—	46.3	109.1	26.4	5.4
	Export growth factor	1970-75	165.9	—	50.8	90.4	53.9	-0.33
	Market share in 1975 (%)		100	—	3.48	4.54	3.31	1.56
Japan	Export growth factor	1970-75	3.41	2.46	3.17	5.48	3.54	—
	Market share in 1975 (%)		100	21.8	3.0	2.6	7.3	—

Note: Degree of catching up vis-à-vis Japan=(exports to Japan/imports from Japan)×100; specialization vis-à-vis Japan=(exports to Japan - imports from Japan)/(exports to Japan+imports from Japan). ASEAN is excluding Singapore.

the positive side, albeit only slightly, in 1975. Hong Kong has the highest degree of specialization in labor-intensive products, especially clothing, which depend on an abundant supply of unskilled labor, but Korea was catching up rapidly in the first half of the 1970s, especially vis-à-vis Japan in the U.S. market. Looking at the growth rates from 1970 to 1975, it is seen that the growth of Hong Kong's exports to the U.S. market diminished from previous growth rates to a rate of 1.6 times, whereas Korean exports expanded by a rapid 3.4 times.

Singapore is at a considerably lower level than the other Asian NICs with respect to labor-intensive goods, but is catching up with Japan in the field of capital-intensive basic materials. Singapore is now clearly developing a trade specialization as an oil refining base.

In 1975 the Asian NIC exports still tended to be held down. This was partly due to the impact of the world recession, but the slow recovery in exports to the Japanese market in particular had an even bigger impact. When this basic trend is taken into account, the following pattern of geographical development can be observed for the labor-intensive goods that the Asian NICs specialize in. Although they are catching up vis-à-vis Japan with increasing speed in the U.S. market which they first entered, growth has tended to taper off markedly due to the limits in market demand itself. Also, as the Asian NICs catch up with Japanese products in third-countries, their products eventually pour into the Japanese market as a new territory for export expansion. Growth rate of exports to Japan up until 1975 was twice to almost four times that of exports to the U.S. market, and, as will be seen later, the flow of Asian NIC products into the Japanese market has accelerated as Japan's economy has recovered. Korea's degree of specialization vis-à-vis Japan went from negative in 1970 to positive in 1975 for both labor-intensive basic materials and labor-intensive products, and the degree of specialization has continued to rise ever since. The results of verification of the pattern of market expansion including the EC for individual commodity items are omitted.

Up until 1975, capital-intensive goods, especially processed basic materials, which the Asian NICs will want to put on the industrial country markets as they industrialize with emphasis on heavy and chemical industries, were penetrating the United States at a rapid rate. In Korea's case capital-intensive basic materials increased 141 times over five-year period, a catch-up rate vis-à-vis Japan of 5, while capital-intensive products increased 20 times, a catch-up rate of 4.7 vis-à-vis Japan. By comparison, entry into the Japanese market was way behind the U.S. market.

The Philippines and Thailand, which rank after the Asian NICs in their stages of development, have a low level of product exports, but there has been a trend toward rapid increase. The Philippines, which is endowed with abundant resources, is already second after Korea in catching up vis-à-vis Japan in the U.S. market in the field of labor-intensive basic materials. When the Philippines' exports to the U.S. began to level off, it switched to the Japanese market, and by 1975 its degree of specialization vis-à-vis Japan had gone over to the plus side. When it comes to labor-intensive final products that require good-quality

labor, however, there is a major gap between the ASEAN countries, on the one hand, and Korea and Hong Kong, on the other. Thailand's exports of labor-intensive goods are still at a very low level, but are expanding more rapidly in the U.S. market than the Japanese. It can be confirmed that these two countries are following the same pattern of export expansion as that formerly taken by the Asian NICs. Since 1975 the Philippines and Thailand, together with Malaysia, have taken advantage of their wage differential vis-à-vis East Asia to accelerate the process of catching up in labor-intensive goods.

If we turn our attention to the division of labor between the Asian NICs and the less-developed ASEAN countries, we can verify, naturally, that substantially different patterns exist for Singapore and East Asia. In the case of Korea, labor-intensive goods account for only an extremely small proportion of its exports to the ASEAN market, but capital-intensive basic materials, by contrast, account for more than 10 per cent. As for capital-intensive products and technology-intensive goods, where Japan has an overwhelming lead over Korea, the ASEAN market is still far from becoming a problem; nevertheless, there is a high growth rate of exports of capital-intensive products to ASEAN countries. Japan's postwar export structure had been a dual one of capital-intensive goods to Asian countries and labor-intensive goods to industrial countries, and it is interesting to note that the exports of Korea, which is in the process of shifting from light to heavy and chemical industries, are following this same trend.

For Singapore, an Asian NIC that is also a member of ASEAN, the other ASEAN countries have a substantial importance. In 1975, about 20 per cent of the capital-intensive basic materials that Singapore specializes in went to the ASEAN market. Over half of its capital-intensive products—expected to become an increasingly important part of Singapore's exports—are destined for the ASEAN market; nevertheless, their degree of catching up vis-à-vis Japan in the ASEAN market was only fifteen compared with thirty-eight for labor-intensive products. Singapore has a pattern of exporting capital-intensive final products (in which it is still at a comparative disadvantage) largely to the neighboring ASEAN market, and exporting capital-intensive basic materials (which it specializes in) and labor-intensive products (which it has a comparative advantage in vis-à-vis the industrial countries) to Japan and the United States respectively in about the same proportions as it exports within the ASEAN region. Brazil, by comparison, exhibits an export pattern of heavy industrial goods within the LAFTA region and light industrial goods outside the region. Since the ASEAN economies are themselves limited in scale, Singapore's export growth rate to the region in fields other than the capital-intensive goods in which it specializes is less than half that of its total exports to the world. The usual pattern of a rapid expansion beginning in the most advantageous markets when a country tries to specialize is not to be seen here. While Singapore is substantially dependent on exports to ASEAN countries, it finds itself having to seek new markets outside the region because it cannot expect a rapid expansion of demand within ASEAN.

Finally, let us look at the pattern of Japanese specialization. In the case of

labor-intensive goods, the importance of the U.S. market has been substantially reduced due to catching up by the Asian NICs. The United States still accounts for one-fourth of Japan's export markets for labor-intensive products. But it should be noted that, in the ASEAN market, although the degree of catching up by the NICs vis-à-vis Japan is increasing rapidly with the exception of Singapore's labor-intensive product exports, it is still at a low level. In the Japanese market, Korea has begun to specialize positively as noted earlier, whereas, as of 1975, Hong Kong, Singapore, and Thailand had negative specialization.

In the case of the capital-intensive goods that Japan specializes in, Korea was substantially behind in 1975, although it will be found that Korea is gaining a large share of Japan's market for shipbuilding. It could be noted that the U.S. share in the ASEAN and Asian NIC markets for capital-intensive goods is substantially lower than Japan's compared with that in the world market as a whole. Even in the field of exports of capital-intensive basic materials, where the United States has a substantial lead over Japan in the world market, the United States' degree of catching up vis-à-vis Japan is dropping sharply: ten in the Korean market and thirty-three in the ASEAN market. Japan's exports of capital-intensive basic materials depend heavily on Korea and ASEAN as markets, and it is extremely important to note that the United States is retreating from Asian countries in these fields.

Japan is very strongly competitive worldwide in capital-intensive products, and the relative importance of the Asian market for Japan's exports is diminished accordingly. The United States' degree of catching up vis-à-vis Japan is less than thirty in this region, and U.S. competitiveness in the Japanese market itself is weak. The degree of specialization is  $-0.96$ , evidence of a tendency for U.S. competitiveness vis-à-vis Japan to be lower than that of the Asian NICs.

The United States is still more competitive than Japan in technology-intensive goods, but as Japanese exports to the United States increase, the difference is gradually dwindling. In the Asian market including Japan, their positions are now reversed.

The above represents the analysis of the Asian division-of-labor structure as it appears in data up to 1975. However, as mentioned earlier, two aspects of Asian NIC export trends have since become particularly prominent. The first is that the Asian NICs are now catching up even more in some capital and technology-intensive fields. The second is the rapid expansion of exports destined for the Japanese market.

Table II shows Asian NIC machinery exports up until 1977. The Asian NICs including Taiwan have been catching up steadily since 1975, and it can be noted that there has been a rapid expansion in their share of the U.S. market for technology-intensive electronic precision goods—along with that for electrical machinery, for which specialization in the Asian NICs already exists. If we examine the list of goods in closer detail, we can find quite a lot of machinery items where Asian NICs have surpassed Japanese exports. More than two-thirds of the transistors and signal diodes, and 42 per cent of the integrated circuits imported into the United States are products from Asian NICs. In television



TABLE III  
ASIAN NIC EXPORTS AND IMPORTS BY REGION AND MARKET SHARES

		U.S.A.		Europe		Japan	
		U.S.\$ Million	%	U.S.\$ Million	%	U.S.\$ Million	%
Exports to:							
General machinery	1971	29.8	16.7	7.4	4.1	6.7	3.7
	1977	286	23.3	127	10.4	91.4	7.4
Electrical machinery	1971	450	61.4	73.4	10.0	34.3	4.7
	1977	2,353	48.3	889	18.3	296	6.1
Transport machinery	1971	20.1	19.0	4.3	4.1	1.6	1.5
	1977	210	14.8	349	24.7	24.2	1.7
Precision machinery	1971	14.5	11.4	18.3	14.3	6.1	4.8
	1977	394	33.0	272	22.8	79.5	6.7
Imports from:							
General machinery	1971	269	22.7	380	32.1	467	39.4
	1977	1,015	25.2	1,051	26.0	1,759	43.6
Electrical machinery	1971	242	29.0	181	21.7	328	39.3
	1977	1,281	32.1	515	12.9	1,514	38.0
Transport machinery	1971	139	23.2	203	33.9	212	35.2
	1977	421	21.6	441	22.6	938	48.0
Precision machinery	1971	27.0	10.1	106	39.7	102	38.1
	1977	166	12.9	386	30.0	580	45.2

sets, to say nothing of radios, the Asian NICs are catching up with Japan: 75 per cent of black-and-white sets and 40 per cent of color sets compared with Japan's 51 per cent.

The Asian NICs' machinery exports to the European market are still lagging substantially compared with the U.S. market because of pressure from intra-regional exports of the Western European countries themselves. The Asian NICs' share even in electrical machinery was 3.1 per cent in 1977, while that of machinery overall was 1.2 per cent. Nevertheless, Table III shows that the importance of Europe as an export market for machinery from Asian NICs increased from 9 per cent in 1971 to 19 per cent in 1977, and that, in the field of transport machinery, the Asian NICs have overtaken the United States and as of 1977 sold one-fourth of their transport machinery exports in Europe. It is expected that the export market for capital-intensive goods will diversify very fast in favor of larger shares going to Europe in the future. The importance of the Japanese market is still relatively low overall at 5 per cent.

### III. THE DIVISION OF LABOR BETWEEN THE ASIAN NICs AND JAPAN: AN INTERNATIONAL REFLECTION OF THE INPUT-OUTPUT STRUCTURE

The structure of the division of labor between the Asian NICs and Japan is determined, as explained in the previous section, by the pattern of specialization arising from differences in factor endowment. There is also a further aspect:

TABLE  
ASIAN NIC SPECIALIZATION BY

Exporting Countries	1970			
	Percentage of Exports to Japan (%)	Percentage of Imports from Japan (%)	Degree of Specialization vis-à-vis Japan	Percentage of Exports to Japan (%)
Metal block				
World	9.1	16.0	-0.29	4.2
Korea	3.8	11.0	-0.82	1.3
Taiwan	3.4	16.2	-0.86	1.8
Petrochemicals block				
World	4.3	4.8	-0.07	6.4
Korea	3.4	13.9	-0.87	5.2
Taiwan	1.4	12.4	-0.92	4.8
Machinery block				
World	12.5	44.0	-0.57	7.0
Korea	2.9	36.2	-0.96	12.9
Taiwan	2.4	49.3	-0.89	10.5
Traditional industries block				
World	8.5	4.3	0.32	7.6
Korea	23.4	6.0	0.04	8.4
Taiwan	18.5	6.3	0.02	10.3
Final products block				
World	9.1	27.1	-0.51	9.4
Korea	32.2	14.6	-0.24	53.6
Taiwan	32.1	12.6	-0.05	46.3

due to the differing levels of industrial development between the two, the relationship between technological inputs and outputs in the production process is reflected in the division-of-labor pattern. The division-of-labor pattern as recently as 1977 between Japan and Korea and Taiwan, with both of which Japan has especially close ties, is shown in Table IV.

As indicated in the model, intermediate basic materials such as metals and petrochemical products are exported from Japan to the Asian NICs. As already noted, Japan tends to have an export specialization vis-à-vis these NICs in the field of capital-intensive basic materials. The degree of this specialization is stronger than that with respect to the world market as a whole. In the case of metals, a product in which Japan has an overwhelming comparative advantage, the degree of specialization vis-à-vis the Asian NICs is 0.9. Even in petrochemicals, where Japan was already at a relative disadvantage (import surplus) in 1977, Japan in that year had a relative advantage vis-à-vis the Asian NICs of 0.6. Japan is thus fulfilling her responsibility to supply petrochemical products to the Asian NICs, which rely on imports for their oil resources. However, Japan's relative advantage is gradually diminishing as the petrochemical industries in the NICs develop. As we have already seen, Singapore's exports of petrochemical products to Japan are increasing, and Japan now has an import surplus.

If we classify merchandise items in greater detail (Table V), it can be seen that although Japan's exports of pig iron and ingots, which are the very earliest

IV  
BLOCK IN THE JAPANESE MARKET

1977		Growth Rate (Factor)			
Percentage of Imports from Japan (%)	Degree of Specialization vis-à-vis Japan	Exports to Japan		Imports from Japan	
		1975/1970	1970/1975	1975/1970	1977/1975
14.1	-0.59	0.99	1.30	2.83	0.97
17.5	-0.92	1.29	1.89	2.94	2.02
21.4	-0.92	2.18	0.91	2.23	1.61
3.8	0.20	2.48	1.68	2.21	1.11
13.0	-0.66	6.60	1.59	2.51	1.38
12.0	-0.66	3.82	3.40	3.44	0.77
59.0	-0.81	1.57	1.01	2.78	1.50
44.2	-0.74	21.51	1.42	2.50	1.82
41.9	-0.77	4.01	1.21	1.70	1.36
3.3	0.34	1.99	1.26	2.68	0.88
6.1	-0.17	2.68	0.93	3.52	1.08
8.6	-0.24	1.37	1.57	3.25	1.14
18.1	-0.37	2.97	0.97	1.47	1.41
16.3	0.26	6.52	1.77	2.75	1.54
13.2	0.28	3.75	1.48	2.14	1.34

stages of the production process, to Korea and Taiwan are not particularly large compared with imports, Japan's exports of primary products with a higher degree of processing are overwhelmingly large. Moreover, when it comes to chrome and molded items, Japan's comparative advantage drops again. Again, although Japan's exports of metal products are substantial, its imports of these products are increasing at a rapid pace. In Japan, which is dependent on resource imports, there is little production for export at the most upstream level, but Japan has become a production base for elsewhere in Asia at the next stage of primary products, using the merits of scale of its technologically sophisticated mass production facilities. Further downstream, in some items requiring technology that are able to be produced on a small scale, it has been easier for Asian countries to develop their own industries, and Japan's specialization has weakened accordingly.

Similarly in the petrochemicals block, there is an import surplus in Asia's favor for petroleum products themselves, but when it comes to the synthetic textiles and resins that make up the next stage, Japan is able to take advantage of the merits of scale to have an overwhelming specialization. As we move further up the scale to soap, cosmetics, paints and so on, Japan's exports remain large, but imports from Asia are increasing rapidly. When it comes to pharmaceuticals, the balance of trade with Asian countries is almost equal, with the sole exception of massive imports from Singapore.

TABLE V  
DEGREE OF SPECIALIZATION VIS-À-VIS JAPAN FOR PRODUCTS BY PRODUCTION PROCESS, 1977

	Korea's Trade with Japan				Specialization vis-à-vis Japan				
	Percentage of Items 1977		Growth Factor 1977/1970		Korea		Taiwan		Singapore
	Exports	Imports	Exports	Imports	Imports	Exports	Imports	Exports	Imports
Metals (total)	100	100	4.08	5.88	-0.895	-0.916	-0.950	-0.916	-0.950
Pig iron	15.3	3.2	3.93	3.57	-0.582	-0.075	0.215	-0.075	0.215
Primary steel products	17.7	61.5	6.11	5.82	-0.966	-0.991	-0.999	-0.991	-0.999
Chrome-plate and moldings	3.1	0.2	136	2.11	-0.033	-0.856	-0.502	-0.856	-0.502
Nonferrous metals	2.0	9.1	0.17	7.10	-0.975	-0.768	0.298	-0.768	0.298
Nonferrous primary products	18.3	6.4	—	8.64	-0.726	-0.934	-0.990	-0.934	-0.990
Steel structures	15.8	11.2	34.2	5.92	-0.854	-0.910	-0.961	-0.910	-0.961
Metal products	27.1	8.3	96.3	5.36	-0.693	-0.861	-0.980	-0.861	-0.980
Chemicals (total)	100	100	8.67	3.47	-0.828	-0.786	-0.265	-0.786	-0.265
Basic chemicals	61.1	40.6	24.0	7.59	-0.752	-0.713	-0.905	-0.713	-0.905
Synthetic textiles	1.9	20.0	0.35	1.39	-0.982	-0.925	-0.986	-0.925	-0.986
Chemical products	19.7	21.2	10.9	3.68	-0.839	-0.873	-0.738	-0.873	-0.738
Synthetic resins	8.3	16.6	10.1	6.76	-0.910	-0.808	-1.000	-0.808	-1.000
Synthetic fertilizers	3.5	0.6	28.1	1.49	-0.284	-1.000	-1.000	-1.000	-1.000
Pharmaceuticals	5.5	1.0	8.66	2.34	-0.312	-0.072	0.905	-0.072	0.905
Petrochemical products	—	—	13.2	4.92	0.370	0.499	0.980	0.499	0.980
Textiles (total)	100	100	5.65	2.20	0.476	0.337	—	0.337	—
Spinning	10.8	4.2	1.36	2.66	0.756	0.181	—	0.181	—
Synthetic spinning	1.5	5.2	13.4	0.59	-0.088	0.396	—	0.396	—
Weaving	21.5	20.3	3.28	2.21	0.497	-0.031	—	-0.031	—
Synthetic weaving	4.6	43.3	16.1	1.99	-0.543	-0.758	—	-0.758	—
Knitted goods	27.4	7.6	14.7	5.18	0.820	0.833	—	0.833	—
Clothes and accessories	31.6	3.2	51.9	11.4	0.931	0.988	—	0.988	—
Other textile products	2.7	16.2	6.98	6.72	-0.368	0.217	—	0.217	—

Imports of machinery from Japan have played an important role in Asia's industrialization. The Asian NICs' export-oriented industrialization has been a process of dependence on imports of intermediate basic materials, and highly active induced imports of machinery for investment purposes. If we look at the machinery block, we can see that it has the second highest import surplus in the Asian NICs after the metals sector. However, the machinery block contains not only investment goods but consumer durables. Thus, there has been a rapid increase in exports to Japan from Asia, especially Korea, in the 1970s, reaching 10 per cent of Asian exports in 1977. In machinery for metal processing, in special and industrial machinery, in machinery parts (excluding Singapore), in heavy electrical goods, in shipbuilding (excluding Korea), and in automobiles, Japan has an overwhelming comparative advantage as it does in metals. In office equipment, in household electrical machinery and other light electrical goods, and in watches and other consumer durables, the Asian NICs have already penetrated the Japanese market to a considerable extent. Japanese imports of goods for industrial use such as lathes and transformers are increasing. For example, there are quite a large number of electronic parts for which the specialization vis-à-vis Japan is shifting in Korea's favor: fixed and adjustable condensers, transformers, speakers, recording tapes, transistors, luminous diodes, and integrated circuits. Imports from the Asian NICs account for more than half of Japan's imports of most of these items.

Although it is expected that such items will increase in the future, the general pattern for trade in machinery has been one of specialization on the part of Japan. If we look at the markets for Asian NIC machinery exports, it can be seen from Table III that most are directed at the U.S. market, and only 6 per cent to the Japanese market. By contrast the position of Japan in Asian NIC machinery imports is rising higher and higher, and Japan has a far greater share of the Asian NICs' imports of general and transport machinery than either the United States or Europe.

In the traditional sector of light industrial goods, the division of labor between Japan and the Asian NICs is, on the whole, an almost horizontal one. However, although Japanese import demand did not grow greatly during the 1970s, demand for Japanese goods in the Asian NICs was induced earlier on in the production process so that the Asian NICs are now shifting from an export surplus to an import surplus vis-à-vis Japan. By contrast, in the final products sector, the Asian NICs moved from an import surplus to an export surplus with Japan during the 1970s and are already increasing substantially their degree of specialization vis-à-vis Japan. In the end, we can recognize a division-of-labor pattern with Japanese exports of production goods, and rapidly increasing exports of final consumption goods by the Asian NICs. This pattern overlaps with the division of labor between the upstream and downstream sectors of the production process that we touched on earlier.

The textile industry as a whole has been treated in the final goods block for the purposes of our analysis here, but if we divide it up we can see a marked specialization on the part of the Asian NICs in clothing and personal accessories,

TABLE VI  
ASIAN NIC TRADE BALANCES BY REGION (U.S. \$ million)

		U.S.A.	EC	Japan	Asia	Oil-Producing Countries
Korea	1971	-147	-179	-699	-102	-157
	1977	679	594	-1,778	335	-1,071
Taiwan	1971	457	14	-583	222	-16
	1977	1,467	374	-1,520	457	-485
Hong Kong	1971	574	75	-627	-124	61
	1977	1,791	706	-1,895	-841	678
Singapore	1971	-153	-228	-431	82	-231
	1977	-44	-26	-1,049	383	-1,954

as opposed to specialization on Japan's part in other ready-made textile products, including those for industrial use. Moreover, in the case of textiles, which, unlike metals, are labor-intensive, the Asian NICs have achieved export specialization even in the more upstream products, but this depends heavily on the type of raw materials used in the production process. In the case of synthetics, which are based on petrochemicals the pace of specialization slows as we move upstream. It is interesting to note that, as in the case of the steel industry (the relationship between steel and primary products), Japan retains a strong comparative advantage at the more downstream stages of synthetic textiles rather than the upstream synthetic spinning process. However, the Asian NICs will probably eventually catch up at these stages also.

Concomitant with the development of this multilayered division of labor between Japan and Asia, three major problems have arisen. The first is that the faster Asian industrialization proceeds, the more rapid is the growth of induced imports of investment and intermediate goods from Japan, and, as shown in Table VI, the greater is the accumulated trade deficit vis-à-vis Japan. Recently Asian NIC governments have been endeavoring to switch over to the United States and Europe for these goods for the purpose of shrinking their payments imbalances. The problem, however, remains serious.

The second problem is that the products that flow into Japan from the Asian NICs are directly linked to the Japanese household economy without going through the production process in Japan. However, Japan's product distribution system involves the addition of commercial margins at each of the complicated wholesale stages before the products reach the consumer so that the competitive advantage of low prices that would otherwise be enjoyed by NIC products is obliterated. Recent consumer marketing surveys have shown that low prices work as a strong inducement at the time of purchase. Also, Japan's complicated distribution system is sustained by traditional commercial practices, with strong links between dealers at the purchasing stage, so that new entrants tend to be shut out. Compared with the mass-produced intermediate basic materials, moreover, there is considerable diversification of demand according to product differentiation and quality in the case of the final products that are purchased by households. There is often substantial product differentiation between products imported from the Asian NICs and domestic products. Though supermarkets

and department stores have considerably increased their direct imports for bargain sales, there are certain barriers to expanding imports from the Asian NICs into Japan precisely because of the above-mentioned "cushion" of the more traditional Japanese wholesale practices. In other words, Japanese industries are enjoying a kind of "protection" in the domestic market. As long as Japanese domestic demand grows steadily, it is unlikely that debate will develop in favor of imposing more restrictions against a probable rapid increase in imports of goods from the Asian NICs.

Thirdly, Japan's industrial structure features a contrast between the extremely highly capital-intensive metals and petrochemical sectors that developed during Japan's era of high economic growth, and the traditional industries and final product sectors which have a labor-absorbing role. Imports from the Asian NICs are concentrated in the latter sector and thus have a strong impact on employment within Japan. As long as Japan's economic growth proceeds at a certain rate, unemployment problems will not emerge, but recession might mean serious unemployment problems once again due to rather labor-intensive product imports from Asia. In this context, policies will be needed that maintain a fairly high rate of growth of the Japanese economy, if product imports from Asia are to accelerate smoothly.

#### IV. FACTORS IN THE EXPANSION OF ASIAN NIC EXPORTS TO JAPAN: ESTIMATE OF THE IMPORT FUNCTION FOR MAJOR MANUFACTURED IMPORTS

My analysis so far has dealt with the structure of imports up to 1977, but product imports from Asian countries have since been increasing dramatically. In order to clarify the processes and factors involved, the following import function has been estimated by JETRO in reference to the sixteen quarterly periods between the first quarter of 1976 and the fourth quarter of 1979:

$$\begin{aligned} \log(\text{real imports}) = & a \log(\text{real income}) \\ & + b \log\left(\frac{\text{import prices}}{\text{domestic wholesale prices}}\right) \\ & + c \log(\text{inventory rate}) \\ & + \text{constant,} \end{aligned}$$

where  $a$  is income elasticity for imports,  $b$  is price elasticity for imports, and  $c$  is market elasticity. The products selected are those which have been entering the Japanese market recently in rapidly increasing numbers, and imports from the United States, the EC, and China have been compared with those of the Asian NICs. I shall examine here the factors leading to increased imports by comparing the elasticities of imports function (Table VII).

In the case of labor-intensive products, which depend on an abundant endowment of labor, the quality of Asian NIC products is in general clearly lower than the quality of EC products and the price is also fairly low. The income elasticity of imports from Asian NICs is generally lower than that of EC products. As

TABLE VII  
ANALYSIS OF FACTORS CAUSING RAPID RISE IN IMPORTS FROM ASIAN NICs

Exporting Countries	Income Elasticity	Price Elasticity	Market Elasticity	R <sup>2</sup>	DW	Market Share (% in 1977)	Average Rate of Increase (1977-79, %)	Unit Prices (U.S.\$)
Synthetic textiles:								
Asian NICs	3.31**	-4.13**		0.903	2.03	81.0	119.2	2,643
Synthetic woven goods:								
Asian NICs	6.80**	-2.56		0.758	0.586	68.4	51.9	0.67
U.S.A.	2.05	-0.18	-3.13*	0.955	3.01	4.7	57.6	2.09
Cotton woven goods:								
Asian NICs	1.58	-0.84**	-1.86*	0.728	1.70	18.4	65.1	1.12
EC	3.00**	-1.53**	-1.35	0.955	1.61	22.8	75.8	5.46
China	0.55	-1.17	-6.77**	0.918	2.04	36.3	132.0	0.56
Men's wear:								
Asian NICs	2.66**	-0.85*	-1.92	0.790	1.18	61.0	35.4	69.6
EC	5.28**	-1.05**		0.936	0.85	9.7	57.1	774.9
China	7.51**	-1.53		0.831	1.85	15.6	91.4	44.1
Women's & children's wear:								
Asian NICs	1.43	-0.33	-4.02*	0.756	1.57	37.2	30.3	54.9
EC	3.17**	-1.13	-1.13	0.971	1.56	33.6	38.1	892.3
China	3.06*		-3.73	0.755	1.47	9.5	81.5	37.4
Briefcases & handbags:								
Asian NICs	2.67**	-0.64	-0.95	0.839	1.39	14.8	44.2	18.3
EC	5.35**	-0.69**		0.942	0.91	77.7	56.2	340.2

TABLE VII (Continued)

Exporting Countries	Income Elasticity	Price Elasticity	Market Elasticity	R <sup>2</sup>	DW	Market Share (% in 1977)	Average Rate of Increase (1977-79, %)	Unit Prices (U.S.\$)
Wrist & pocket watches:								
Asian NICs	5.05**	-1.02**		0.944	1.86	37	57.8	7.3
Switzerland		-0.92**	-0.45	0.957	1.23	58	14.8	135
Rubber tires:								
Asian NICs	6.87**	-0.69**		0.971	2.81	23.6	65.9	1.0
EC	3.85**	-2.29**	-1.33**	0.962	1.71	52.9	120.1	24.1
Tableware:								
Asian NICs	4.18*	-0.89*	-2.08	0.926	1.68	7.7	46.7	7.3
EC	2.91**	-0.73**	-2.53**	0.964	2.03	80.2	45.4	11.6
Resin for processing:								
Asian NICs		-2.08**	-3.06**	0.781	2.00	13	63.9	813
U.S.A.	0.44	-0.82	-1.75	0.927	0.90	61	46.9	1,763
Resin primary products:								
Asian NICs		-2.79	-6.38**	0.954	2.22	26	255.9	1,192
U.S.A.	1.36*	-1.39**		0.811	1.94	55	29.6	3,698
Integrated circuits:								
Asian NICs	1.21		-0.53**	0.706	1.23	7.6	36.0	0.60
U.S.A.	6.17**	-0.91*	-0.74*	0.950	1.52	77	60.4	0.92

\* Significant at 95 per cent confidence level.

\*\* Significant at 99 per cent confidence level.

Japan's income levels rise, demand patterns are likely to become more quality-oriented, and demand for lower-quality products will expand that much more slowly. Thus it is possible that the present trend toward rapid increase in demand will approach its limit. However, when it comes to synthetic textiles (and synthetic fibers), which, as noted earlier, is the area in which the shift to a comparative advantage for the Asian NICs is lagging farthest behind, a high income elasticity can be expected.

In the case of textile imports from the EC, the income effect operates even more strongly. Yet the price effect is not necessarily weakened accordingly. Even with some high-quality items, we cannot ignore the effect of price reduction on the consumer's desire to purchase. However, in the case of imported products from the Asian NICs, the price elasticity is not always large either. In the case of synthetic products, which are more competitively than Chinese products, price elasticity is fairly large and the NICs' share in the Japanese market is increasing, but in clothing and textiles, price elasticity for NIC products is so small that they are losing their share to the lower-priced Chinese products. The effect of price reductions on expanding import demand does not work very well for the import of lower-priced products that are in competition. If the rival's products are far lower in price, little effect can be expected from relatively small price reductions. Thus there is a strong possibility that Asian NIC products which try to enter the Japanese market with low prices as their only weapon will be rapidly overtaken by even cheaper Chinese products. The Asian NICs will have to seek to expand their exports through the income effect by improving quality, and not just relying on low price levels.

In the case of imports (largely from Singapore) of watches, one of the more technology-intensive consumer goods, it is clear that income elasticity has an extremely large effect on Japanese domestic demand. These watches are of course cheaper than Swiss watches, and with a price elasticity of  $-1$ , the price effect is considerable, and the Asian NICs are thus gaining a larger share of the Japanese import market. Tires and tableware show almost the same pattern. These three types of imports from Asian NICs show a higher income elasticity than EC products and both income and price effects are statistically significant. These types of consumer durables are successfully fending off Chinese low prices, and demand for them on the Japanese market is expected to grow steadily.

With respect to the intermediate goods that are fed into the production process, product imports from the Asian NICs are developing a close relationship with Japanese inventory adjustments. Although income and price effects tend to work in favor of imports of intermediate goods from the United States or the EC, there is almost no statistically significant relationship in the case of Asian NIC product imports with the exception of resins for processing. The production of intermediate goods in the Asian market is frequently linked with capital and technology of Japanese enterprises, and where domestic production in the home country cannot be fully adjusted to trends in the domestic demand for intermediate goods, imports from the Asian NICs are then adjusted accordingly. In the case of intermediate goods there is the fear that, even as very

TABLE VIII  
 JAPANESE INVESTMENTS IN THE ASIAN NICs IN THE 1980s  
 (Number of firms)

Industry	History of Performance				Investments until Mid-1980s				Firms Responded
	Long Good		Not Long Little		Asian NICs		North America		
	Long Good	Not Long Little	Important	Worth Conducting Feasibility Study	Important	Worth Conducting Feasibility Study			
Food	1	0	2	4	9	9	1	33	
Textile	4	3	1	5	4	6	4	26	
Organic & inorganic chemicals	2	2	1	11	7	7	16	39	
Other chemicals	4	3	1	12	4	6	4	21	
Medical supplies	3	2	2	9	2	4	5	16	
Rubber	1	2	2	3	0	2	1	8	
Cement & pottery	2	1	1	5	8	5	3	25	
Steel	1			2	2	3	2	27	
Nonferrous metals	1	2		4	4	2	2	15	
Metals		3	3	15	15	12	12	21	
Machinery	5	4	3	4	8	3	3	72	
Electric appliances	22	2	4	30	12	21	17	68	
Transport machinery (except automobiles)	1			3	0	1	2	7	
Automobiles	5	1	2	10	4	6	10	27	
Precision machinery	2	1	2	5	4	3	4	16	
Other manufactures	3	1	2	5	1	4	1	11	

Note: Surveyed in September 1979.

marginal suppliers in the Japanese market, the Asian NICs will undergo repeated large economic fluctuations in response to economic fluctuations in Japan.

#### V. THE PROSPECTS FOR INVESTMENT BY JAPANESE ENTERPRISES AND THE POSSIBILITY OF A NEW ASIAN DIVISION-OF-LABOR PATTERN

The structure of the division of labor with the Asian NICs is heavily affected by investment overseas by Japanese enterprises. It is said that Japanese companies investing in the processing zones in Korea and Taiwan are sustaining to a substantial extent the export of products from East Asia. Initially exports for the U.S. market were encouraged by such investments, but more recently a boomerang effect has been set off, with products flowing into the Japanese market. The future of Asian NIC exports will be strongly affected by Japanese investments overseas, not just for the Asian market, but also in the United States and Western Europe (Table VIII).

Finally, I would like to touch on the results of a questionnaire survey which I made concerning Japanese investments in the 1980s.

There will be a gradual shift in Japanese companies' overseas strategies from export activities to direct production abroad, so that exports and overseas production operate in tandem. Export activities are expected to increase by an average of about 1.5 times over the next five years, but many companies expect overseas production to increase by an average of 2-5 times in the same period.

Investment by Japanese enterprises in the Asian NICs will continue to be active. Of the 270 companies scheduling overseas investments (out of 474 companies surveyed), one-half (136 companies) responded positively to the category "putting great emphasis on investment in the Asian NIC market," and a further 92 companies responded favorably "studying the feasibility of investment in that market." In the cases of the North American and Continental EC markets, the companies emphasizing these markets numbered 102 and 32 respectively, and those studying their feasibility numbered 85 and 73 respectively. It is thus apparent that although the markets in the United States and other industrial countries will be important areas of investment by Japanese companies in the 1980s, there is still strong interest in the Asian NICs.

In addition to investment in the Asian NICs, the Asian division-of-labor pattern has also been significantly affected by the expansion of Japanese firms' investments in the North American market, a major export market for the Asian NICs. In the electrical goods industry, for example, the quality of products manufactured in Asian NIC factories is shifting towards the better, medium-quality goods, and the U.S. factories carry out the final assembly of Asian-made and locally-made parts. The intra-company division of labor thus grows, and the Asian NICs export pattern shifts from labor-intensive and light industrial goods to the more sophisticated heavy industrial goods. As trade frictions in the industrial countries become more acute, local assembly between the industrial countries is encouraged and intra-firm division of labor progresses. About 15 per

cent of the companies surveyed replied that they aim at global operations. This will undoubtedly encourage intra-firm division of labor within Japan's large companies.

A further trend is that, with rising wages in the Asian NICs, Japanese enterprises are increasingly expanding their production of labor-intensive products in Malaysia and other ASEAN countries. Out of 270 companies scheduling overseas investments, those emphasizing investment in markets other than the Asian NICs come to some 86, while 81 responded that they are "studying the feasibility." This trend will induce an expansion in exports of labor-intensive goods from the ASEAN countries, and will accelerate their catching up with the East Asian NICs.

One aspect of Japanese overseas investment in the Asian NICs that will draw particular attention in the future will be investment by small- and medium-size businesses. So far almost no companies with fewer than one thousand employees (only about 20 per cent of those surveyed) are producing abroad. There will still be a strong tendency for smaller Japanese manufacturers to concentrate on exports, but quite a number of smaller businesses are planning future direct investments in neighboring Asian countries. Investments by small- and medium-size businesses in Asian countries will have an impact on the division-of-labor patterns among the countries concerned. A number of smaller Japanese businesses investing in Asia appear to be aiming at the demand on the local market, but in such areas as production of labor-intensive parts, most of the products are being sent back to Japan.

Finally, I shall take a look at which Japanese industries will be the fastest to invest abroad during the 1980s. The most prominent trend is seen in the electrical machinery and electronics industries, which have not only already invested substantially in the Asian region but are now investing in the U.S. market as well. There is very strong desire to invest during the 1980s, and as a result exports from the Asian NICs will accelerate. At the same time, Japanese electrical machinery and electronics companies will, as a matter of international strategy, expand their intra-firm division of labor. Of sixty-eight companies in these industries, thirty put emphasis on direct investment in the Asian NICs and twelve are "studying its feasibility," while twenty-one emphasized investment in the United States and seventeen were "studying its feasibility." This is an indication of the global strategies of intra-firm trade through investments in both the Asian NICs and the United States.

Similarly, the chemicals industry will be investing heavily in the Asian NICs in the 1980s. Of seventy-six companies surveyed including the pharmaceuticals industry which has an extremely strong desire to invest in Asia, almost half, thirty-two, replied that they were emphasizing investment in the Asian NICs. In the metals industry, moreover, fifteen out of twenty companies replied that they were stressing investment in the Asian NICs.

Although there is a trend towards active local production of intermediate basic materials (one of Japan's major exports to Asian countries), the steel and general machinery industries (in which Japan has an overwhelmingly large comparative

advantage) do not show great interest in investment in Asia, and a similar pattern of export specialization will probably be seen in future. The automobile industry, however, is strongly oriented toward local assembly. In the precision machinery industry, too, which is already investing substantially, the trend toward local production will continue. But, conversely, further investment in the Asian market cannot be expected from the textile industry, which invested there in the first boom period. Also, imports of cement and ceramics from the Asian NICs have been increasing rapidly, and there is now little interest in investment in Asia in these industries.

From this pattern of overseas investment by Japanese companies, it is apparent that the division of labor between Japan and the Asian NICs in the 1980s will continue unchanged in the direction of export specialization by Japan, especially in the machinery and steel that sustain Asian industrialization. However, the horizontal division of labor will progress further in the electrical machinery and electronics industries and, to a considerably lesser extent, in the precision machinery and chemicals industries, with the result that there is expected to be an expansion of product imports of much greater sophistication to the Japanese market.

## VI. CONCLUSION

As is apparent from the above analysis, the Asian NICs have enjoyed a rapid expansion of exports as their industrialization has progressed, and have set off industrial adjustments in the developed-country markets. Japanese foreign investments have served to accelerate this trend, but as long as Japanese domestic demand grows steadily, Asian NIC product imports should prove no great burden to Japanese industry. So far, Japan has been exporting intermediate basic materials and machinery to support Asian NIC industrialization, and, conversely, labor-intensive final consumption goods have been entering the Japanese market. Since the latter have not always been able to expand adequately due to Japan's complicated distribution system, the Asian NIC trade deficit vis-à-vis Japan has been growing substantially. Asian NIC exports to Japan have been showing a trend towards expansion, not only in labor-intensive goods, but also in the electrical machinery, electronics, and precision machinery sectors that are sustained by Japanese overseas investments. The low-quality, labor-intensive goods produced by the Asian NICs are being overtaken by even cheaper Chinese products, and the key to the smooth development of Asian NIC-Japan relations would seem to lie in how to raise quality and send new items into the Japanese market. To this end, it will be necessary to accelerate technology transfers to these regions and speed up the process of catching up technologically in fields other than labor-intensive goods. As the Asian NICs develop, a new, more sophisticated division-of-labor pattern will be formed centering on Japan as a major market for the larger Asian region.