

# PACIFIC MANUFACTURED TRADE AND JAPAN'S OPTIONS

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## INTRODUCTION

THERE is as yet no common, clear understanding of what might be the appropriate institutional framework for realizing a "Pacific economic community." The community still remains a concept and is largely out of touch with realities. Nonetheless, the Pacific basin region includes such countries as Japan, Australia, Mexico, Asian NICs, and ASEAN countries which assuredly possess dynamic economies with great potentials for growth and which have been in fact strengthening mutual market integration through their relatively free trade regimes. Among the Pacific basin economies, Japan, Asian NICs, and ASEAN countries constitute one of the most closely integrated subregions in economic terms, with conspicuously robust recent industrial growth to their credit. It is not hard to imagine that the subregion will be able to play a pivotal role in turning the "Pacific economic community" into a viable reality. Japan will have to frame its overall economic policy in the context of the global market, but with continued emphasis on, and commitment to, the promotion of subregional cooperation with Asian NICs and ASEAN countries.

The present paper attempts to overview the recent dynamic mode of manufactured trade in the said subregion and the role Japan has been playing in generating this subregional dynamism, and also to offer some pointers on the possible policy objectives to which Japan should orient itself in the future.

## I. STRUCTURE OF COMPARATIVE ADVANTAGE

### A. *Revealed Comparative Advantage (RCA)*

Over the last ten years or so, four Asian newly industrializing countries (ANICs for short, comprising the Republic of Korea, Taiwan, Hong Kong, and Singapore) achieved a tremendous expansion of their manufactured exports, which drastically altered the composition of their merchandise exports. During the period 1968-79, R.O.K. increased its manufactured exports by 41.7 per cent per annum, and Taiwan, Hong Kong, and Singapore similarly attained rapid growth of their own, at rates of 35.9 per cent, 20.8 per cent, and 44.7

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per cent per annum, respectively. The annual growth of Japan's manufactured exports during the same period was 22.9 per cent. As a result, the share of the ANICs in the total world manufactured exports more than doubled from 2.1 per cent in 1968 to 5.4 per cent in 1979. Because Japan increased its share only moderately from 9.1 per cent to 12.7 per cent, the catch-up ratio of the ANICs vis-à-vis Japan greatly improved from 23.1 per cent [ $=(2.1/9.1) \times 100$ ] to 42.5 per cent [ $=(5.4/12.7) \times 100$ ].

Manufactured exports of four ASEAN countries (the Philippines, Thailand, Malaysia, and Indonesia), or ASEAN-4 for short, are much smaller in value than the ANICs, but their growth has been equally rapid. The annual increase rate during 1968-79 was 28.4 per cent for the Philippines, 41.5 per cent for Thailand, 28.0 per cent for Malaysia, and 35.1 per cent for Indonesia. The share of manufactures in total exports considerably increased in each country except Indonesia; from 4.6 per cent to 22.5 per cent in Thailand, from 5.9 per cent to 15.6 per cent in Malaysia, from 6.9 per cent to 21.1 per cent in the Philippines, and from 1.4 per cent to 1.8 per cent in Indonesia. Most of these countries can no longer be called primary commodity exporters or mono-cultural producers.

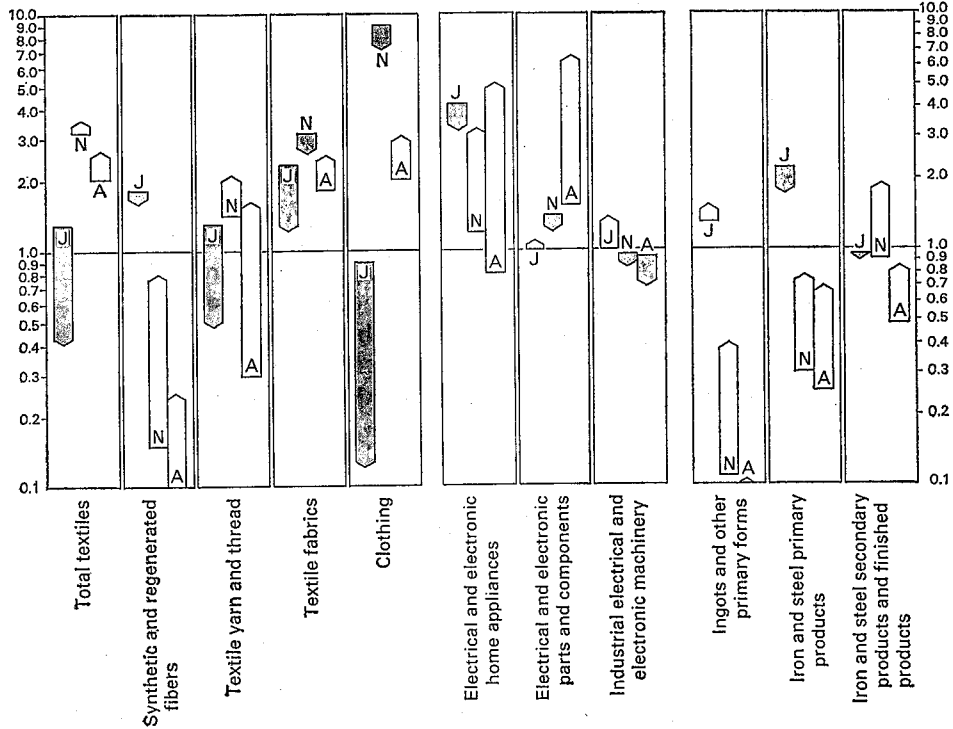
Export expansion by Japan's neighbors has been most remarkable in textile products and machinery, particularly electrical and electronic machinery. These two commodity categories have come to command central importance in their total exports. In 1979, textiles and electrical and electronic products respectively accounted for 36 per cent and 15 per cent, together a little more than 50 per cent, of the total exports by the ANICs. With respect to ASEAN-4, the former amounted to 20 per cent and the latter to 28 per cent in the same year. It must be noted that these two commodity categories attained the highest export growth in these countries. The annual growth rate of textile exports during 1968-79 was 35.8 per cent for R.O.K., 44.4 per cent for Taiwan, 20.0 per cent for Hong Kong, and 36.2 per cent for Singapore, which surpassed by far the growth of 8.8 per cent in Japan over the same period. As a result, Japan's share in the world textile trade dropped from 11.1 per cent in 1968 to 6.5 per cent in 1979, while that of the ANICs nearly trebled from 6.6 per cent to 17.9 per cent. The growth of textile exports was just as remarkable in ASEAN-4, amounting to 28.6 per cent for the Philippines, 24.3 per cent in Thailand, 40.0 per cent for Malaysia, and 34.9 per cent for Indonesia.

Textiles are typical labor-intensive manufactures, over which Japan began first to lose its comparative advantage. Figure 1 shows changes in comparative advantage among Japan, ANICs, and ASEAN-4,<sup>1</sup> using the revealed comparative advantage (RCA) index.<sup>2</sup> During the period 1970-79, Japan's RCA index

<sup>1</sup> Observations owe a great deal to the following publication, and the authors wish to express their appreciation for permission to quote from it: Institute of Developing Economies, Economic Development Research Unit, ed., *Comparative Advantage of Manufacturing Industries in Asian Countries*, CAM Series No. 16 (Tokyo: Institute of Developing Economies, 1982).

<sup>2</sup> For information on "revealed comparative advantage," refer to the following publications: B. Balassa, "Trade Liberalization and 'Revealed' Comparative Advantage," *Manchester*

Fig. 1. RCA Changes in Japan, ANICs, and ASEAN-4 for Textiles, Electrical and Electronic Manufactures, and Iron and Steel Manufactures (1970-79)



Source: [9, various issues].

Note: 1. RCA index =  $(E_h^i/E_h)/(W^i/W)$ , where  $E_h^i$  stands for the export of  $i$  product by  $h$  country,  $E_h$  for the total exports of the country,  $W^i$  for the world total exports of the product, and  $W$  for the world total exports.

2. J stands for Japan, N for ANICs, and A for ASEAN-4.

for total textiles sharply declined from 1.3 to 0.4, while the ANICs and ASEAN-4 improved theirs from 3.1 to 3.5 and from 2.1 to 2.6, respectively.

Textile products are classifiable from upstream to downstream into four categories: synthetic and regenerated fibers (SITC 266-7), textile yarns and thread (SITC 651.3-8), textile fabrics (SITC 652-4), and clothing (SITC 84).

Production gets more capital- and technology-intensive upstream, and more labor-intensive downstream. Japan retains its comparative advantage only in the production of synthetic and regenerated fibers, and still captures one-fifth of the world export market. However, Japan has been slowly losing its advan-

*School of Economic and Social Studies*, Vol. 33, No. 2 (May 1965); idem, "Revealed Comparative Advantage Revisited: An Analysis of Relative Export Shares of the Industrial Countries, 1953-1971," *Manchester School of Economic and Social Studies*, Vol. 45, No. 4 (December 1977); idem, "A 'Stages Approach' to Comparative Advantage," in *Economic Growth and Resources*, ed. I. Adelman, Vol. 4, *National and International Policies* (London: Macmillan Press, 1979).

tage even in these upstream products, whereas the ANICs and ASEAN-4 show rapidly rising RCA indices, although their export market shares in synthetic and regenerated fibers still remain small to date. With respect to textile yarn and thread, the ANICs and ASEAN-4 have gained greatly in their comparative advantage, while Japan's RCA index continued to decline, dropping below 1 in 1972. The RCA index for clothing steadily declined close to 0.1 in Japan, but also shows a decreasing tendency in the ANICs, reflecting the rapid catch-up by ASEAN-4. The swift wax and wane of comparative advantage is most evident in the production of clothing. Although they have a large share of over 30 per cent in the world export market of clothing, the ANICs had their RCA index drop from 9.4 to 7.1, while ASEAN-4 gained from 2.1 to 3.3.

The situation in electrical and electronic machinery is similar to that of textile products. During the period 1970-79, their exports increased at 41.9 per cent per annum in R.O.K., 26.0 per cent in Taiwan, 18.3 per cent in Hong Kong, and 54.1 per cent in Singapore, which compare favorably with 17.9 per cent in Japan.

Consequently, the share of the ANICs in the world export market nearly trebled from 3.2 per cent to 9.1 per cent. Because the market share of Japan expanded from 17.4 per cent to 21.3 per cent over the period, ANICs' catch-up ratio relative to Japan more than doubled from 18.4 per cent to 42.7 per cent.

The export growth of electrical and electronic products in ASEAN-4 was even higher than in the ANICs, averaging 22.0 per cent per annum in the Philippines, 53.4 per cent in Thailand and as high as 88.2 per cent in Malaysia.

The electrical and electronic machinery category covers diverse products, ranging from labor-intensive, technologically standardized products like radios, TVs, and their parts and components to products requiring advanced technological achievements such as VTRs, LSIs, computers, and communication apparatuses. Among the three large product groups classified into industrial electrical and electronic machinery (SITC 716, 771, 773-4, 778.1-3, 874.8, 778.4, 778.8), electrical and electronic home appliances (SITC 761-3, 775) and electrical and electronic parts and components (SITC 776, 772, 764.99), Japan shows a high and rising RCA index for industrial machinery which requires especially advanced technologies, and has a commanding share in the world export market. The RCA indices of the ANICs and ASEAN-4 have been on the decline with regard to industrial machinery.

Apropos of electrical and electronic home appliances, however, Japan's RCA index has been gradually decreasing, although its export market share still remains as large as 45 per cent. In contrast, the ANICs and ASEAN-4, particularly the latter group, have rapidly rising indices. Especially with regard to radios and black and white TVs, moreover, the indices of the ANICs have begun to decline, while those of ASEAN-4 have been on the rise. The contrast between the ANICs and ASEAN-4 is most pronounced in electrical and electronic parts and components which are highly labor-intensive and technologically standardized in production process: the indices of the latter climbed sharply in nine years, while those of the former have been on the wane. Among the ASEAN countries, Malaysia has attained the largest gain in export market

share: its share has already exceeded Hong Kong's and is about to overtake Taiwan's.

The subregional structure of comparative advantage has begun to show some perceptible change even in the capital-intensive steel industry. Japan still retains a large world export market share and a high RCA index for ingots and other primary forms (SITC 672), and changes observed in the indices of the ANICs and ASEAN-4 are less than substantial. With respect to iron and steel primary products (SITC 673-9), however, Japan's index has begun to drop, while those of the ANICs and ASEAN-4 have been on the increase.

The shift in comparative advantage is more evident in iron and steel secondary products and finished products (SITC 692.11, 693.11, 693.2, 693.51, 694.01, 694.02, 695-7, 699), and ANICs export market share has already reached 8.3 per cent as compared to Japan's 13.2 per cent.

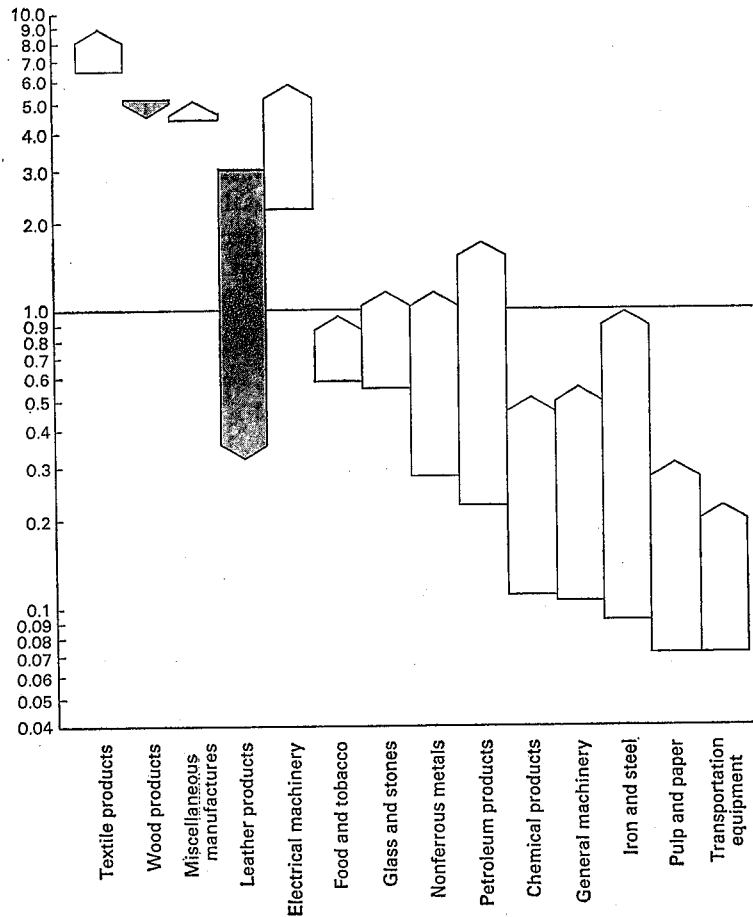
### B. *Multiple Catch-up Process*

It is reasonably justified to conclude from the above observations that a dynamic multiple catch-up process is unfolding in Asia: the ANICs have been catching up with Japan by manufacturing labor-intensive, technologically standardized textile products and electrical and electronic machinery, and thereby gaining the edge in the world export market, while they themselves are in turn being pursued by the ASEAN countries. Furthermore, it is even possible to surmise that this multiple catch-up process is about to extend from the labor-intensive, technologically standardized to the capital- and technology-intensive industrial subsectors. Figure 2 shows the changing RCA indices of various industrial subsectors in the ANICs during the period of 1970-79. Indices for labor-intensive industries like textiles and miscellaneous manufactures are quite high in the ANICs, but their changes in the past nine years are either slow or showing a decline. On the other hand, indices for heavy and chemical industries such as machinery and steel have been rising substantially. This indicates the ongoing sophistication of the ANICs' structure of comparative advantage, on the one hand, and the possibility for ASEAN countries to edge, in their turn, into the export markets for labor-intensive manufactures, on the other.

The international division of labor among Japan, ANICs, and ASEAN-4 involves this dynamic dimension of the multiple catch-up structure, giving substance to the term "the growth region." This dynamic catch-up process can be visually expressed, as shown in Figure 3. Manufactures are classified into labor-intensive goods and capital- and technology-intensive goods as indicated in the footnote to the figure, and the movements of their respective RCA indices calculated for ten countries or country groups are plotted in relation to the per capita GNP of each country or country group over the period 1970-77. The results help discern the evolving pattern in the structure of international comparative advantage.

RCA indices for labor-intensive goods already passed their peak and have been declining in Hong Kong and Singapore, while they are in the midst of peaking in Korea and Taiwan. On the other hand, the indices for capital-

Fig. 2. Subsectoral RCA Changes in ANICs (1970-79)

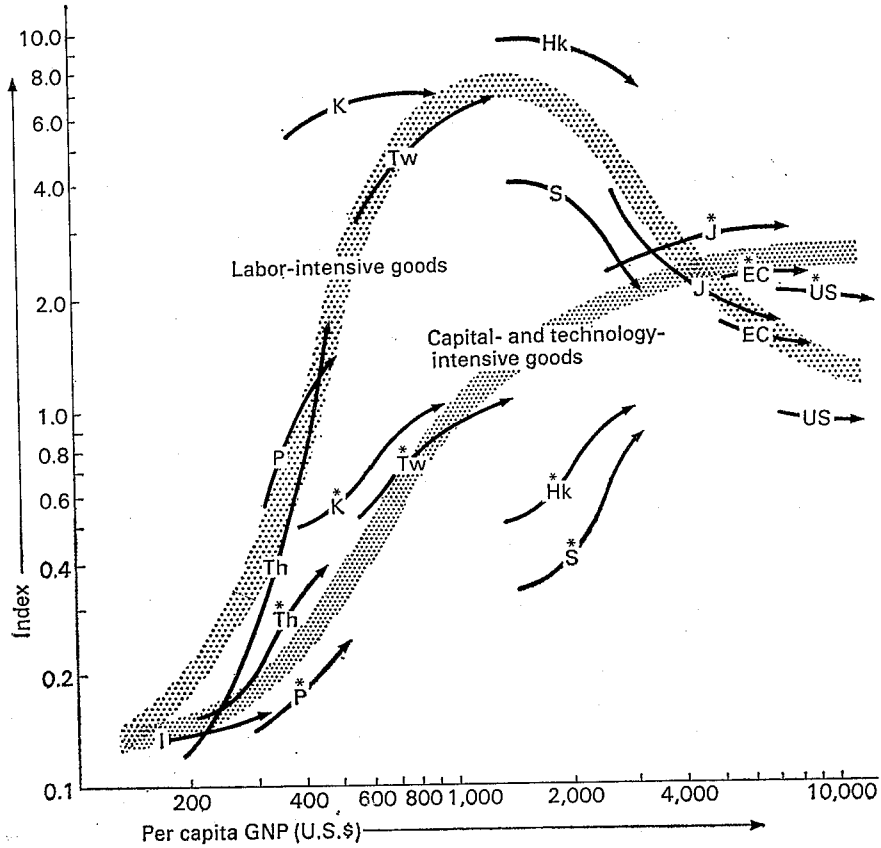


Source: [4, 1982 edition].

and technology-intensive goods in the ANICs, though still low, have been clearly picking up, as shown in Figure 3. The comparative advantage of the ANICs is now in a shift from labor-intensive to capital- and technology-intensive goods. The ANICs are yielding their position of comparative advantage to ASEAN-4 in labor-intensive industries, and setting their course to overtake Japan in capital- and technology-intensive industries. Among the ASEAN countries, Thailand and the Philippines show rapidly improving RCA indices for labor-intensive goods, while there is no significant movement in those of Indonesia. Thailand and the Philippines moreover show the beginnings of an upward movement in their indices for capital- and technology-intensive goods. In other words, the two countries have begun to change their RCA structures in the process of catching up with the ANICs.

The RCA indices of nine EC countries and the United States show little change over the period both for labor-intensive, and capital- and technology-

Fig. 3. Multiple Structure of RCA Indices for Manufactures (1970-77)



Labor-intensive goods consist of: SITC 611, 612, 613, 631, 632, 633, 651, 652, 653, 654, 655, 656, 657, 662, 663, 664, 665, 666, 667, 691, 692, 693, 694, 695, 696, 697, 698, 812, 821, 831, 841, 842, 851, 891, 893, 894, 895, 896, 899.

Capital- and technology-intensive goods consist of: SITC 512, 513, 514, 515, 521, 531, 532, 533, 541, 551, 553, 554, 561, 571, 581, 599, 621, 629, 641, 642, 661, 671, 672, 673, 674, 675, 676, 677, 678, 679, 681, 682, 683, 684, 685, 686, 687, 688, 689, 711, 712, 714, 715, 717, 718, 719, 722, 723, 724, 725, 726, 729, 731, 732, 733, 734, 735, 861, 862, 863, 864, 892.

- Notes: 1.  $RCA\ index = (1/n) \sum_{i=1}^n [(E_h^i/E_h)/(W_i/W)]$ , where  $E_h^i/E_h$  stands for the ratio of the export of  $i$  product by  $h$  country to the total exports of the country, and  $W^i/W$  for the ratio of the world total exports of the product to the world total exports.
2. I stands for Indonesia, Th for Thailand, P for Philippines, K for the Republic of Korea, Tw for Taiwan, H for Hong Kong, S for Singapore, J for Japan, EC for European Economic Community countries, and US for the United States. The symbols with asterisks are for capital- and technology-intensive goods and without asterisks for labor-intensive goods.

intensive goods, and their RCA structures in effect appear to have been stabilized. In contrast, Japan's indices for capital- and technology-intensive goods have been rising, while those for labor-intensive good have been on the decline. Japan is still in the process of catching up with the United States and EC countries where the RCA structures are already mature and stabilized. Oft-reported trade frictions between Japan, the United States and EC countries might be considered one of the consequences from the interaction dynamics between structurally mature and stabilized countries and structurally changing mobile countries.

It is possible to conclude that Asia constitutes an economic arena where multiple dynamic processes of catch-up are being vigorously acted out by Japan and its neighbors in varying stages of industrial development.

### C. *Japan's Contribution*

Several studies have been undertaken to identify major factors which contributed to the export expansion and international competitiveness of the ANICs and ASEAN-4.<sup>3</sup> The present paper focuses on Japan's contribution to their manufactured exports, by noting the following points.

First of all, one should note on the macro-economic level that the feedback process between export and investment operated more or less without interruptions, one fortifying the other toward growth in these countries. In fact, the ratio of capital formation (gross domestic investment divided by GDP) increased just as rapidly as the ratio of exports to GDP. During 1960-80, the ratio of capital formation increased from 11 per cent to 31 per cent in R.O.K., from 20 per cent to 26 per cent in Taiwan, from 18 per cent to 29 per cent in Hong Kong, and from 11 per cent to 43 per cent in Singapore. The average ratio was 23 per cent for the entire developed world and 32 per cent for Japan in 1980. In other words, the ANICs surpassed the average ratio of the developed countries in twenty years, some of them approaching, or even overtaking Japan's ratio. ASEAN countries also improved their ratios by more than 10 percentage points, in 1980 reaching 25 per cent in Thailand, 29 per cent in Malaysia, 30 per cent in the Philippines, and 22 per cent in Indonesia.

The rapid economic growth observed in the ANICs and ASEAN-4 is not triggered solely by their "export-oriented industrialization drive." These countries used their export earnings to import capital and intermediate goods and technologies, and the resultant capital formation further strengthened the international competitiveness of their manufactured exports, which in turn increased their capacity to invest. This mechanism of reciprocal inducement between export expansion and capital formation was the key to their success. The conventional term "export-oriented industrialization" needs to be redefined to include the presence and effective operation of such a mechanism.

<sup>3</sup> The present author, Toshio Watanabe, also undertook such an analysis, which was published as *Gendai Kankoku keizai bunseki—kaihatsu keizaigaku to gendai Ajia* [An economic analysis of current Korean economy: development economics for contemporary Asia] (Tokyo: Keisō-shobō, 1982).



Capital formation in the ANICs and ASEAN-4 was largely achieved by importing capital goods, for which Japan was the primary supplier. Metal manufactures and machinery accounted in 1981 for 68.0 per cent and 78.3 per cent of Japan's respective total exports to the ANICs and ASEAN-4. Durable consumers' goods are included in their metal manufactures and machinery imports, but due to the considerable speed of successful import substitution with respect to consumer durables, the percentage of capital goods has risen to a substantial level. Japan's supply of capital goods has undeniably played the pivotal role in this expanding virtuous circle of exports→capital goods imports→productivity improvements→exports in the ANICs and ASEAN-4.<sup>4</sup> In this regard, it is useful to refer to the findings shown in Table I. Induced production coefficients for R.O.K. and Taiwan ( $B^{JK}$ ,  $B^{JT}$ ) indicate the total domestic output of intermediate goods in Japan per additional unit of final demand generated in the respective industrial subsectors in R.O.K. or Taiwan. For instance, a unit increase of final demand for electrical and electronic machinery and for textile products in R.O.K. has a coefficient of 0.3715 and 0.2348, respectively, in inducing the increase of total domestic output of intermediate goods in Japan. The coefficient covers both direct and indirect induced effects. The direct induced effect is an increase of Japan's exports to R.O.K. resulting from an increase of final demand in a particular subsector in the latter country. The directly induced output in Japan for such exports further induces, through interrelated input-output chains, increases of output in other related industries of the country. These constitute the indirect effect. As seen from the table, R.O.K.'s coefficients are distinctly high in heavy and chemical industries such as primary iron and steel manufactures, metal manufactures, transport equipment, precision instruments, chemicals, and primary nonferrous metal manufactures. This indicates that R.O.K.'s domestic capacity to procure these products is still limited and heavily dependent on intermediate goods imported from Japan. The same applies to Taiwan, whose coefficients are extremely high in basic metals, chemicals, and their respective manufactures, and machinery. Examination of these coefficients shows that rapid industrial growth in these countries depended heavily on the supply of capital goods from Japan. It also shows that the continuing industrialization drive in the ANICs and ASEAN-4 is likely to benefit Japan through its induced effects.<sup>5</sup>

In relation to the virtuous circle mentioned above, it is necessary to note the following point. It is often argued that the balance of trade deficits in the ANICs and ASEAN-4 vis-à-vis Japan are serious and cumulatively growing due to the expanding imports of capital goods. This is the major issue these

<sup>4</sup> Rapid rises in capital formation in these Asian countries are discussed in the following publications: Miyohei Shinohara, *Keizai taikoku no seisui* [Rise and fall of economic powers] (Tokyo: Tōyō-keizai-shimpōsha, 1982), Chapter 2. Yasukichi Yasuba, "ASEAN no kōgyō-ka to Nihon no taiō" [Industrialization in ASEAN countries and Japan's role], in *Nihon no sangyō chōsei*, ed. Sueo Sekiguchi (Tokyo: Nihon-keizai-shimbunsha, 1981), Chapter 2.

<sup>5</sup> The author, Toshio Watanabe, argues this point in "Ajia kōdo seichō keizai-ken eno michi" [The path toward a high-growth economic community in Asia], *Chūō kōron*, May 1983.

TABLE I  
INDUCED EFFECTS ON JAPAN'S TOTAL DOMESTIC OUTPUT BY AN INCREASE  
OF SUBSECTORAL FINAL DEMAND IN R.O.K. AND TAIWAN (1975)

R.O.K. (BJK)		Taiwan (BJT)	
1. Foodstuffs	0.0436	1. Foodstuffs	0.0769
2. Beverages	0.0385	2. Beverages	0.0021
3. Tobacco	0.0468	3. Synthetic fibers	0.0189
4. Fiber yarns	0.1938	4. Yarns and fabrics	0.1597
5. Textile and leather manuf.	0.2348	5. Wood manuf.	0.0247
6. Wood manuf.	0.0499	6. Pulp	0.0068
7. Pulp and paper	0.1821	7. Paper and paper prod.	0.1709
8. Printing	0.1171	8. Printing	0.0329
9. Rubber manuf.	0.2692	9. Leather manuf.	0.1050
10. Chemicals	0.3058	10. Rubber manuf.	0.1188
11. Petroleum prod.	0.0175	11. Chemicals	0.8668
12. Coal prod.	0.0516	12. Petroleum prod.	0.1550
13. Nonmetallic mineral prod.	0.0666	13. Basic metals	1.1311
14. Iron and steel	0.2051	14. Machinery	0.6531
15. Primary iron	0.5395	15. Misc. manuf.	0.0871
16. Primary nonferrous metals	0.2920		
17. Metal manuf.	0.5205		
18. General mach.	0.3200		
19. Electrical mach.	0.3715		
20. Transport equip.	0.4525		
21. Precision instr.	0.4156		
22. Misc. manuf.	0.2549		

Sources: Japan, Administrative Management Agency, *1975 Input-Output Tables* (1979); Bank of Korea, Research Department, *1975 Input-Output Tables* (1978); Taiwan, Executive Yuan, Council for Economic Planning and Development, Overall Planning Department, *Taiwan Input-Output Tables, Republic of China, 1976* (1980). For further information, see, T. Watanabe, "An Analysis of Structural Dependence between Korea and Japan," in *Trade and Growth of the Advanced Developing Countries in the Pacific Basin*, ed. W. Hong and L. B. Krause (Seoul: Korea Development Institute, 1981) and Tai-Ying Liu, *Trade Relationship between Taiwan, Republic of China and Japan: An International Input-Output Analysis* (Taipei: Taiwan Institute of Economic Research, 1981).

countries raise in their criticism of Japan. To be sure, the limited propensity to import manufactures is one of the serious structural problems the Japanese economy is encumbered with, as will be discussed later. Nonetheless, the increasing imports of capital goods from Japan constitute the foundation stone of the aforementioned virtuous circle mechanism in the ANICs and ASEAN-4. Accordingly, the expansion of these countries' trade deficits relative to Japan reflects the fact that the mechanism has been gaining force. If these countries should choose to restrict their imports from Japan to fight the deficit problem, this might disrupt the operation of the mechanism, at least in the short run, and decelerate the momentum of their export expansion. More important to note is the fact that the ratio of exports to imports has been rising in the ANICs vis-à-vis Japan because of the smoothly-working virtuous circle. The

ratio rose during 1970–81 from 28.0 per cent to 59.9 per cent in R.O.K., from 35.7 per cent to 46.7 per cent in Taiwan, and from 20.3 per cent to 43.5 per cent in Singapore. Only in Hong Kong did it drop a little from 13.0 per cent to 12.6 per cent. These figures indicate, contrary to the argument by the critics, that the ANICs have been gradually reducing their dependence on imports from Japan.

Secondly, Japan has been a major importer from its Asian neighbors. Japan accounted for 11.3 per cent of ANICs' and 34.3 per cent of ASEAN-4's total exports in 1981. A factor that has contributed to the increase of their exports to Japan is the changes in the latter's industrial structure. The changing sub-sectoral allocation of investments in tangible fixed assets clearly shows the direction of structural change in Japan. The share of labor-intensive industries like textiles and wood manufactures<sup>6</sup> dropped from 20.1 per cent in 1965 to 18.8 per cent in 1979. The share of textiles in particular recorded the largest drop from 5.5 per cent to 2.7 per cent. Intermediate goods industries like ceramics and metal manufactures<sup>7</sup> slightly increased the share from 16.1 per cent to 17.8 per cent. The share of capital goods industries like chemicals and steel<sup>8</sup> has been on the decrease. Chemicals declined from 17.5 per cent to 9.5 per cent. Iron and steel rose from 13.9 per cent in 1965 to 20.2 per cent in 1975, but sharply dropped to 13.8 per cent in 1979. In contrast, machinery industries<sup>9</sup> increased substantially from 25.0 per cent in 1965 to 32.8 per cent in 1979, now having the largest share in investment allocation.

The earliest decline occurred in labor-intensive industries, which were affected by rising wages in Japan. Most of the intermediate and capital goods industries are materials industries which require higher energy inputs. Accordingly, they were seriously hit by the two oil crises and unable to offset the successive increases in production costs by energy saving measures. In contrast, machinery industries have high value-added ratios with lower energy inputs and benefited from rapid technological innovations and growing international markets.

The rapid changes in Japan's industrial structure mentioned above enabled its neighboring countries to enter into Japan's markets of first labor-intensive manufactures, next some of the capital-intensive ones, and then technologically standardized machinery manufactures. The presence of an industrial giant undergoing rapid structural changes no doubt made a great positive impact on the export-oriented industrialization drive in the ANICs and ASEAN-4.

Thirdly, large-scale direct investments from abroad were another factor which facilitated the expansion of manufactured exports by the ANICs and ASEAN-4.

<sup>6</sup> Labor-intensive industries consist of food and beverages, textiles, clothing and made-up articles, wood and wood manufactures, furniture, printing and publishing, rubber manufactures, and leather and leather manufactures.

<sup>7</sup> Intermediate goods industries consist of pulp and paper, nonmetallic mineral manufactures, metal manufactures, and other manufactures.

<sup>8</sup> Capital goods industries consist of chemicals, oil and coal products, iron and steel, and nonferrous metals.

<sup>9</sup> Machinery industries consist of general machinery, electrical machinery, transport equipment, and precision instruments.

Contribution of foreign capital was especially large in textiles and electrical and electronic machinery, which are now the mainstays of their manufactured exports. The percentage of these industries in the total inflow of direct foreign investments in 1978 was 40.3 per cent in R.O.K., 38.9 per cent in Taiwan, 52.0 per cent in Hong Kong, 33.0 per cent in Malaysia, and 40.2 per cent in Thailand. Direct foreign investments generated a large percentage of manufactured exports. For instance, foreign firms produced 51 per cent of R.O.K.'s total exports of electrical and electronic machinery in 1979, and the percentage increases to 84 per cent when joint-ventures are included. One estimate gives a figure of over 80 per cent for Hong Kong in 1978.

Japan played a particularly important role in direct investment to the ANICs and ASEAN-4.<sup>10</sup> Japan's cumulative direct investments in manufacturing amounted to U.S.\$270.66 million in Asia during 1978-81, most of which were directed to the ANICs and ASEAN-4. Japanese investments in Asia were largely concentrated in textiles and electrical and electronic machinery, which amounted to 42.9 per cent of Japan's total investments in R.O.K., 56.9 per cent in Taiwan, and 74.8 per cent in Hong Kong during the period. Japanese manufacturing subsidiaries and joint-ventures in Asia exported 34.8 per cent of their total sales, and the percentage was 39.8 per cent in textiles and 48.3 per cent in electrical and electronic machinery. Of these exports, the largest percentage was destined to Japan.

Japanese overseas direct investments started to increase rapidly in the latter half of the 1960s spurred by the following four factors, among others. First, the shortage of labor and rapidly rising wages which started in the 1960s deprived Japan of its erstwhile comparative advantage in labor-intensive manufacturing. Secondly, Japan's balance of trade turned a constant surplus in the latter half of the 1960s, and this brought the liberalization of overseas investments. Thirdly, entrepreneurial resources which had accumulated during the period of rapid growth had their domestic opportunities curtailed by the growth deceleration after the first oil crisis and sought to direct themselves to the rapidly growing Asian countries. Fourthly, the repeated revaluation of the yen reduced the costs of overseas investments. Furthermore, the generalized scheme of preferences for developing countries and the voluntary restrictions on exports to developed countries of textiles and other labor-intensive manufactures in Japan also worked to stimulate overseas investments [8]. In the meantime, Japan's neighbors in Asia were pursuing import substitution during the 1960s and manufactured export promotion in the 1970s and welcomed foreign capital and expertise with enthusiasm.

Lastly, the pattern of direct investments in Asia from abroad has been changing recently due to the following factors. One is that the tendency of real wages to rise rapidly in the ANICs is affecting their comparative advantage. Rising wages are an outcome of the smallness of these countries. Because of their small population, the expanding employment capacity of the industrial sector

<sup>10</sup> The historical trend of Japanese foreign investment is well documented in eleven issues of the MITI's *Waga kuni kigyō no kaigai jigyō katsudō* [Overseas activities of Japanese firms]. Figures used in the present paper are taken from the relevant issue.

makes labor supply restrictive before long and pushes up wage rates. The ANICs have thus been losing their comparative advantage in labor-intensive manufacturing to ASEAN countries which have a relatively abundant supply of labor available at lower wages.

The other is that the international economic environment changed radically after the first oil crisis in 1973. The all-round simultaneous expansion of the world economy in the 1960s was one of the major factors which favored the export-oriented industrialization in the ANICs, but the oil crisis put an end to this situation. The export market for the ANICs chiefly consisted of developed countries, where labor-intensive industries had been on the wane and the ANICs managed to gain and expand their marketing edge by taking advantage of their cheaper labor costs. As long as developed countries could maintain their high economic growth and adjust their industrial structures with reasonable ease, the inflows of goods from the ANICs caused less friction.

However, the oil crisis triggered the slowdown of growth and severe recession of demand in the developed economies. Since then, manufactured imports from the ANICs have understandably been subjected to increasing scrutiny and control there. This presumably substantially benefited ASEAN-4 with, as yet, much smaller shares of manufactures in their total exports. The advantage of labor-intensive manufacturing has been shifting from the ANICs to ASEAN-4.

This shift has already been affecting the behaviors of foreign firms. The vanguard of industrial investments and export market development in accordance with superior comparative advantage in the developing world have been mostly foreign private enterprises. These enterprises have been also quick to sense the dwindling comparative advantage and redirect their investments elsewhere. Private firms in Japan and other developed countries saw the comparative advantage for labor-intensive manufactures in the ANICs and heavily invested there, thus contributing in no uncertain measure to the export-oriented industrialization in these countries. But these firms are now investing for the sophistication of manufactured exports in the ANICs, while gradually directing their new investments in labor-intensive manufacturing to ASEAN-4.

The leading components of ASEAN-4's manufactured exports have been textiles and electrical and electronic products, and it is safe to say that these products, especially electrical and electronic products, are mostly manufactured by foreign private firms. Electrical and electronic industries are invariably run by large-scale companies of the developed countries, and changes in international investment opportunities and manufacturing environments are quickly reflected in their operational strategies. These large companies can relatively easily take the initiative of moving their manufacturing and marketing bases from one country to another as circumstances require. In the last few years, the growth rates of private foreign investments outstanding in electrical and electronic industries have been clearly higher in ASEAN-4 than in the ANICs.

The already mentioned dynamic catch-up process of the ANICs by ASEAN-4 has been thus facilitated by the rising wage levels in the former, changing export market environments and shifting investments by foreign private firms. In due response, the ANICs have begun to reframe their policies on foreign capital

TABLE  
EXPORT INTENSITY MATRIX

	Japan	R.O.K.	Taiwan	Hong Kong	Singapore
Japan		5.04	4.82	2.39	2.63
R.O.K.	6.45		—	2.81	1.37
Taiwan	3.06	0.03		5.80	2.78
Hong Kong	1.85	0.95	—		3.46
Singapore	1.39	1.91	—	0.96	
Indonesia	5.04	0.21	—	4.10	33.43
Malaysia	4.60	0.49	—	3.57	12.11
Thailand	4.69	0.61	—	4.65	9.86
Philippines	5.51	0.47	—	5.71	1.77
U.S.	2.25	1.28	1.82	0.99	1.39
EC	0.43	0.31	0.27	0.40	0.36

Source: [9, 1979].

Note: Export intensity,  $I_{ij} = (E_{ij}/E_i) / [M_j / (W - M_i)]$ , where  $E_{ij}$  stands for exports from  $i$  country to  $j$  country,  $E_i$  for total exports of  $i$  country,  $M_j$

and to attract foreign firms to industrial subsectors with higher value-added ratios and advanced technological requirements. One typical example is Singapore, which has recently decided to limit various incentives to foreign investors in capital- and technology-intensive industries, while severely restricting their entry to labor-intensive industries, and at the same time has announced the adoption of a high wage policy.

## II. DEVELOPMENT OF HORIZONTAL DIVISION OF LABOR

### A. *Horizontal Division of Labor Index*

Japan's market integration with its Asian neighbors via manufactured trade has been greatly strengthened in recent years, partly because Japan itself has been undergoing rapid structural changes and partly because its Asian trade partners have been successful in realizing rapid industrial growth and export expansion. As a result, the export intensity between Japan, the ANICs, and ASEAN-4 increased considerably in 1979. As shown by the matrix of Table II, Japan's export intensity index is very high in relation to R.O.K. and Taiwan and also high vis-à-vis ASEAN-4, while low relative to the United States and EC countries. The Republic of Korea's export intensity index is highest in relation to Japan, and though not the highest, Taiwan's is substantial vis-à-vis Japan. ASEAN-4's indices to Japan are extremely high, outdistancing their indices to the United States and EC countries.

The matter does not end with Japan's increased export intensity to the ANICs and ASEAN-4. Reflecting the diversification of manufactured exports by these countries, their export intensity to Japan has also diversified. To put it differently, the pattern of trade between Japan and its Asian neighbors has been changing from "the specialized intensity structure," in which the latter countries are linked to Japan through their exports of a very limited number of goods,

II  
FOR MANUFACTURES (1979)

Indonesia	Malaysia	Thailand	Philippines	U.S.	EC
3.83	2.72	3.80	4.19	1.93	0.35
2.77	1.13	1.77	2.11	2.63	0.48
4.02	1.61	2.55	3.38	3.27	0.38
4.38	1.46	1.98	4.02	2.06	0.63
—	37.31	9.68	6.19	1.86	0.42
	6.02	3.82	5.19	0.21	0.78
2.19		1.82	3.70	2.71	0.64
1.74	4.24		0.76	1.69	0.39
1.36	2.39	3.77		2.68	0.70
1.11	1.31	1.20	2.73		0.63
0.49	0.43	0.45	0.14	0.53	

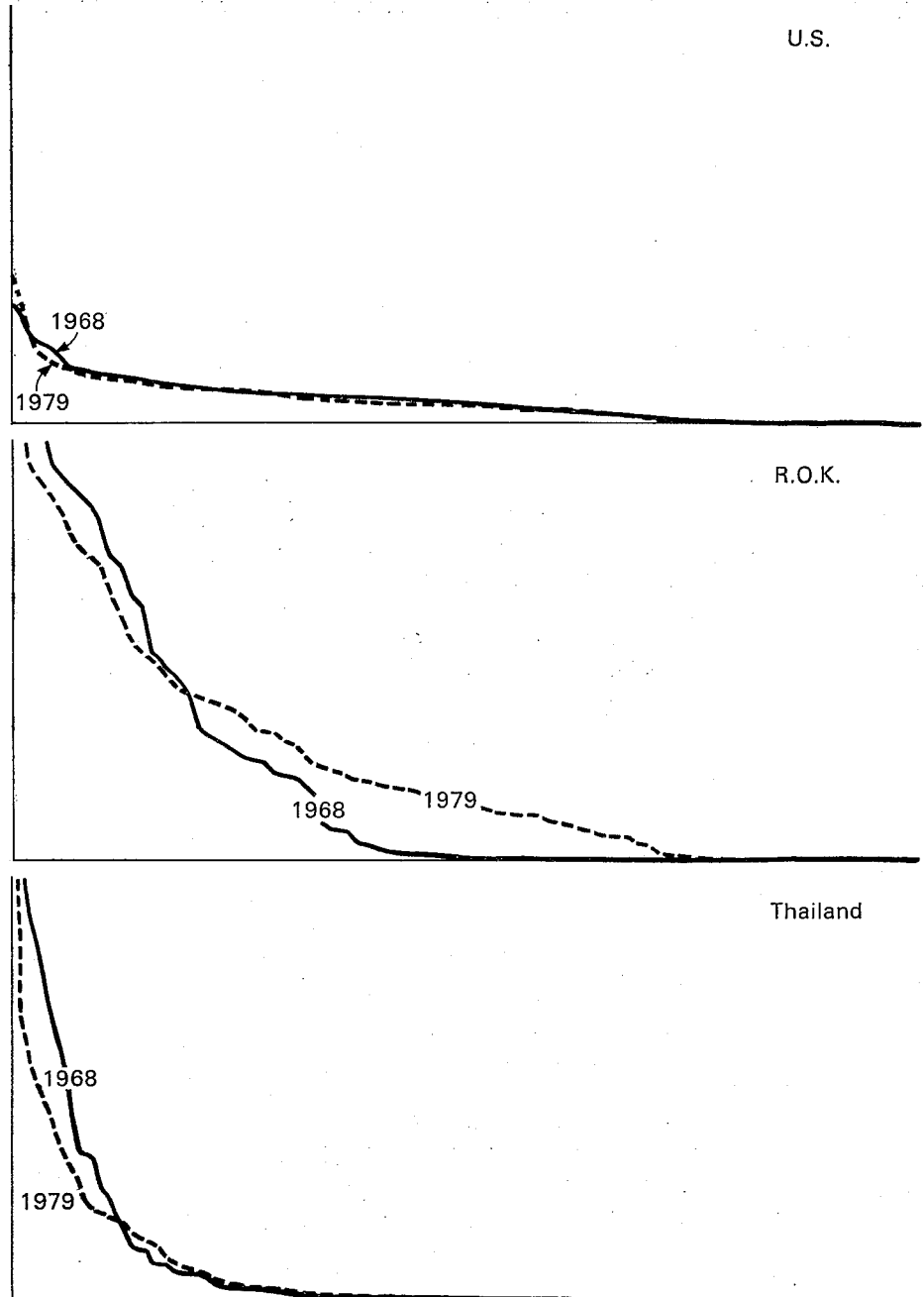
for total imports of  $j$  country,  $W$  for world total imports and  $M_i$  for total imports of  $i$  country.

to "the leveled intensity structure," where the linkage is provided by many diverse goods. Figure 4 is prepared by calculating the export intensity indices of these selected countries vis-à-vis Japan for each SITC three-digit category and plotting them from the largest on the left to the smallest on the right. As shown in Figure 4, the export intensity indices of R.O.K. and Thailand which had been low in 1968 rose in 1979, while those that had been high declined, thus making their structures more leveled than before. The degree of leveling is more advanced in R.O.K. than in Thailand, indicating their different levels of export industrialization. It is interesting to note that there was virtually no change in the United States which had a well leveled structure in relation to Japan in 1968.

Asian countries' increased export intensity and diversity in relation to Japan imply that the range of horizontal division of labor in manufacturing has been expanding between them. In fact, the progress of horizontal trade between Japan and its Asian neighbors has been remarkable, all the more striking a phenomenon when one realizes that there has been little change in the pattern of horizontalization between Japan and other developed countries during more than ten years.

Figure 5 is prepared by calculating horizontal division of labor indices of Japan vis-à-vis three selected countries for each SITC three-digit category and arranging them from the largest on the right to the smallest on the left. If a given trade partner of Japan has pronounced comparative advantage in a small number of resource-intensive manufactures but little else, and depends entirely on imports from Japan for most of the manufactures it needs, that is, if the country has a typically vertical trade relationship with Japan, its structure of horizontal trade would show a profile where most of the goods have indices of 1 or close to 1, positioned along the upper part of the chart. As the country gradually builds up its industrial capacity to produce an increasing variety of manufactures, which substitute imports from Japan and are eventually exported

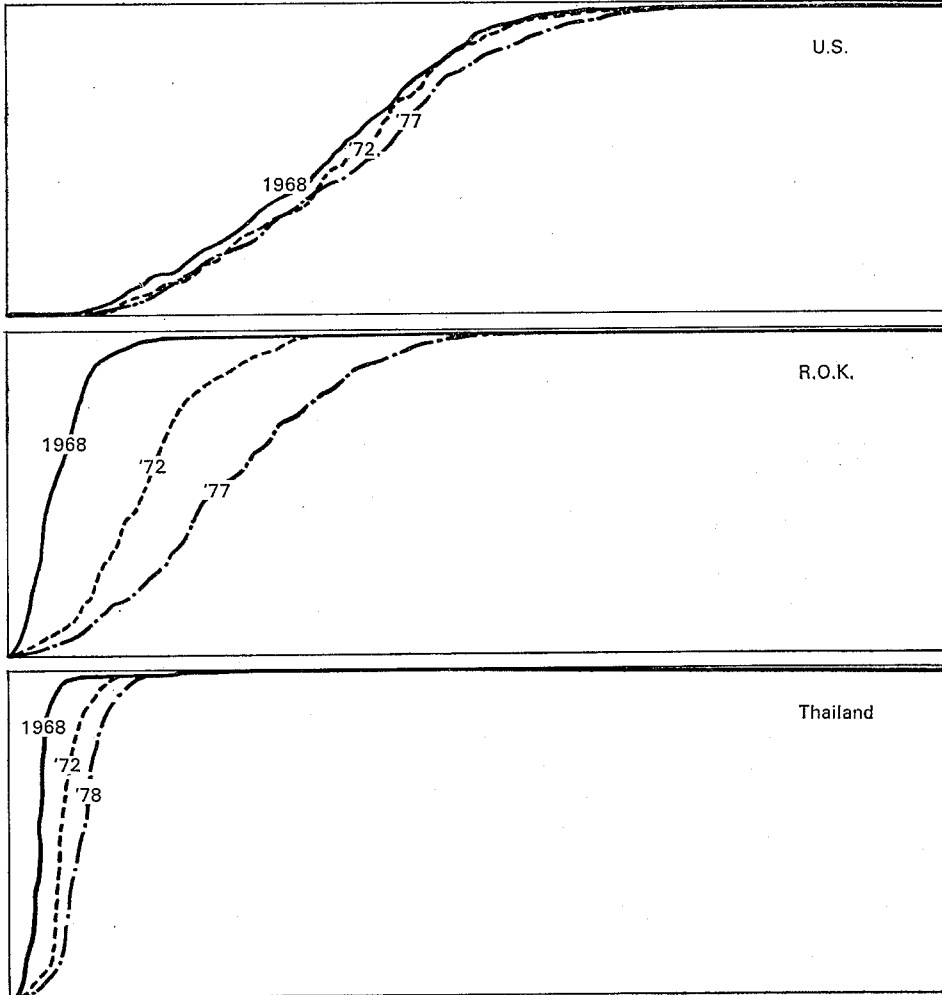
Fig. 4 Changes of Manufactured Export Intensity Structures in Selected Countries in Relation to Japan (1968-79)



Source: International Monetary Fund, *Direction of Trade Statistics Yearbook, 1981* (Washington, D.C.: International Monetary Fund, 1981).



Fig. 5. Changes in Japan's Horizontal Division of Labor Structures for Manufactures Relative to Selected Countries (1968, 1972, and 1977)



Sources: [3, various issues].

Note: Japan's horizontal trade for  $i$  product in relation to  $j$  country,  $E_{ij} = (E_{ij} - M_{ij}) / (E_{ij} + M_{ij})$ , where  $E_{ij}$  stands for Japan's export of  $i$  product to  $j$  country, and  $M_{ij}$  for Japan's import of  $i$  product from  $j$  country.

to Japan, indices would gradually become smaller than 1 and the structure in the end would achieve a diagonally balanced profile.

Figure 5 shows Japan's horizontal division of labor profiles in relation to the United States, R.O.K., and Thailand for the years 1968, 1972, and 1977. The degree of horizontalization is most advanced in relation to the United States, but the shifts in the profile during the years are minimal. Japan has a greater number of goods for which it fully specializes in exporting to R.O.K. than to the United States, but the progress of horizontalization with the former has

TABLE III  
 JAPAN'S SUBSECTORAL HORIZONTAL DIVISION OF LABOR INDICES IN RELATION TO  
 ANICs, ASEAN-4, AND THE UNITED STATES (1965, 1970, AND 1978)

	ANICs			ASEAN-4			U.S.		
	1965	1970	1978	1965	1970	1978	1965	1970	1978
05 Foodstuffs	16.7	15.9	24.9	16.6	18.0	16.3	23.6	35.9	21.3
06 Beverages	—	—	—	0.0	0.0	0.3	12.6	19.0	45.1
08 Fiber yarns	11.5	39.6	41.9	2.1	0.6	32.8	0.7	1.3	45.7
09 Textile prod.	24.1	31.6	25.8	4.8	19.0	30.7	9.6	14.4	34.6
10 Wood manuf.	18.2	27.8	21.6	4.5	21.4	21.7	23.0	6.1	22.5
11 Pulp and paper*	6.4	17.5	9.2	1.4	11.2	9.5	33.8	34.4	28.7
12 Printing	13.7	14.3	90.2	7.5	1.8	93.5	16.9	23.6	30.7
13 Rubber prod.*	20.7	37.7	37.8	0.3	0.1	17.6	21.1	12.6	29.9
14 Chemicals	7.9	14.9	19.1	4.9	4.5	9.4	31.4	35.6	44.6
15 Petroleum prod.*	10.4	36.7	19.3	27.1	31.5	8.6	6.9	3.9	2.7
16 Coal prod.*	0.0	47.8	99.5	0.0	0.0	0.0	0.0	0.0	28.4
17 Nonmetallic mineral prod.*	3.7	11.1	19.0	0.0	0.1	0.8	29.0	35.3	52.8
18 Iron and steel*	21.5	23.5	28.0	0.0	0.0	6.0	40.7	16.9	51.5
19 Primary iron and steel manuf.	0.0	7.3	13.0	0.0	0.3	4.6	11.4	2.8	1.5
20 Primary nonferrous metal manuf.*	12.7	15.0	20.9	1.0	1.5	3.6	34.9	36.6	22.0
21 Metal manuf.*	0.3	12.2	21.3	0.1	0.2	0.9	28.0	15.7	24.4
22 General mach.*	1.6	1.3	6.0	0.3	0.2	1.6	37.4	43.9	47.0
23 Electr. and electro. mach.*	3.8	20.4	22.4	0.0	0.0	6.4	52.4	50.6	55.9
24 Transp. instr.*	0.5	6.8	10.6	0.0	0.0	0.4	23.9	17.2	13.7
25 Precision instr.*	2.5	3.3	16.5	0.0	0.0	21.5	42.3	44.2	44.0
26 Miscell. manuf.	25.5	44.0	51.0	18.0	30.0	38.4	29.3	30.6	53.0
Total manuf.	8.7	16.3	27.4	3.9	5.9	15.2	33.4	31.0	35.7

Source: [3, various issues].

Note: The horizontal division of labor index =  $(1/n) \sum_{i=1}^n [(E_{ij} + M_{ij} - |E_{ij} - M_{ij}|) / (E_{ij} + M_{ij})] \times 100$ .

\* Producers' goods subsectors.

been rapid during 1968-77. Vis-à-vis Thailand, the bulk of goods have indices close to 1, but their profile shows some appreciable shifts.

Table III shows the shifts in Japan's horizontal division of labor in relation to the ANICs, ASEAN-4, and the United States by major category of manufactures for the years 1965, 1970, and 1978. Japan's indices for the heavy and chemical industrial subsectors are comparatively high in relation to the United States, and much lower vis-à-vis the ANICs. But the progress in eighteen years has been very limited, some even regressing, relative to the United States. Japan's horizontal trade vis-à-vis the ANICs has progressed rapidly in such industries as electrical and electronic machinery, primary iron and steel and metal manufactures, but indices for textile products, wood manufactures, and some others have come to a standstill or even declined in the 1970s, after

the substantial gains observed in the latter half of the 1960s. It is interesting to note that Japan's horizontal division of labor with ASEAN-4 has progressed substantially in the 1970s for textile products and wood manufactures. These observations certainly reflect the ongoing multiple catch-up process among Japan, the ANICs, and ASEAN-4 discussed in Section I of this paper.

### B. *Direct Investments*

The expansion of horizontal division of labor among Japan and its Asian neighbors has taken place in response to the changing industrial structure and the emergence of declining industries in Japan, on the one hand, and to the improved comparative advantage of other Asian countries, on the other. Japanese overseas private investments played an important role in transferring the operational bases of declining industries to Asia and thereby forging the ties of horizontal trade. Overseas subsidiaries of Japanese firms have high ratios of exports to total sales, as already mentioned. In addition, their import requirements are also large. Generally speaking, Japanese firms aim more at export earnings than profit maximization in their overseas ventures, unlike the Western multinational and other big companies. It is reported that most Japanese overseas companies are operated under the leadership of trading companies which often participate in such ventures, and that they are therefore most strongly inclined toward investments which generate high export earnings to enable quick returns on the invested capital [6, Chap. 3]. Moreover, only a small number of Japanese firms attempt to build the entire production processes from materials to final products in foreign countries. Over 60 per cent of the Japanese firms chose to transfer parts of intermediate manufacturing processes, while importing necessary raw materials, semi-finished products, and capital goods from the parent companies in Japan. The percentage of imports from Japan in total purchases among Japanese overseas companies is very high, amounting in 1980 to 58.3 per cent in R.O.K., 44.8 per cent in Taiwan, 45.6 per cent in Hong Kong, and 52.0 per cent in Singapore. This means that Japanese direct foreign investments have a built-in propensity to forge intra-enterprise international division of labor and that their operational strategy aims at optimizing intra-enterprise resource allocation. Overseas ventures by Japanese private firms accordingly play a major role in promoting the horizontal trade among Japan, the ANICs, and ASEAN-4.

### C. *Structural Integration*

There is a considerable disparity in the maturity of industrialization between Japan and the other Asian countries. Accordingly, the reciprocal intra-industry trade of minutely differentiated products, the true manifestation of horizontal division of labor, still remains proportionately very limited between Japan and the ANICs and ASEAN-4. The present intra-industry trade, where Japan exports machinery and capital- and technology-intensive parts and semi-finished products and imports final assembled products and labor-intensive, technologically standardized parts and semi-finished products, is still predominantly vertical in relation to the ANICs and ASEAN-4. Although reciprocal transactions within the same

industrial subsector have been on the increase, the general pattern of trade still remains that Japan specializes in exports of capital-intensive goods and high-technology products to the ANICs and ASEAN-4, which in their turn specialize in exports to Japan of labor-intensive and technologically standardized products. The case study of Japan's trade with R.O.K., which is more advanced in horizontalization than those with other Asian countries, in the textile and the electrical and electronic subsectors is useful to depict the modality of the ongoing intra-industry trade in Asia.

With respect to textile products, R.O.K. specializes only in clothing in its exports to Japan, while it depends heavily on Japan for imports of capital-intensive goods like synthetic and regenerated textile yarns and fabrics. The country's dependence on imports from Japan is just as high or even higher with respect to more upstream products such as ethylene glycol (an intermediate material for polyester fibers), caprolactum (a material for nylon fibers), and acrylonitrile (a material for acryl fibers) and textile machinery.

With respect to electrical and electronic machinery, which are the second in importance to textiles in the trade between R.O.K. and Japan, the intra-industry process division of labor exists according to the level of technological requirements. The Republic of Korea's exports to Japan are substantial in household appliances due to the country's comparative advantage in labor-intensive assembly. The standardization of technology is quite advanced in the production of parts as well as in assembly in the electronics industry. Notably, the production of electronic parts employs a substantial amount of unskilled labor, and the percentage of transportation in the total production costs is relatively small. Accordingly, technologically less-demanding processes among the electronic parts production are quite often transferred to lower-wage countries through direct overseas investment. Such investment behavior of the electronics industry is evident in the trade between Japan and R.O.K. Japan is a net importer vis-à-vis R.O.K. of such standardized electronic parts as batteries and integrated circuits. On the other hand, Japan specializes in exporting to R.O.K. such technology-intensive parts as transducers, structural parts, and acoustic parts, not to mention industrial electronic machinery. This pattern of bilateral specialization in the electrical and electronic industry has evolved more from intra-enterprise international subcontracting than from a straightforward intra-industry division of labor between the two countries.

Increasing horizontal division of labor implies that the progress of industrialization in one country will increasingly induce the upturn of industrial production in another country; that is, the accelerating international reciprocity of carry-over effects in industrialization. According to the dictum of classical theories of trade, there is no basis for the assertion that accruing benefits, at least in the static sense, are larger in horizontal than in vertical trade. However, horizontal trade entails a dynamic effect of reciprocal inducement for industrialization among trade partners. As long as inter-industry vertical division of labor prevails among trade partners, traded goods are more or less wholly produced in the respective producing countries. Therefore, the export of a particular product by one country is less likely to induce increased output in

another country. On the other hand, horizontal trade involves, as already pointed out in relation to the trade between Japan and R.O.K. of textile and electrical and electronic products, sizable transactions of intermediate goods. It is no exaggeration to say that intermediate goods are the strength of horizontal trade. One has to note that an expansion of production in one country induces an increase in output in another country via the trade of intermediate goods, and that the expansion of such trade ensures a closer integration among trading countries through reciprocal inducement effects.

The analysis of international input-output tables between Japan and R.O.K. reveals the following facts. The aggregated output of Japan's sectoral intermediate goods generated by R.O.K.'s total final demand amounted to U.S.\$805.8 million in 1970, while the same induced output in R.O.K. generated by the final demand in Japan was U.S.\$52.2 million, or a mere 6.5 per cent of the former. These figures indicate that the expansion of final goods production in Japan did not equally generate the country's imports of intermediate goods from R.O.K., and that industrialization in the latter country had not sufficiently extended to the production of intermediate goods in the beginning of the 1970s. After a short period of five years, however, R.O.K.'s induced output vis-à-vis Japan rose substantially in both absolute and relative terms, amounting to U.S.\$780 million, or 31.5 per cent of Japan's induced output of U.S.\$2,476.1 million in the same year. During 1970-75, R.O.K.'s industrial capacity to produce intermediate goods expanded tremendously, supplying a sizable volume of inputs to Japanese industries. Japan's neighbors are industrializing their economies in rapid strides, fortifying the ties of reciprocal inducement in industrial production between themselves and Japan. This is precisely the dynamic effect of horizontal division of labor [10].

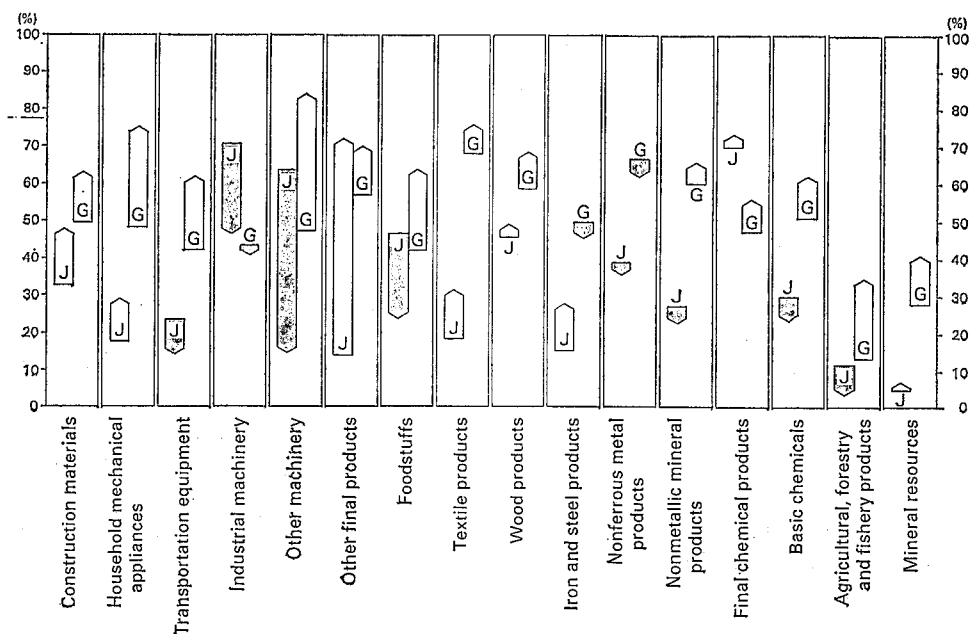
The intermediate goods trade means that "a given country requires semi-finished products manufactured in other countries to maintain its own productive activities," to borrow a definition from Ozaki and Ishida [7]. In other words, the intermediate goods trade works to strengthen a structural integration of trade partners. The progress of horizontal division of labor intensifies the direct interdependence of industrial structures among trading countries and contributes in the end to the formation of an organically integrated economic community among them. The economies of Japan, the ANICs, and ASEAN-4 are on the threshold of the path toward such an end.

### III. JAPAN'S APPROACH: PRESENT AND FUTURE

#### A. "Self-sufficient All-round Industrial Structure"

As discussed already, Japan has been rapidly intensifying its horizontal ties with neighboring countries. Nevertheless, the current level of its trade horizontalization still remains low compared with other developed countries. This is one of the cruxes of the problem of Japan's trade structure. Figure 6 compares the horizontal trade indices by product category of Japan and West Germany for the years 1965 and 1975. Their respective trade structures show different pictures. West Germany exhibits high horizontal trade over a wide range of

Fig. 6. Horizontal Specialization Indices in Japan and West Germany (1965-75)



Source: Calculated from [4, 1978 edition].

Note: For calculation of indices, see Table II.

products from the highly processed to the less processed. Moreover, the indices rose from 1965 to 1975. The progress of horizontalization is understandable from the presence of the EC integration, but West Germany's horizontal trade is also substantial and growing in relation to countries outside the community. In contrast, Japan's indices are on the whole considerably lower than West Germany's. In 1975, Japan had higher indices than West Germany only for industrial machinery and final chemical products. The progress of horizontalization during 1965-75 is observed only in eight product categories compared with thirteen in West Germany.

Japan's industrial structure is characterized by stronger self-sufficiency than those in other developed countries. Industrialization in Japan proceeded to encompass the entire gamut of manufacturing from technology-intensive final goods like electrical and electronic machinery, transport equipment, and capital goods like general machinery to input materials and semi-finished products such as steel, nonferrous metals, and basic chemicals, not to mention labor-intensive final goods like textiles and wood manufactures. Japan's industrial structure has thus developed into one which is largely self-sufficient, the least dependent among the developed countries on manufactured imports. Because of this all-round industrial structure, increased production of a given product in any industry in Japan has less import-inducive effects per unit of the increased output than in other countries. The MITI's *Tsūshō hakusho* [White paper on international trade] in 1978 studied the industrial self-sufficiency of the Japanese

economy, and after the international comparison on the input structures of metal manufactures and machinery industries, concluded as follows:

In the case of Japanese manufacturing industries, inputs are largely procured from the domestic manufacturers, irrespective of whether the industry manufactures intermediate goods for which the input component is generally larger (or value-added ratios are lower) or other goods with higher levels of processing (or with higher value-added ratios). Steel in particular, which is the most fundamental of all inputs, is 99 per cent domestically procured. The proportion of imported inputs is only perceptibly larger in a very limited number of final goods industries such as textiles and processed food than in other industries. In contrast to Japanese industrialization which evolved to achieve greater self-sufficiency in manufactures, the input structures of many manufacturing industries in West Germany show substantial inflows of imports. Particularly notable is the fact that the country relies on imported steel and nonferrous metals to a greater extent than in Japan. [4, pp. 243-45]

Manufactured imports accounted for 22.8 per cent of Japan's total imports in 1979. The percentage was invariably higher in other major developed countries: 78.5 per cent in Canada, 66.3 per cent in United Kingdom, 60.3 per cent in France, 60.1 per cent in West Germany, 56.2 per cent in the United States, and 48.8 per cent in Italy.

With most of its productive facilities reduced to rubble during World War II and with a huge population to feed and employ, Japan naturally sought to rebuild its economy by first concentrating on labor-intensive and capital-saving final goods industries. Furthermore, Japan's postwar economic recovery and growth continued to be restricted by "the balance of payments ceiling," and the most urgent imperative during the period from the national economic point of view was to overcome this chronic constraint. Japan began in great earnest to develop its key input materials industries like iron and steel, chemicals, and nonferrous metals for that purpose. From this initial stage were to emerge and flourish machinery industries which would lead the subsequent accelerated growth of the Japanese economy. In addition, Japan possessed a large domestic market which could support and absorb its all-round industrialization. Externally, Japan at that time was the lone industrial country in the Far East, with no possibility of developing horizontal division of labor with neighboring countries. That Japan was not in a position to develop ties of regional horizontal trade in a manner similar to the European Economic Community also contributed to the drive toward self-sufficiency in its industrialization.

The self-sufficiency of the industrial structure was no doubt reinforced by a series of postwar protectionist policies. It was only around 1965 that Japan began regularly to manage an international balance of payments surplus. The surplus was to expand cumulatively from then on, but the exchange rate remained unchanged until the Smithsonian multinational currency adjustment in December 1971. The fixed exchange rate of ¥360 to the dollar, which was extremely favorable even in relation to its actual international competitiveness at the time, helped Japan expand manufactured exports while restricting imports. Undeniably, Japan was a prime beneficiary of the IMF fixed exchange rate

regime. Even after the transition to the floating exchange rate system in February 1973, the intervention of the Bank of Japan helped keep for some time the level of appreciation lower than the yen actually warranted. The favorable postwar movement of the exchange rate worked to propel Japanese industries toward export markets, even including those industries which lacked comparative advantage, and at the same time it discouraged the expansion of imports, thus giving an added impetus for self-sufficient industrialization.

On top of this favorable turn in exchange rates, postwar Japan maintained rigid non-tariff barriers compared with the standards of the day in other developed nations, and this protectionist policy lasted until 1964 when the country joined the GATT. Even after GATT membership, certain protected industries like aluminum and computers continued to benefit from import restrictions. Non-tariff barriers, which continued through the mid-1960s, were unquestionably another policy tool which helped support the self-sufficiency of Japan's industrial structure.

The postwar protectionist policy measures have already been withdrawn. Following the Kennedy Round, Japan undertook in 1972 a 20 per cent linear reduction of import tariffs on 1,865 items, and its further efforts at tariff reduction were also notable at the Tokyo Round. The restricted items which currently remain in force are no more, and average import duties are no higher, than in other developed countries, as far as manufactures are concerned. The tariff burden ratio, i.e., the ratio of total receipts from import duties to total imports, is in fact smaller in Japan than in other developed countries. Needless to say, this progressive trade liberalization has been making an impact toward transformation on Japan's self-sufficient industrial structure.

The largest impact which will help effect the transformation, however, comes from the ongoing industrialization in the ANICs and ASEAN-4, which signifies an emergence of Japan's trade partners for regional horizontal division of labor. Japan must pin its hopes on the mutually beneficial process of development, in which greater horizontal trade with these countries gradually breaks up its now unwieldy self-sufficient industrial structure and thereby facilitates a further expansion of horizontal division of labor with them. Japan should make efforts to formulate policies which will be effective to sustain this process.

In future horizontal specialization between Japan and its Asian neighbors, machinery industries will probably play the central role. It will take some time for the horizontal division of labor in Asia to mature like that among the EC countries or between the United States and Canada, but the transition will presumably be rapid. As already shown in Table III, trade horizontalization in machinery has been proceeding at a remarkable speed between Japan and the ANICs. There are significant beginnings of similar horizontalization between Japan and ASEAN-4, though still small in value.

It is possible to define developed countries as those economies which have their own industrial base for producing machinery which is competitive in the international market. However, machinery accounts for the largest percentage of total imports in many developed countries [1]. In 1979, the share of machinery in total imports in the developed world was 41 per cent, and for individual



countries, 46 per cent in the United States, 63 per cent in Canada, 35 per cent in United Kingdom, 46 per cent in Sweden, 33 per cent in Japan, and 31 per cent in West Germany. Because machinery industries encompass an enormous variety of products and have practically limitless chains of vertical linkage, they can play the pivotal role in facilitating multiple intra-industry trade, or horizontal division of labor, between trade partners.

As already pointed out, what is most notable in the recent export drive among the ANICs is the rapidly increasing percentage of machinery in total exports. The share of machinery increased in R.O.K. from 0.3 per cent in 1961 to 8.6 per cent in 1971 and to 21.9 per cent in 1979, in Taiwan from 1.4 per cent to 17.7 per cent and 25.6 per cent, in Hong Kong from 3.3 per cent to 13.5 per cent and 22.2 per cent, and in Singapore from 5.4 per cent to 11.0 per cent and 26.7 per cent. The relative importance of machinery, especially of electrical and electronic machinery, has also been increasing significantly in the exports of ASEAN-4. Such maturing of industrial structures in Asian countries seem to attest to the future possibility of evolving horizontal division of labor with Japan.

#### B. *Policy Options*

Japan's horizontal division of labor with the ANICs and ASEAN-4 is expected to proceed basically through the working of the free market mechanism in the future as it has been to date. A regional customs union or some other similarly formal institutional framework for regional cooperation among them is not advisable for the time being. The ANICs and ASEAN countries have been and will be Japan's most important partners in Asia for horizontal division of labor, but at the same time it should not be forgotten that the Pacific Asian region encompasses other countries with substantial growth potentials, which are likely to emerge as partners to regional horizontalization. The ANICs include countries like R.O.K. and Taiwan which underwent political division along ideological and other differences, and premature formation of a restricted regional organization may work to aggravate the tension along the East-West axis, which might cost all the countries in the region dearly in the long run, in both political and economic terms.

Most urgently required of Japan is a policy review reformulating its current stances on international trade and investment, development aid, and structural adjustments to facilitate the horizontal ties to the ANICs, ASEAN-4, and other Asian neighbors. First of all, although Japan has been liberalizing its trade step by step, such policy efforts have been chiefly directed toward the United States and Western Europe and much less attention has been paid to trade partners in Asia. It is one of the first priorities for Japan to rectify this oversight. Although it is commendable that Prime Minister Nakasone officially agreed, during his last visit to ASEAN countries, to tariff reductions on those items favored by them, the concession is far from sufficient. Secondly, Japanese overseas direct investments will continue to expand in Asian countries, apace with the sophistication of Japan's industrial structure toward higher value-added ratios and intensified application of advanced technologies. Such investments

will continue to be effective as an important means to promote Japan's horizontal trade with Asian countries. Thirdly, Japanese aid policy states more or less explicitly its emphasis on Asian neighbors. On the occasion of his recent visit to ASEAN countries, the Japanese prime minister pledged a sizable increase of bilateral aid to these countries, which followed the seven-year loan agreement of U.S.\$4,000 million with R.O.K. Japan's aid commitments will have to be stepped up in the future as well.

Japanese industrial policies had been geared, up until about 1970, toward across-the-board promotion: i.e., they aimed to develop the entire gamut of manufacturing industries and to strengthen international competitiveness in all of them. The notion of international industrial adjustments as complementary to national industrialization was then considered too farfetched to come to the fore in policy formation. The so-called "full range industrialization" [5] was a consequence of this stance, and efforts were made, mostly successfully, to strengthen the international competitiveness of each industry. In the beginning of the 1970s, Japan's trade balance began to record continuous surpluses, and fears were increasingly voiced over the inflationary effect of such surpluses. The postwar balance of payments constraint apparently ceased to plague Japan, and so one of the primary factors to justify its self-sufficient industrial structure ceased to exist. The continued balance of payments surpluses, on the other hand, expanded Japan's capacity for overseas direct investment, and a number of industries began to transfer their plants as overseas bases for production and export. Japanese overseas investments served to strengthen Asian countries' export competitiveness, which in its turn eventually hit back hard on the declining industries in Japan. The "boomerang effect" made it unavoidable for Japan to adjust its industrial structure.

Japan has been gradually changing its industrial policies since the early 1970s in inevitable response to such circumstances. The New Economic and Social Seven-Year Plan endorsed at the cabinet meeting in October 1979 discusses increasingly expensive oil and its unstable supply, rapid catch-ups by ANICs and other developing countries, and rising protectionist moods in other developed countries, and announces that the most important policy objective for Japan is to transform the industrial structure. The plan considers the promotion of "knowledge-intensive" industries as most imperative, and goes on to propose as follows:

... Japan will intensify research and development in relevant fields for the purpose of transforming its industrial structure to a knowledge-intensive one. Every effort must be made to develop highly sophisticated assembly industries like electronics, industrial machinery and systems engineering and knowledge-intensive industries like fine chemicals. With respect to materials industries, emphasis will be directed to the development of new and sophisticated materials and of resource- and energy-saving technologies. In all industries, the primary objective is to sophisticate manufacturing processes and final products. Technological innovations must be stepped up in advanced-technology industries such as information and communication apparatuses and aircraft, whose sound development will have far-reaching carry-over effects on other industrial subsectors. On the other hand,

research and development efforts will be promoted in industries which manufacture appliances and equipment in the spheres of health, social welfare and other social infrastructures so as to meet the rising expectations among the population of better care and services. Moreover, effective manpower development will become ever more necessary to strengthen Japan's capability of original research and development. Finally, utmost efforts must be made to sophisticate Japan's export structure, with special emphasis on promoting plant exports among others. For this purpose, it will be necessary to strengthen Japan's capability of information gathering, consulting and engineering services on a global scale. It will be equally important to improve export financing and insurance services in a manner contributory to a better international order. [2, p. 90].

The vision portrayed above clearly indicates that Japanese industrial policies are now at a significant turning point. The authors believe that this new turn in Japan's industrial development will open up a vast new perspective for horizontal division of labor among Japan and its Asian neighbors.

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