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Affiliates of U.S. and Japanese Multinationals in East Asian Production and Trade

Robert E. Lipsey

Foreign direct investment (FDI) is one of the main avenues for the movement of technology and modern business methods across national borders. FDI from more developed countries is presumably more likely to carry advanced technology than that from developing countries. Among the developing countries, those in Asia have been more receptive to inward direct investment than those in other regions.

Of all the direct investment by developed countries in the developing countries of Asia, the United States and Japan account for by far the largest shares. Together they were responsible for over 80 percent of the outward FDI stock from developed countries at the end of 1996 (OECD 1998). This combination of the importance of FDI to Asian host countries and the importance of the United States and Japan in FDI in Asia is the motivation for the focus in this paper on the roles of U.S. and Japanese multinational enterprises (MNEs), in particular the affiliates of these MNEs, in the growth and composition of production and trade in the countries of East Asia.

There are two basic types of data with which one can study the role of multinational firms in the host countries where they operate. One type is home country data on the foreign activities of the multinational firms based there. The other is host country data on the activities of foreign-

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owned firms within their borders. Each type of data has advantages and drawbacks. The home country data have the advantage of comparability across host countries and coverage of all host countries, although not always in published form for each of them individually. The U.S. data have a high degree of coverage of U.S. investing firms and extensive published descriptions of the data. Unfortunately, few home countries collect such data and among those few, Japan issues data that are deficient in many respects (Ramstetter 1996; Lipsey, Blomström, and Ramstetter 1998). The U.S. data, despite their high quality, suffer from the extensive suppression of information for confidentiality reasons, especially for individual countries, industries, and industries within countries. Because of the suppressions, we alternate here between two definitions of "developing Asia." One is called by that name and covers all Asia and Oceania except the Middle East, Japan, Australia, and New Zealand. The other consists of eight individual entities, Hong Kong, Indonesia, Korea (South), Malaysia, the Philippines, Singapore, Taiwan, and Thailand. These account for over 85 percent of sales of U.S. affiliates in developing Asia.

Host country data have the advantage of comparability within each country. There is comparability between information on foreign-owned firms or establishments and on domestically owned ones and among data for establishments owned by different home countries. They are presumably comparable with respect to definitions, such as those for sales, employment, wages, value added, and other variables, and also with respect to industry definitions. However, there are differences from host country to host country in industry coverage, size or type of firm coverage, and definitions of concepts and industries, so that regional summations are questionable. For that reason, this paper, with its concentration on the region, is based mainly on home country data, but some comparisons with host country data are added in the discussions of individual countries.

This paper focuses on the role of MNEs in the development of the exports of their host countries, with some attention also to their role in the development of host country production. One reason for this focus is that MNEs play a particularly large role in trade, larger than in host country production, at least in manufacturing and mining, and especially larger than in employment. Another reason is that there exists, in comprehensive and long-term series on the trade of individual countries, classified by product, a natural basis for comparison between the activities of MNEs and those of other firms within host countries. Some much less detailed data are available on production in some host countries, covering shorter time periods than those of the trade data.

An additional difference between production for export and production for host country domestic sale is that export production is probably more footloose and less under the influence of host country government restrictions than production for local sale, although export production can be

influenced by host country incentives. Given that incentives are expensive for host governments, the pattern of exports may reflect the comparative advantages of the host countries better than the more easily influenced production for domestic use.

An earlier examination of the role of multinational firms in developing country trade concluded that in the late 1960s and the 1970s, when exports of manufactured goods by developing Asian countries grew by almost 800 percent, U.S. affiliates were the sources of about 6.5 percent of that growth, and of an increasing share of exports. Up to 1983, the export growth of these countries was to almost twenty times the 1966 level, and U.S. firms accounted for a little over 6 percent of the increase. Over a shorter period, from 1974 to 1983, Japanese firms' affiliates were responsible for another 7 percent, so that the two sets of foreign firms together may have been responsible for about 13 percent of the export growth, not an insignificant share but certainly not a dominant one (Blomström, Kravis, and Lipsey 1988).

The roles of the two countries' MNEs in developing Asia in these early years become clearer if we look at the industry distribution of manufactured exports. Between 1966 and 1977, for example, the Asian developing countries remained predominantly exporters in "other manufacturing," mainly textiles and apparel, which made up half of the enormous growth in their manufactured exports. U.S. firms' manufacturing affiliates in these countries played no role in this export growth, and if we judge by their 1977 share, discussed below, Japanese affiliates could not have been very important either. There were two major changes in export composition. One was a shift out of food products, an industry in which U.S. affiliates were unimportant, and by 1977, so were Japanese affiliates. The other was a move into machinery, which grew from 4 to 14 percent of exports. More than a quarter of the growth in machinery exports, and a higher proportion of that in electrical machinery, was in exports by U.S. affiliates in these countries (Lipsey and Kravis 1985, table A-6). The 1977 data suggest that Japanese affiliates played a negligible role in nonelectrical machinery, but a larger one in the growth of exports of electrical machinery.

5.1 Developing Asia as a Whole in 1977

The export pattern of developing Asia in manufacturing as of 1977 and the position of U.S. and Japanese affiliates in manufactured exports at that point are summarized in table 5.1. The Japanese affiliate data are subject to major problems, worse for the industry distribution than for the total, but serious for the total too, as is explained in Ramstetter (1996) and in Lipsey et al. (1998). However, the general outlines of the picture are probably correct.

The developing Asian countries were, within manufacturing, still

Table 5.1 **Industry Distribution of Manufactured Exports from Developing Asia, 1977**

Industry	Total Manufacturing Exports:[a] Distribution (%)	Exports By: Japanese Manufacturing Affiliates Amount (million $)	Exports By: Japanese Manufacturing Affiliates Distribution (%)	Exports By: U.S. MOFAs: Distribution (%)	Affiliate Shares in Total Exports: Japanese (%)	Affiliate Shares in Total Exports: U.S. (%)	Industry Share in Affiliate Exports as Percentage of Share in Region's Total Exports: Japanese (%)	Industry Share in Affiliate Exports as Percentage of Share in Region's Total Exports: U.S. (%)
Foods	14.2	245	9.1	6.1	4.2	3.1	64.3	43.2
Chemicals	3.5	77	2.9	4.8	5.4	9.8	82.8	137.5
Metals	7.6	76	2.8	2.4	2.4	2.2	37.0	30.9
Nonelectrical machinery	3.9	45	1.7	5.9	2.8	10.6	42.4	149.3
Electrical machinery	13.3	787	29.3	67.7–69.3	14.4	36.3–37.2	220.5	509–521
Transport equipment	3.5	137	5.1	0.9	9.6	1.8	146.3	25.6
Other manufacturing	54.0	1,322	49.2	10.6–12.3	6.0	1.4–1.6	91.0	3.0
Textiles and apparel	26.0	803	29.9	n.a.	7.5		115.0	
Other	28.0	519	19.3	n.a.	4.5		68.9	
Total[b]	100.0	2,689	100.0	100.0	6.5	7.1	100.0	100.0

Sources: NBER World Trade Database (1997), Lipsey and Kravis (1985), Ramstetter (1993), and appendix tables 5A.1 and 5A.2.

Note: Developing Asia excludes the Middle East and includes the Asia and Pacific regions except for Australia, New Zealand, and Japan. MOFA = majority-owned foreign affiliate.

[a]Eight East Asian exporters: Hong Kong, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, and Thailand. Manufactured exports by other countries of developing Asia outside the Middle East, including Bangladesh, China, India, Myanmar, and Pakistan, were $9,902,502 in 1977.

[b]Excludes petroleum and coal products.

predominantly exporters of foods and "other manufactures" in 1977. These industries were the source of over two-thirds of their manufactured exports and, with metals, three-quarters of the total. Electrical machinery had already reached some importance, at 13 percent of the total. The specializations of Japanese and U.S. manufacturing affiliates in this group of countries were different from those of the countries and from each other. Japanese affiliate exports were relatively larger than U.S. affiliate exports in transport equipment, and particularly in "other manufacturing," mainly textiles and apparel, almost half of Japanese affiliate exports. U.S. affiliate exports were more concentrated in electrical machinery, which made up two-thirds of U.S. affiliate exports, and to a smaller extent in chemicals and nonelectrical machinery.

With relatively large shares in foods and especially in textiles and apparel and the rest of "other manufacturing," the export pattern of the Japanese affiliates was much closer than that of the U.S. affiliates to the comparative advantages of the host countries. Relative to the exports of the host countries, those of U.S. affiliates were extremely high in electrical machinery, and a little high also in chemicals and in nonelectrical machinery, all industry groups of U.S. home-country-export comparative advantage, and also relatively R&D-intensive industries. Thus one could say that as of the mid-1970s, both U.S. and Japanese affiliates, but especially the U.S. affiliates, were pushing Asian host countries toward specialization in electrical machinery. Japanese affiliates differed from U.S. affiliates in being much more involved in exploiting the traditional comparative advantages of these host countries.

U.S. and Japanese affiliates together were responsible for 14 percent of the region's manufactured exports, but the share varied widely across industries. Despite the concentration of Japanese affiliate exports in "other manufacturing," they were a minor part of total exports in this industry group. In electrical machinery, however, the two countries' affiliates were responsible for over half of their host countries' exports, and affiliates accounted for between 10 and 15 percent of total exports in chemicals, nonelectrical machinery, and transport equipment.

The comparative advantages of U.S. and Japanese affiliates relative to their host countries are described by the ratios in the last two columns of table 5.1. Both countries' affiliates had large comparative advantages relative to their host countries in electrical machinery. U.S. affiliates, but not Japanese affiliates, also had them in chemicals and nonelectrical machinery, and Japanese, but not U.S. affiliates, in transport equipment and, more surprisingly, in textiles and apparel.

The industry distributions of production, as measured by gross product for U.S. majority-owned foreign affiliates (MOFAs) and by sales for U.S. and Japanese affiliates, are shown in table 5.2. There are no comparable data for production and sales in the region. As was the case for exports,

Table 5.2 **Industry Distribution of Gross Product and Sales of U.S. and Japanese Manufacturing Affiliates in Developing Asia, 1977**

	U.S. MOFAs					
	Amount (million $)		Distribution (%)		Japanese Affiliates: Sales	
Industry	Gross Product	Sales	Gross Product	Sales	Amount (million $)	Distribution (%)
Foods	121–364[a]	548–612	8.1–24.3	10.7–11.9	480	5.9
Chemicals	270	911	18.1	17.8	546	6.8
Metals	38	104	2.5	2.0	691	8.6
Nonelectrical machinery	154[b]	243	10.3	4.7	132	1.6
Electrical machinery	586	2,306	39.2	45.0	1,988	24.6
Transport equipment	≤190[c]	195–212	≤12.7	3.8–4.1	930	11.5
Other manufacturing	324	754–801	21.7	14.7–15.6	3,308	41.0
Textiles and apparel	n.a.	66	n.a.	1.3	2,154	26.7
Other	n.a.	688–735	n.a.	13.4–14.3	1,154	14.3
Total	1,495	5,125	100.0	100.0	8,074	100.0

Sources: Ramstetter (1993), appendix table 5A.2, U.S. Department of Commerce (1981, table III.F5), and Mataloni and Goldberg (1994).

Note: Developing Asia excludes the Middle East and includes the Asia and Pacific regions except for Australia, New Zealand, and Japan.

[a]Includes Japan and New Zealand.

[b]Assumes all the excess of individual industries over the total (2,433 − 1,495 = 938) is exports of nonelectrical machinery by U.S. affiliates in Japan.

[c]Includes New Zealand.

U.S. affiliate sales were more concentrated in foods, chemicals, and machinery, and Japanese affiliate sales in metals, transport equipment, and "other manufacturing," particularly textiles and apparel. The most extreme concentrations in industry distribution that were seen for exports, such as for U.S. and Japanese affiliates in electrical machinery and for Japanese affiliates in "other manufacturing," are somewhat muted in production and sales, although they are still visible.

The difference between the industry distributions for exports and for sales implies that export-sales ratios, or export orientation, differ among the industries. As can be seen by comparing tables 5.1 and 5.2, U.S. affiliates were far more export oriented than Japanese affiliates in metals and in both machinery groups, with electrical machinery the least focused on its host country markets, selling only 15 percent or less there. In the food industry, Japanese affiliates exported a little more than half of their sales, considerably more than U.S. affiliates did, and in chemicals, transport equipment, and "other manufacturing," the export ratios of the two countries' affiliates were similar. For the most part (six out of eight industries), higher shares of an industry in exports by one country's affiliates were associated with higher export-sales ratios in that country's affiliates. U.S. firms' machinery affiliates were the only group exporting far more than they sold in their host countries. Other high export ratios were found in foods, Japanese electrical and nonelectrical machinery affiliates, and both countries' affiliates in "other manufacturing."

Thus, by 1977, a group of foreign-owned affiliates had been drawn to developing Asia to produce for export, and another, smaller group, mainly in chemicals and transport equipment, had been drawn there by the prospect of selling to the host countries themselves. The exporting activities of the affiliates that did export accounted for only about 14 percent of the region's exports because most of the region's exports were in foods, metals, and "other manufacturing," where foreign firms seemed to have little advantage over local firms.

5.2 The Trade of Individual Countries in 1977

The export patterns of the eight East Asian countries had one common feature in the mid-1970s, as is shown in table 5.3. Exports of food products and "other manufacturing" were more than half of total manufactured exports in every country except Singapore. But there were also some sharp differences. In the four newly industrialized economies (NIEs), Hong Kong, Korea, Singapore, and Taiwan, led by Singapore, electrical machinery accounted for at least 10 percent of exports. Malaysia was not far behind, but in the other three countries, electrical machinery exports were a minor part of the total, less than 4 percent. Nonelectrical machinery was much less important than electrical machinery, but the comparative

Table 5.3 **Industry Distributions of Manufactured Exports by Eight East Asian Countries, 1977**

Industry	Hong Kong	Indonesia	Korea	Malaysia	Philippines	Singapore	Taiwan	Thailand
Foods	2.7	22.6	9.9	26.2	44.7	11.5	12.0	54.5
Chemicals	3.7	3.6	2.5	2.4	3.9	7.2	3.3	1.4
Metals	2.7	9.2	9.9	20.4	6.6	5.4	4.8	13.4
Nonelectrical machinery	5.2	0.8	1.3	1.5	0.8	11.1	5.0	1.0
Electrical machinery	12.8	1.6	11.4	9.3	2.1	28.8	16.9	3.5
Transport equipment	0.8	0.5	7.3	1.0	1.0	9.7	2.2	0.2
Other manufacturing (total)	72.1	61.7	57.7	39.1	41.1	26.3	55.9	25.9
Textiles and apparel	41.4	11.2	33.7	3.7	10.9	9.8	26.2	14.4
Other	30.7	50.5	24.0	35.4	30.2	16.5	29.7	11.5
Total[a]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: NBER World Trade Database (1997).

[a]Excludes petroleum and coal products.

advantages seemed to be related. Three of the four countries in which electrical machinery made up a large part of exports were also the ones with the largest shares of their exports in nonelectrical machinery. However, comparative advantage in chemicals, the other group in which R&D is relatively high, appears to be unrelated to that in machinery.

Thus, even by 1977, the region was dividing into two groups of countries. One, consisting of four or five countries, was, with the participation of foreign affiliates, moving into the export of machinery and chemicals. The other group showed little indication of moving away from their traditional export specializations.

5.3 The Growth of the Region's Production and Exports, 1977–95

The story of developing Asia's growth over the fifteen or twenty years after 1977 is a familiar one. The eight countries of table 5.3 grew more than twice as fast, in terms of their GDP, as the world as a whole. Their exports of manufactured goods grew to sixteen times the 1977 level by 1995 and their share of world manufactured exports from 6 to 15 percent (18 percent if China is added). The composition of the eight countries' exports changed drastically, with foods and "other manufacturing" declining from 68 to 38 percent and machinery rising from 17 to 44 percent (appendix table 5A.1). While 41 percent of the increase in exports was in the older sectors, foods, metals, and "other manufacturing," more than half of the growth came from the chemical and machinery sectors.

Another way of describing the export patterns is by the extent to which exports are the product of industries characterized by high, medium, or low ratios of R&D expenditure to output, recognizing that the particular products that make up a country's exports in one of these industries may not themselves be the ones resulting from the R&D. U.S. parent companies investing in developing Asia, even in 1977, were not only in relatively high R&D industries but, within those industries, were R&D intensive relative to other firms. Parents in the nonelectrical machinery industry with direct investments in developing Asia in 1977 were over 50 percent more R&D intensive than those with investments in Europe, the next highest area in this respect. Parents in the electrical machinery industry with direct investments in developing Asia were almost 40 percent more R&D intensive than those with European investments (Lipsey, Blomström, and Kravis 1990).

The exports of the eight developing East Asian countries in 1977 were mostly from industries of low R&D intensity. The main ones were foods, metals, and, within the broad "other manufacturing" group, textiles and apparel, lumber and furniture, and leather and leather products. By 1995, the export distributions, especially those of Singapore, Malaysia, and Taiwan, were much more tilted toward high-R&D industries. The shares of

high-R&D industries in the manufacturing exports of Singapore and Malaysia were far above those in the exports of the United States and Japan, and their share in Taiwan's exports was a little above the shares for those two high-tech leaders. In all the East Asian countries, except Indonesia, the share of high-R&D-intensity industries in manufactured exports was higher than in such advanced countries in Europe as France and Germany (table 5.4).

What role, if any, did the affiliates of U.S. and Japanese companies play in these transformations? From 1977 to 1995, the region's dependence on U.S. affiliates for exporting, never large, declined. The share of U.S. affiliates in total manufactured exports declined from 7 to about 5.5 percent. In 1977, U.S. affiliates accounted for more than 4 percent of East Asian exports only in chemicals and machinery, concentrated in a share of more than a third in electrical machinery. By 1995, the two machinery industries were the only ones with U.S. affiliate shares over 4 percent (table 5.5). The role of U.S. affiliates in the region's exports shrank substantially in both chemicals and electrical machinery, but grew in nonelectrical machinery to 18 to 20 percent. These changes can also be seen in the shares of U.S. affiliates in the growth of exports, large in both machinery industries in the first period, from 1977 to 1982, around 15 and 25 percent, but after that concentrated in the nonelectrical machinery sector. In that industry,

Table 5.4 **R&D Intensities of Manufacturing Export Industries: Developing Countries in East Asia, the United States, Japan, and Europe**

	1977			1995		
Country	Low[a]	Medium	High[b]	Low[a]	Medium	High[b]
Hong Kong	53	34	14	40	33	27
Indonesia	93	5	3	74	17	9
Korea	69	20	11	32	40	28
Malaysia	82	6	12	26	27	47
Philippines	88	10	2	53	18	29
Singapore	36	35	28	13	25	62
Taiwan	60	27	12	31	33	36
Thailand	88	7	5	45	27	28
Japan	28	57	15	11	54	35
United States	25	56	19	23	44	33
Germany	27	61	12	25	56	19
France	38	50	12	36	41	23
United Kingdom	29	57	14	26	47	27

Source: NBER World Trade Database (1997).

[a]Food; metals; textiles and apparel; leather and leather products; paper, pulp, etc.; other paper and allied products; printing and publishing; lumber, wood, and furniture; glass products; and stone and clay products.

[b]Drugs; office machinery and computers; communication equipment except radio and TV; electronic components; other electrical machinery; aircraft; and instruments.

Table 5.5 **Share of U.S. MOFA Exports[a] in Total Exports from Eight East Asian Countries,[b] 1977–95 (percent)**

Industry	1977	1982	1989	1995
Foods	3.1	0.7–1.6	1.8	3.1[c]
Chemicals	9.8	4.1	6.2	3.2
Metals	2.2	0.7	1.7	1.4
Nonelectrical machinery	10.6	12.2	19.2	19.5
Electrical machinery	36.3–37.2	29.3	11.9	5.6
Transport equipment	1.8	3.9	3.1	1.2
Other manufacturing	1.4–1.6	0.7	0.8	1.0[c]
Total[c]	7.1	6.3–6.4	5.6	5.6

Source: Appendix tables 5A.1 and 5A.2.

[a] From developing Asia as a whole, excluding the Middle East.

[b] Excludes petroleum and coal products.

[c] 1995 MOFA export data include New Zealand.

U.S. affiliates still accounted for about 20 percent of export growth in 1989–95, but the U.S. affiliate share was below 6 percent in the other broad industry groups.

These broad industry group categories and aggregations of countries conceal differences among individual industries and individual countries. Many of these are hidden in the published data by suppression rules, but for a few industries we can compare total sales, including both exports and local sales, by U.S. affiliates in Asian countries other than Japan and Australia, but including New Zealand, with total exports by the eight East Asian countries. A high ratio of affiliate sales to exports could mean that the industry is dominated by the U.S. affiliates or it could mean that the U.S. affiliates are producing for sale in the host country rather than for export. The available information on these affiliate sales ratios by industry is shown in table 5.6. The high ratio for soaps, cleansers, and toilet goods, far over 100 percent, indicates that U.S. affiliates in this industry focus on host country markets rather than export markets. Within electrical machinery, the U.S. affiliates' importance is concentrated in electronic components and accessories.

Japanese affiliates accounted for a little less of Southeast Asia's exports than U.S. affiliates in each of the years for which we can make a comparison, through 1989, and their share of the region's exports also declined. After that, however, their exports and their shares of the region's exports rose sharply through 1995, considerably surpassing those of U.S. MOFAs (table 5.7). The major differences among industries were that Japanese affiliates were a negligible factor in exports of nonelectrical machinery, the industry in which U.S. affiliates were most important as exporters in 1995, but were more important than U.S. affiliates in exports of every other

Table 5.6 **United States MOFA Sales and Sales Relative to Region Exports of Developing Asian Countries in Eleven Individual Industries, 1995**

Industry	Affiliate Sales (million $)	Affiliate Sales as Share of Region Exports[a] (%)
Chemicals		
Industrial chemicals	2,245	6.9
Drugs	1,693	77.7
Soaps, cleansers, and toilet goods	3,167	174.0
Agricultural and other chemicals	1,511	14.5
Electrical machinery		
Household appliances, audio, video, etc.	≤6,333	≤7.5
Electronic components and accessories	15,910	21.7
Electronic and other electrical equipment n.e.c.	≥361	≥1.3
Other manufacturing		
Lumber, wood, and furniture	418	2.6
Printing and publishing	554	26.2
Misc. plastic products	1,060	9.7
Instruments and related products	648	3.0

Sources: Appendix table 5A.1 and U.S. Department of Commerce (1998, table III.E.4).
[a]Region exports are the total of eight East Asian developing countries.

Table 5.7 **Share of Japanese Manufacturing Affiliate Exports in Total Exports from East Asian Countries (percent)**

	Ramstetter			MITI: NIE-4 and ASEAN-4	
	Asia		ASEAN-5[a] and NIEs:		
Industry Group	1977	1989	1989	1989	1995[b]
Foods	4.2	1.3	1.5	1.7	4.8
Chemicals	5.4	4.1	4.1	4.7	6.0
Metals	2.4	3.6	3.5	4.0	3.0
Nonelectrical machinery	2.8	1.7	1.7	1.9	2.2
Electrical machinery	14.4	12.5	12.3	14.1	16.7
Transport equipment	9.6	4.5	5.3	6.1	7.4
Other manufacturing	6.0	0.9	1.0	1.5	3.6
Textiles and apparel	7.5	0.8	0.8	0.9	1.9
Instruments	4.5	1.0	1.1	6.6	10.1
Other manufacturing				1.2	3.6
Total	6.5	4.0	4.0	4.8	7.2

Sources: Ramstetter (1993, table 4) and appendix tables 5A.1 and 5A.5.
[a]Includes Brunei.
[b]Excludes petroleum and coal products.

industry group, particularly transport equipment and electrical machinery. The original Japanese share in textile and apparel exports almost vanished between 1977 and 1989.

The region's dependence on U.S. and Japanese affiliates together as sources of exports declined between 1977 and 1989 from about 13.5 to 10.5 percent and then rose again to almost 13 percent with the large growth in exporting by Japanese affiliates. The combined U.S. and Japanese affiliate shares fell in four or five of the seven industry groups, most notably in electrical machinery, where the affiliates were responsible for over half of exports in 1977 but only 22 percent in the mid-1990s, indicating some maturing of the domestic industry. The outstanding exception was nonelectrical machinery, where the affiliate share grew to over 20 percent by 1989 and remained close to that level in the next six years. Thus, at the regional level, there seems to have been some growing out of dependence on foreign affiliates, except in the case of U.S. affiliates in nonelectrical machinery, mainly involved in computer-related products.

5.4 Production and Exports in Individual Countries

Although East Asia has been treated here so far mainly as a unit, there are large differences among the countries. A separation by country gives a picture of the differences and also provides a larger number of observations.

Singapore has been the country most dependent on U.S. affiliates as exporters, with their share close to 20 percent in 1977 and 1995 (appendix tables 5A.6–5A.10). The Philippines are next, still at about 7 percent, and in Malaysia these shares were high in 1982 but fell sharply after that. In Hong Kong and Taiwan, and even more in Indonesia and Korea, U.S. affiliate shares in manufactured exports were low and falling, although U.S. affiliates were important as exporters in Indonesia's petroleum industry, not included in the manufacturing totals here.

The great importance of U.S. affiliates in the electronics industry, especially in the early stages of development of the industry, stands out in the comparison of tables 5A.7 through 5A.10 with table 5A.6. At the first appearance of the industry in the data here, which does not mean the beginning of the industry itself for the earlier entrants, the shares of U.S. affiliates are very high. They range from 97 percent in the Philippines (ignoring the anomalous 1982 ratio, which shows the affiliates exporting almost twice the national total), to three-quarters in Malaysia and Thailand in 1982 and over half in Singapore and close to 30 percent in Hong Kong and Taiwan in 1977. Only Indonesia and Korea show no such high ratios, and Indonesia hardly entered the industry. After those initial high ratios, which suggest that U.S. firms were the initiators of the industries in these countries, the role of U.S. affiliates diminished sharply in the most success-

ful exporting countries, to 3 percent in Hong Kong, 6 percent in Singapore, and 7 percent in Taiwan.

On a smaller scale, the chemical industry went through a similar evolution, although the U.S. affiliate shares of exports were never as high and the pattern was not as consistent. The shares did decline from 12 to 3.5 percent in Hong Kong, from 18 to 3 percent in Taiwan, from 27 to 1.5 percent in Indonesia, from 8 to 1.5 percent in Malaysia, and from 42 to 5 percent in the Philippines. In this case also, affiliates may have been teachers with apt students.

The major exception to the pattern of receding importance of U.S. affiliates as exporters is the nonelectrical machinery industry in Singapore. The industry was already an important exporter in 1977, and the share of U.S. affiliates in 1982, the first year we can calculate it, was over 30 percent. That share grew to 37 and 45 percent in 1989 and 1995 even as the industry's share in Singapore's exports grew steadily from 11 percent in 1977 to over a third in 1995. In the last period, U.S. affiliates accounted for almost half of Singapore's export growth in this industry.

The declining role of affiliates in the region's exports does not necessarily mean that there were similar declines in their role in production. As their export role was declining, U.S. affiliates were being naturalized, in the sense that they were selling more of their production in host country markets (appendix tables 5A.7–5A.10). The overall export-sales ratios for U.S. manufacturing affiliates fell in six out of the seven countries for which they could be calculated between 1977 and 1995 and also, more often than not, in individual industry groups within countries. Shifts toward host country markets over time were more common than shifts toward export markets in each industry in each period in each country, wherever data were available. That predominance suggests that production for export preceded production for host country markets on the part of U.S. MNEs. Perhaps the MNEs were more knowledgeable about export markets than about host country markets or perhaps host country markets did not develop until after production for export had begun. The export production itself may have stimulated the growth of host country markets in general or in the same industries.

Japanese manufacturing affiliates in East Asia have generally been less export oriented than U.S. affiliates. About a third of their sales were outside host countries in 1977 (tables 5.1 and 5.2), as compared with 57 percent for U.S. affiliates. In 1995, the export-sales ratio for U.S. affiliates was down to 54 percent (appendix table 5A.2), and those for Japanese affiliates were up to 43.5 percent in the NIEs and 38 percent in the ASEAN-4 (appendix table 5A.4). Thus Japanese affiliates have become a little more like U.S. affiliates as time has passed. Among the major industries, Japanese affiliates were much less export oriented in nonelectrical machinery

than U.S. affiliates in 1995 but had become considerably more export oriented in electrical machinery.

Some of the country studies in Dobson and Chia (1997) offer a closer look at trade-investment relations in Southeast Asia, particularly in the two machinery industries. In Singapore, for example, in a category called "electronic products and accessories," which encompasses most of the two machinery groups in our tables, foreign affiliates accounted for almost 90 percent of the capital. Over 80 percent of sales were exports, and they constituted almost two-thirds of Singapore's domestic exports of manufactures in 1992; (Chia 1997). U.S. and European affiliates were particularly export oriented; each group sent about half its exports to its home region (Chia 1997, table 2.8). Japanese affiliates, more involved in consumer electronics, sold the highest proportion locally among all the foreign-owned operations. Chia concluded that the data demonstrate "differences in U.S. and Japanese corporate strategies for offshore production, the former to supply the home and third-country markets, the latter to supply largely the host and third-country markets" (1997, 449).

A study of a sample of foreign-owned firms in Taiwan by Tu (1997) covering electronics and chemical firms did not find such large differences in export behavior between U.S. and Japanese affiliates as in the Singapore study but did note two points that help to explain aggregate behavior. One is the effect of the age of an affiliate. Younger affiliates relied much more than older affiliates on their home markets; as an affiliate matured, and perhaps as the local market matured at the same time, it tended to sell more in its local market. This process could be one explanation for the similar tendency visible in the aggregate data. A more disturbing finding in this study is that affiliates reported as sales to parents products that were actually shipped to third countries. Such a practice would put into question the reliability of the division between exports to home countries and exports to third countries (Tu 1997, 75).

The study of foreign firms in Hong Kong in the same volume, also based on a nonrandom sample survey, suggested large differences between U.S. and Japanese firm behavior, as was reported for Singapore (Chen and Wong 1997). Japanese affiliates were more tightly tied to their parents in the sense that more of their exports went to them, while U.S. affiliates sold somewhat more to other affiliates and much more to unrelated firms. Japanese affiliates were also more dependent on their parents for "the supply of capital, machinery, components, and parts" (Chen and Wong 1997, 91). One gets the impression that U.S. firms have gone further than Japanese firms in the division of labor among affiliates.

In Thailand, the differences between U.S. and Japanese firms do not appear as large (Ramstetter 1997). Both are focused substantially on their home markets, although that dependence has been rising for Japanese

firms and declining for U.S. affiliates. Japanese affiliates are much more important than U.S. affiliates, accounting for 22 percent of Thai exports of nonpetroleum manufactured exports, as compared with 8 percent for U.S. affiliates. Exports are concentrated in electrical and computing machinery (nonelectrical machinery in the aggregate data), especially on the part of U.S. affiliates (Ramstetter 1997, 122–23).

Japanese affiliates in the electrical and electronics industries in Malaysia differed from U.S. and European affiliates in being to a larger extent producers of final products, and much less exporters to home markets (Sieh and Yew 1997, 138–39). U.S. affiliates purchased few inputs from unrelated suppliers in third countries but much more from affiliates in those countries, the main reason being that "U.S. affiliates as semiconductor producers were higher up on the value-added chain and could use imports only from their proprietary sources whereas Japanese firms turning out intermediate products half way down the value-added chain had more procurement options" (140). One U.S. firm was described as having "a no duplication policy, which divided production activities among affiliates in different locations to avoid duplicating the output of another affiliate" (140).

In a study of the location of export production by U.S. and Japanese MNEs Kumar (1997) distinguished between production for export to the MNEs' home markets and production for export to the rest of the world and found some differences in determinants for the two types and between Japanese and U.S. firm practices. Although the study is not specific to FDI in Asia, Kumar attempted to measure the attractiveness of the "first generation of NIEs" and of a "second tier," the ASEAN-4 countries and China. One conclusion is that the first-generation NIEs were favored by U.S. MNEs over other locations for production for the U.S. market in 1982 and 1989 but that they had lost their advantage by 1994. "Favored" in that study means favored beyond the degree expected from the measured determinants of export production location. These same countries were attractive to Japanese MNEs in 1989, but not before, and they had lost that advantage by 1994. The explanation offered was that export-oriented investment was discouraged by the combination of "rising wages, appreciating currencies, loss of GSP [Generalized System of Preferences] benefits and MFA [Multi-Fiber Arrangement] quotas." At the same time, coefficients representing membership in the "second tier" in equations explaining exports to U.S. and Japanese markets were increasing over time. Among industry groups, these trends were clearest, and the coefficients most frequently statistically significant, for U.S. affiliates in the electrical machinery industry, confirming the impression from the data reported here.

Kumar also suggested that there are differences in the behavior of U.S. and Japanese affiliates, as appears to be the case in our data here. His interpretation was that "U.S. MNEs tend to relocate production of inter-

mediate products for home consumption, whereas Japanese MNEs seem to shift production of more finished goods in relatively simpler technology industries. The offshore production by U.S. MNEs would seem from this more of 'globalized production' which links subsidiaries in home and host countries vertically" (Kumar 1997, 33–34). This picture of the close relationships between parents and affiliates within U.S. firms fits with the finding in Lipsey (1998) that exports to individual markets from U.S. affiliates in Asian countries are larger when parent exports to affiliates in those markets are also large. This phenomenon was particularly noticeable in the electronic component and accessory industry, part of the electrical machinery industry reported on here.

5.5 Conclusions

The composition of manufacturing production and of the manufactured exports of East Asian countries has been completely transformed over the past twenty years or so. To varying degrees, these countries went from a pattern of exports within manufacturing fairly typical of developing countries to one much more like that of highly developed countries. In some cases they have moved quite far up the scale into R&D-intensive industries, although not necessarily in the more sophisticated sectors of these industries. Foods, textiles and apparel, and "other manufacturing," mainly labor-intensive products of industries of low R&D intensity, declined from almost 68 percent of exports to 38 percent, and exports from the chemical and machinery industries rose from 21 percent to more than half of exports. In all the countries, the share of exports from R&D-intensive industries at least doubled and in most cases grew much more than that.

It would be hard to explain these changes by the initial comparative advantages of these countries in the late 1960s and early 1970s. The decisions to welcome foreign firms as direct investors, taken at different times and to different degrees among the countries, seem to have been a crucial element in these developments. Foreign firms, particularly American firms at the beginning, saw a way to integrate these countries into worldwide networks of production, first in electronics and then in aspects of the computer industry. Foreign firms supplied the technology and the links to other parts of the production networks that completed the set of resources necessary for the growth of these industries. The most typical pattern seemed to be the establishment of affiliates almost completely for export production, followed by the development of these affiliates over time to produce more for domestic sale and by the growth of production by non-affiliated host country firms in the same or related industries.

Although this is a general description, each country has its own story. Indonesia does not fit the pattern except a bit for chemicals. Korea looks to be a country that transformed almost entirely without inward FDI,

although chapter 9 in this volume, by Kim and Hwang, suggests that this source was more influential than is visible from our data. The smallest countries have been, as we would expect, most dependent on trade for the growth of these industries.

U.S. and Japanese firms seem to have played somewhat different roles. U.S. firms were earlier major investors, and their investments and affiliate exports were distributed across industries along the lines of U.S. comparative advantage, while the industry distribution of Japanese affiliate production and exports was closer to that of the host countries. Thus U.S. investments initially did more to drive changes in the composition of their host countries' production and trade. Over time, however, U.S. and Japanese affiliates have become more alike in transmitting home country technologies and comparative advantages, U.S. firms more in computer equipment, Japanese firms more in motor vehicles, and both in electronics.

It is a little difficult to match the growth of exports by foreign-owned affiliates in these countries with total export growth. Of the two fast-growing machinery sectors, in electrical machinery, U.S. and Japanese affiliates alone were responsible for half of exports in 1977 and their share diminished in the next twenty years. In nonelectrical machinery, mainly computers and accessories and parts, the share of the two home countries' affiliates, chiefly U.S. affiliates, increased substantially between 1977 and 1995.

By 1995, the two machinery industries' exports were 30 percent or more of total manufactured exports in seven out of the eight countries we cover here. The exception is Indonesia, where "investments in export-oriented electronic components by multinational enterprises (MNEs) failed to take off . . . because of the lack of a conducive investment climate between 1973 and 1985" (Pangestu 1997, 204). Two semiconductor investments that had been established by major American firms were closed in 1985–86. In the seven other countries, except for Korea, which seems to have managed without much inward FDI, the earliest data for the electrical machinery industry show large initial shares in exports for U.S. affiliates alone (we do not have individual country data for Japanese affiliates). The large early affiliate shares of exports were followed by declines in every case. The data seem to say that U.S. affiliates were extremely important in the initial stages of this now major industry for the region but have been replaced to some extent, at least in their export roles, by firms from other home countries, especially Japan, and by local firms. While their role in exports was declining, U.S. affiliates were shifting their sales to their host country markets to some extent.

A somewhat similar pattern of initially high U.S. affiliate shares in exports, declining in later years, can be observed in the chemical industry, although the shares were never as high as in electrical machinery, and U.S.

affiliates in chemicals were always much more oriented toward their host country markets than those in electrical machinery.

The major exception to this trend was the nonelectrical machinery industry, mainly computers and parts. In this case, the share of U.S. affiliates in the region's exports grew over time. The industry was particularly important as an exporter in Taiwan, where it was a larger exporter than electrical machinery, and in Singapore, where it was a little smaller. U.S. and Japanese data are not available in sufficient industry detail to test whether what appear to be differences in behavior are explainable by the detailed industry composition of their investments, and the data that do exist are undermined by differences in consolidation rules, by the extent of transshipments with little value added, and by many other problems. Detailed industry composition does seem to be the explanation in many individual cases, as in the distinction between consumer electronics and semiconductor specializations in individual countries within the electrical machinery industry, which seems to explain the extent of exporting relative to host country sales.

The declining share of U.S. and Japanese affiliates in exports of most manufacturing industries in East Asia does not reflect any withdrawal from the region or decline in affiliate activity. Exports by U.S.-owned affiliates grew by almost twelve times their original level between 1977 and 1995 and by 20 percent in 1995 alone. Local sales in host countries grew even faster. Exports by Japanese affiliates grew by seventeen times their original value during the same period and more than tripled between 1989 and 1995. The declines in affiliate shares of exports over time reflect the enormous growth of local firms and of other countries' affiliates, particularly the former, and local firm growth may itself have been partly a result of the growth of U.S. and Japanese affiliates.

Appendix

Table 5A.1 **Total Manufacturing Exports from Eight East Asian Developing Countries, by BEA Industry (thousand dollars)**

BEA Industry	Eight East Asian Countries				China
	1977	1982	1989	1995	1995
Foods, beverages	5,821,264	9,148,580	18,842,283	32,302,726	8,382,957
Grain and bakery products	973,120	1,325,249	2,550,353	3,294,523	242,055
Beverages	56,719	147,902	521,524	1,640,030	377,354
Other foods	4,791,425	7,675,429	15,770,406	27,368,173	7,763,548
Metals	3,134,546	7,931,640	19,235,083	41,959,157	11,487,855
Primary ferrous metals	522,892	2,945,840	6,397,892	12,016,614	5,150,802
Primary nonferrous metals	696,045	2,486,644	6,982,512	17,013,441	2,629,008
Fabricated metals	1,915,609	2,499,156	5,854,679	12,929,102	3,708,045
Chemicals	1,420,428	4,662,246	14,378,199	46,840,356	9,038,614
Drugs	238,851	435,684	851,535	2,179,272	1,576,508
Soaps etc.	100,061	193,635	715,352	1,820,308	255,190
Agricultural chemicals	148,795	421,328	678,032	1,116,177	324,808
Industrial chemicals	657,697	2,879,271	9,119,940	32,441,071	5,673,745
Other chemicals	275,024	732,328	3,013,340	9,283,528	1,208,363
Nonelectrical machinery	1,619,786	4,543,134	33,371,652	109,901,639	8,517,448
Farm machinery	7,274	20,322	62,257	105,436	30,894
Construction machinery	170,857	622,518	1,550,159	4,539,509	615,859
Office machinery and computers	287,088	1,289,448	20,421,918	75,304,945	4,314,138
Other nonelectrical machinery	1,154,567	2,610,846	11,337,318	29,951,749	3,556,557

Electrical machinery	5,449,590	15,308,265	62,903,273	186,338,138	19,918,362
Household appliances	379,354	1,473,990	5,113,634	8,920,646	2,449,297
Communication equipment	2,690,290	6,748,263	28,890,560	75,412,819	10,109,288
Electronic components	1,496,885	4,642,779	19,029,095	73,297,736	1,290,004
Other electrical machinery	883,061	2,443,233	9,869,984	28,706,937	6,069,773
Transport equipment	1,429,584	6,046,633	10,786,016	30,201,357	4,019,598
Motor vehicles and equipment	275,738	854,101	4,119,487	13,879,435	770,761
Other transport equipment	1,153,846	5,192,532	6,666,529	16,321,922	3,248,837
Other manufacturing	22,181,030	46,434,273	129,468,588	219,145,317	73,991,027
Tobacco	31,602	141,180	1,123,437	2,710,042	881,111
Textiles and apparel	10,681,181	21,990,140	58,399,709	88,139,101	37,756,419
Leather and leather goods	1,938,555	4,992,661	15,034,178	26,440,852	9,951,212
Pulp and paper	104,362	272,341	1,352,956	4,955,717	398,102
Paper products	163,703	229,285	943,937	2,329,828	544,110
Printing and publishing	141,183	264,745	863,964	2,112,456	174,366
Rubber products	283,286	669,848	1,933,883	4,012,348	693,181
Plastic products	381,948	1,037,387	4,815,120	10,955,936	2,850,202
Lumber, wood, and furniture	3,607,149	5,027,258	11,905,881	16,192,271	2,309,235
Glass products	114,405	304,852	959,950	2,256,762	651,440
Nonmetallic minerals	496,230	1,241,159	2,594,052	3,889,019	2,308,794
Instruments	1,517,636	3,398,382	9,641,167	21,875,646	4,337,914
Other manufacturing	2,719,790	6,865,035	19,900,354	33,275,339	11,134,941
Total	41,056,228	94,074,771	288,985,094	666,687,690	135,355,861

Source: NBER World Trade Database (1997).
Note: BEA = U.S. Bureau of Economic Analysis.

Table 5A.2 **Estimate of U.S. Manufacturing MOFA Sales and Exports in Developing Asia (million dollars)**

Industry Group	1977	1982	1989	1995
Sales				
Foods	548–612	873	1,330	3,866[a]
Chemicals	911	1,578	3,020	8,297
Metals	104	177	448[a]	1,273
Nonelectrical machinery	243	796	7,082	25,996
Electrical machinery	2,306	5,099	9,658	21,472
Transport equipment	195–212	417–589	1,718	2,056
Other manufacturing	754–801	821–1,026	2,354	7,362[a]
Total	5,125	9,933	26,008	69,230
Exports				
Foods	179	65–150	340	996[a]
Chemicals	139	189	891	1,518
Metals	69	53	67–397	581
Nonelectrical machinery	172	552–629	6,412	21,479
Electrical machinery	1,978–2,025	4,478	7,495	10,470
Transport equipment	26	234	333	357
Other manufacturing	311–358	326	990	2,126[a]
Total	2,921	5,954–6,024	16,095	37,493

Sources: U.S. Department of Commerce (1981, tables III.F5, III.H3, III.H4, III.H5; 1985, tables III.D3, III.E3, III.E4, III.E5; 1992, tables III.E3, III.F4, III.E7, III.F8; 1998, tables III.E3, III.F7).

[a]Includes New Zealand.

Table 5A.3 Estimate of Exports by Japanese Manufacturing Affiliates in NIE-4 and ASEAN-4, 1989 (million yen)

Country Group and Industry	Sales Reported by Destination				Total Sales	Estimated Exports[a]
	In Local Markets	Exports to		Total		
		Japan	Other			
NIE-4						
Foods	55,737	9,101	6,268	71,106	72,423	15,654
Chemicals	163,039	27,453	31,897	222,389	258,903	69,095
Metals						
Iron and steel	30,505	3,150	6,725	40,380	46,600	11,396
Nonferrous metals	196,465	1,975	26,109	224,549	231,924	29,006
Nonelectrical machinery	65,431	34,656	47,484	147,571	156,549	87,137
Electrical machinery	404,331	331,133	355,522	1,090,986	1,563,046	983,765
Transport equipment	191,890	8,569	36,156	236,615	367,415	69,449
Other manufacturing (total excl. petroleum and coal products)	290,172	66,029	52,059	408,260		159,573
Textiles	79,016	14,301	11,701	105,018	115,464	28,588
Pulp, paper, and products	3,303	128	1,494	4,925	4,925	1,622
Instruments	71,299	27,991	14,664	113,954	176,482	66,060
Petroleum and coal products	607			607	607	0
Miscellaneous	136,554	23,609	24,200	184,363	244,107	63,302
Total manufacturing	1,398,177	482,066	562,220	2,442,463	3,238,445	1,425,074
Excl. petroleum and coal products	1,397,570	482,066	562,220	2,441,856	3,237,838	1,425,074

(*continued*)

Table 5A.3 (continued)

Country Group and Industry	Sales Reported by Destination				Total Sales	Estimated Exports[a]
	In Local Markets	Exports to Japan	Exports to Other	Total		
ASEAN-4						
Foods	5,585	5,882	9,451	20,918	39,342	28,838
Chemicals	108,655	9,049	9,609	127,313	161,471	23,664
Metals						
Iron and steel	44,258	387	234	44,879	83,083	1,150
Nonferrous metals	41,797	37,207	21,433	100,437	112,135	65,470
Nonelectrical machinery	42,361	301	543	43,205	45,154	882
Electrical machinery	106,628	53,508	145,217	305,353	366,308	238,395
Transport equipment	544,685	4,829	15,604	565,118	584,118	21,120
Other manufacturing (total excl. petroleum and coal products)	241,122	48,368	50,554	390,044		103,312
Textiles	84,086	18,268	22,021	124,375	130,312	42,212
Pulp, paper, and products	1,155	4,528	2,350	8,033	8,033	6,878
Instruments	1,383	4,334	15,487	21,204	22,945	21,448
Petroleum and coal products	84			84	84	0
Miscellaneous	154,498	21,238	10,696	186,432	191,334	32,774
Total manufacturing	1,135,175	159,531	252,645	1,547,351	1,744,319	482,830
Excl. petroleum and coal products	1,135,091	159,531	252,645	1,547,267	1,744,235	482,830

Source: Data supplied by Ministry of International Trade and Industry from its *Overseas Business Activities of Japanese Companies: The 1996 Basic Survey of Overseas Business Activities,* no. 6 (Tokyo, 1998).

Note: NIE-4 comprises Hong Kong, Korea, Singapore, and Taiwan. ASEAN-4 comprises Indonesia, Malaysia, the Philippines, and Thailand.

[a]Estimated by multiplying reported exports by the ratio of sales by all firms reporting sales to sales by firms reporting exports.

Table 5A.4 Estimate of Exports by Japanese Manufacturing Affiliates in NIE-4 and ASEAN-4, 1995 (million yen)

Country Group and Industry	Sales Reported by Destination				Total Sales	Estimated Exports[a]
	In Local Markets	Exports to		Total		
		Japan	Other			
NIE-4						
Foods	140,143	11,193	16,722	168,058	259,870	43,165
Chemicals	105,792	7,568	89,986	203,346	391,538	187,838
Metals						
Iron and steel	61,165	2,692	10,155	74,012	82,088	14,249
Nonferrous metals	45,827	5,119	19,446	70,392	97,059	33,871
Nonelectrical machinery	130,972	67,811	62,505	261,288	369,535	184,304
Electrical machinery	817,658	406,712	578,192	1,802,562	2,792,722	1,525,919
Transport equipment	540,678	10,821	31,060	582,559	757,806	54,480
Other manufacturing (total excl. petroleum and coal products)	269,796	140,858	120,794	531,448		343,922
Textiles	64,335	10,084	17,126	91,545	197,248	58,628
Pulp, paper, and products	4,261	133	32	4,426	4,426	165
Instruments	46,141	102,509	37,739	186,389	219,808	165,394
Petroleum and coal products	7,270	49,400	45,392	102,062	124,851	115,958
Miscellaneous	155,059	28,132	65,897	249,088	317,184	119,735
Total manufacturing	2,119,301	702,174	974,252	3,795,727	5,614,135	2,503,705
Excl. petroleum and coal products	2,112,031	652,774	928,860	3,693,665	5,489,284	2,387,747

(*continued*)

Table 5A.4 (continued)

Country Group and Industry	Sales Reported by Destination				Total Sales	Estimated Exports[a]
	In Local Markets	Exports to Japan	Exports to Other	Total		
ASEAN-4						
Foods	34,150	22,762	52,471	109,383	151,179	103,980
Chemicals	229,804	11,854	40,229	281,887	402,790	74,422
Metals						
Iron and steel	135,886	2,745	4,407	143,038	206,840	10,342
Nonferrous metals	97,779	24,872	32,317	154,968	166,417	61,414
Nonelectrical machinery	54,072	22,081	8,925	85,078	118,811	43,300
Electrical machinery	446,731	551,024	523,113	1,520,868	1,984,968	1,401,915
Transport equipment	1,104,801	30,190	67,336	1,202,327	1,920,034	155,742
Other manufacturing (total excl. petroleum and coal products)	355,778	108,349	132,266	596,393		273,038
Textiles	116,377	19,253	69,984	205,614	225,886	98,035
Pulp, paper, and products	27,161	5,500	2,626	35,287	39,110	9,006
Instruments	24,533	24,923	6,979	56,435	76,481	43,234
Petroleum and coal products	3,702		20	3,722	3,722	20
Miscellaneous	187,707	58,673	52,677	299,057	329,709	122,763
Total manufacturing	2,462,703	773,877	861,084	4,097,664	5,625,947	2,124,173
Excl. petroleum and coal products	2,459,001	773,877	861,064	4,093,942	5,622,225	2,124,153

Source: See table 5A.3 source.

[a]Estimated by multiplying reported exports by the ratio of sales by all firms reporting sales to sales by firms reporting exports.

Table 5A.5 **Estimated Exports by Japanese Manufacturing Affiliates in Asia, 1977–95 (million dollars)**

Industry Group	Ramstetter: Asia 1977	Ramstetter: Asia 1989	Ramstetter: ASEAN-5[a] and NIEs: 1989	MITI: NIE-4 and ASEAN-4 1989	MITI: NIE-4 and ASEAN-4 1995
Foods	245	237	282	322.5	1,564.4
Chemicals	77	595	585	672.4	2,788.2
Metals	76	684	677	775.7	1,274.5
Nonelectrical machinery	45	555	558	638.0	2,419.8
Electrical machinery	787	7,873	7,741	8,858.8	31,127.3
Transport equipment	137	490	577	656.5	2,235.0
Other manufacturing (total)	1,322	1,207	1,250	1,905.5	6,559.2
Textiles and apparel	803	465	448	513.2	1,665.6
Instruments	519	742	802	634.3	2,218.0
Other manufacturing				758.0	2,675.6
Total	2,689	11,640	11,669	13,829.4	47,968.3

Sources: Ramstetter (1993) and tables 5A.3 and 5A.4.

[a]Includes Brunei.

Table 5A.6 **Exports of Manufactures[a] from Eight East Asian Countries by Industry Group, 1977–95 (thousand dollars)**

Country and Industry Group	1977	1982	1989	1995
Hong Kong				
Foods	256,802	662,472	1,882,668	3,582,198
Chemicals	348,964	828,680	4,026,423	11,383,580
Metals	255,766	693,988	2,609,562	8,053,573
Nonelectrical machinery	495,528	1,057,120	5,474,508	15,210,030
Electrical machinery	1,213,898	3,291,700	13,863,662	38,805,902
Transport equipment	74,193	481,051	654,222	2,646,318
Other manufacturing	6,835,003	14,235,886	42,949,392	88,915,715
Total	9,480,154	21,250,897	71,460,437	168,597,316
Indonesia				
Foods	465,239	482,282	1,480,611	3,186,468
Chemicals	73,437	102,084	594,328	1,964,915
Metals	190,621	271,415	1,327,256	1,497,760
Nonelectrical machinery	17,243	23,681	40,079	854,940
Electrical machinery	32,577	152,287	184,387	2,582,789
Transport equipment	10,836	49,998	50,953	498,228
Other manufacturing	1,271,806	1,852,418	8,385,785	18,638,042
Total	2,061,759	2,934,165	12,063,399	29,223,142
Korea				
Foods	951,604	1,093,836	2,154,627	2,615,023
Chemicals	237,418	775,222	2,421,485	10,017,341
Metals	955,248	3,426,428	6,379,956	12,926,587
Nonelectrical machinery	124,994	519,754	4,774,447	11,676,193
Electrical machinery	1,092,561	2,415,386	14,556,488	38,111,603
Transport equipment	699,307	3,429,626	5,737,720	16,281,059
Other manufacturing	5,544,306	10,512,615	26,642,572	29,879,132
Total	9,605,438	22,172,867	62,667,295	121,506,938
Malaysia				
Foods	958,905	1,710,206	2,585,565	5,219,501
Chemicals	89,057	191,460	964,498	3,351,459
Metals	743,853	705,840	1,006,563	2,339,194
Nonelectrical machinery	54,727	181,462	905,575	9,457,032
Electrical machinery	341,482	1,730,515	7,015,158	28,958,402
Transport equipment	36,139	92,722	459,995	2,098,706
Other manufacturing	1,429,386	2,850,005	6,363,782	13,334,417
Total	3,653,549	7,462,210	19,301,136	64,758,711

Table 5A.6 (continued)

Country and Industry Group	1977	1982	1989	1995
Philippines				
Foods	627,074	907,574	1,224,237	1,674,770
Chemicals	54,255	112,721	301,423	352,365
Metals	92,676	97,254	557,107	1,231,200
Nonelectrical machinery	10,787	24,787	287,288	503,733
Electrical machinery	28,986	132,519	1,509,044	2,644,959
Transport equipment	13,809	23,907	46,267	239,913
Other manufacturing	576,554	1,099,154	2,867,666	2,705,713
Total	1,404,141	2,397,916	6,793,032	9,352,653
Singapore				
Foods	465,869	879,931	1,393,198	2,498,570
Chemicals	293,950	1,773,415	3,175,826	6,993,314
Metals	218,151	900,026	1,894,330	4,390,085
Nonelectrical machinery	453,116	1,446,278	9,825,956	35,410,739
Electrical machinery	1,171,020	3,312,026	11,191,121	39,716,887
Transport equipment	395,719	789,503	1,545,859	2,517,585
Other manufacturing	1,069,305	2,364,878	6,393,573	12,871,241
Total	4,067,130	11,466,057	35,419,863	104,398,421
Thailand				
Foods	1,033,687	2,012,206	5,123,919	9,357,212
Chemicals	26,303	73,802	403,013	2,348,829
Metals	255,076	431,551	716,735	1,837,748
Nonelectrical machinery	19,571	33,687	1,435,820	7,560,101
Electrical machinery	66,745	349,718	1,883,851	9,616,727
Transport equipment	4,232	56,632	200,448	1,447,577
Other manufacturing	491,010	1,376,276	7,212,798	18,880,388
Total	1,896,624	4,333,872	16,976,584	51,048,582
Taiwan				
Foods	1,062,084	1,400,073	2,997,458	4,168,984
Chemicals	297,044	804,862	2,491,203	10,428,553
Metals	423,155	1,405,138	4,743,574	9,683,010
Nonelectrical machinery	443,820	1,256,365	10,627,979	29,228,871
Electrical machinery	1,502,321	3,924,114	12,699,562	25,900,869
Transport equipment	195,349	1,123,194	2,090,552	4,471,971
Other manufacturing	4,963,660	12,143,041	28,653,020	33,919,669
Total	8,887,433	22,056,787	64,303,348	117,801,927

Source: NBER World Trade Database (1997).

[a]Excludes petroleum and coal products.

Table 5A.7 **Sales, Local Sales, and Exports by U.S. Manufacturing[a] MOFAs in Eight East Asian Countries by Industry Group and Country, 1977 (million dollars)**

Industry Group	Hong Kong	Korea	Singapore	Taiwan	Indonesia	Malaysia	Philippines	Thailand
Sales								
Foods	D	44	5	D	5	D	379	33
Chemicals	122	4	D	78	58	58	270	53
Metals	D	0	50	0	4	3	D	D
Nonelectrical machinery	53	D	104	D	0	D	0	0
Electrical machinery	400	111	670	482	58	316	76	D
Transport equipment	0	0	D	D	0	D	D	0
Other manufacturing	141	D	27	48	136	D	171	67
Total	745	187	882	782	262	445	1,010	234
Local sales								
Foods	D	D	0	D	5	0	213	32
Chemicals	80	3	D	25	38	51	247	48
Metals	2	0	D	0	4	3	D	D
Nonelectrical machinery	D	2	D	1	0	0	0	0
Electrical machinery	40	D	20	40	D	D	48	D

Transport equipment	0	0	D	D	0	D	D	0
Other manufacturing	D	D	D	D	D	D	141	65
Total	145	59	60	224	155	106	750	D
Exports[b]								
Foods	0[c]	D	5	D	0	1[c]	166	1
Chemicals	42	1	2[c]	53	20	7	23	5
Metals	D	0	D	0	0	0	D	0[c]
Nonelectrical machinery	D	D	D	D	0	D	D	0
Electrical machinery	360	D	650	442	D	262–316	28	D
Transport equipment	0	0	D	D	0	1[c]	2[c]	0
Other manufacturing	D	D	D	D	D	D	30	2
Total	600	128	822	558	104	339	260	D

Source: U.S. Department of Commerce (1981, tables III.F5, III.H3, III.H4, III.H5).

Note: D = suppressed in source.

[a] Excludes petroleum and coal products.
[b] Sales minus local sales unless otherwise indicated.
[c] Sum of tables III.H4 and III.H5.

Table 5A.8 **Sales, Local Sales, and Exports by U.S. Manufacturing[a] MOFAs in Eight East Asian Countries by Industry Group and Country, 1982 (million dollars)**

Industry Group	Hong Kong	Korea	Singapore	Taiwan	Indonesia	Malaysia	Philippines	Thailand
Sales								
Foods	D	D	11	D	D	D	510	26
Chemicals	210	D	58	114	130	88	478	155
Metals	D	0	10	D	D	D	D	D
Nonelectrical machinery	92	0	536	D	3	D	D	0
Electrical machinery	641	267	1,034	820	159	1,335	335	297
Transport equipment	0	0	212	D	0	0	D	0
Other manufacturing	155	D	16	116	D	98	181	D
Total	1,135	414	1,877	1,496	484	1,618	1,678	521
Local sales								
Foods	D	D	3	D	D	D	411	D
Chemicals	145	D	16	102	D	75	454	D
Metals	D	0	2	D	D	D	D	D
Nonelectrical machinery	20	0	78	D	3	D	D	0
Electrical machinery	57	≤35[b]	43	93	50	52	92	35

Transport equipment	0	0	4	D	0	0	D	0
Other manufacturing	D	D	7	D	D	84	D	D
Total	256	148–180	154	608	306–375	299	1,233	D
Exports[c]								
Foods	0	1[d]	8	0[d]	0[d]	2[d]	99	D
Chemicals	65	0	42	12	D	13	24	D
Metals	D	0	8	D	0[d]	0[d]	D	0[d]
Nonelectrical machinery	72	0	458	D	0	8[d]	D	0
Electrical machinery	584	232[d]–264	991	727	109	1,283	243	262
Transport equipment	0	0	208	D	0	0	D	0
Other manufacturing	D	1[d]	9	D	D	14	D	6
Total	879	234[d]–266	1,723	888	109–178[d]	1,319	445	268–486

Source: U.S. Department of Commerce (1985, tables III.D3, III.E3, III.E4, III.E5).

Note: D = suppressed in source.

[a]Excludes petroleum and coal products.
[b]Total sales minus exports.
[c]Sales minus local sales unless otherwise indicated.
[d]Sum of tables III.E4 and III.E5.

Table 5A.9 **Sales, Local Sales, and Exports by U.S. Manufacturing[a] MOFAs in Eight East Asian Countries by Industry Group and Country, 1989 (million dollars)**

Industry Group	Hong Kong	Korea	Singapore	Taiwan	Indonesia	Malaysia	Philippines	Thailand
Sales								
Foods	D	289	109	245	D	D	461	89
Chemicals	250	167	523	494	156	189	590	342
Metals	D	D	89	D	4	D	0	D
Nonelectrical machinery	610	33	3,800	1,094	D	50	D	D
Electrical machinery	1,382	644	2,832	1,641	≤42	2,090	404	633
Transport equipment	D	D	226	D	0	0	0	0
Other manufacturing	1,139	338		314	D	D	D	100
Total	3,543	1,518	7,579	4,879	341	2,681	1,664	2,132
Local sales								
Foods	D	286	30	D	D	D	284	30
Chemicals	163	154	119	421	150	165	576	337
Metals	D	D	31	8	4	D	0	D

Nonelectrical machinery	142	D	171	≤365[b]	D	D	0	≤247[b]
Electrical machinery	457	130	562	605	D	286	89	D
Transport equipment	0	D	3	D	0	0	0	0
Other manufacturing	230	311	54	203	D	166	154	77
Total	1,111	933	970	2,615	≥154	678	1,103	570
Exports[c]								
Foods	D	3	79	D	1[d]	2[d]	177	59
Chemicals	87	13	404	73	6	24	14	5
Metals	D	D	68	D	0	D	0	6[d]
Nonelectrical machinery	468	D	3,629	≥729	0[d]	D	D	D
Electrical machinery	925	514	2,270	1,036	D	1,804	315	≥386
Transport equipment	D	0[d]	169	0[d]	0	0	0	0
Other manufacturing	909	27		111	D	D	D	23
Total	2,432	585	6,609	2,264	≤187	2,003	561	1,558

Source: U.S. Department of Commerce (1992, tables III.E3, III.F4, III.F7, III.F8).

Note: D = suppressed in source.

[a]Excludes petroleum and coal products.
[b]Total sales minus exports.
[c]Sales minus local sales unless otherwise indicated.
[d]Sum of tables III.F4 and III.F8.

Table 5A.10 **Sales, Local Sales, and Exports by U.S. Manufacturing[a] MOFAs in Eight East Asian Countries by Industry Group and Country, 1995 (million dollars)**

Industry Group	Hong Kong	Korea	Singapore	Taiwan	Indonesia	Malaysia	Philippines	Thailand
Sales								
Foods	106	460	110	422	90	D	909	373
Chemicals	1,025	566	1,152	1,304	405	400	1,127	826
Metals	337	28	311	56	25	116	0	183
Nonelectrical machinery	974	514	18,233	1,157	144	D	32	D
Electrical machinery	3,271	1,311	5,792	2,513	89	4,970	1,389	726
Transport equipment	86	113	300	D	D	0	0	0
Other manufacturing	1,855	1,050	512	D	D	D	436	D
Total	7,654	4,042	26,410	7,948	999	8,288	3,893	5,086
Local sales								
Foods	D	459	13	371	87	D	613	199
Chemicals	625	543	545	1,021	377	345	1,110	778
Metals	189	27	60	4	23	47	0	177
Nonelectrical machinery	252	264	2,455	125	138	D	28	D
Electrical machinery	1,995	1,022	3,238	865	45	2,230	197	226

Transport equipment	5	113	28	D	D	0	0	0
Other manufacturing	D	969	262	D	D	D	361	D
Total	4,399	3,398	6,602	4,637	829	3,389	2,309	2,157
Exports[b]								
Foods	D	1	97	51	3	D	296	174
Chemicals	400	23	607	283	28	55	17	48
Metals	148	1	251	52	2	69	0	6
Nonelectrical machinery	722	250	15,778	1,032	6	1,407[c]	4	D
Electrical machinery	1,276	289	2,554	1,648	44	2,740	1,192	500
Transport equipment	81	0	272	3[c]	0	0	0	0
Other manufacturing	D	81	250	≥207[c]	D	D	75	≥43[c]
Total	3,255	644	19,808	3,311	170	4,899	1,584	2,929

Source: U.S. Department of Commerce (1998, tables III.E3, III.F4, III.F7, III.F8).

Note: D = suppressed in source.

[a] Excludes petroleum and coal products.
[b] Sales minus local sales unless otherwise indicated.
[c] Sum of tables III.F4 and III.F8.

References

Blomström, Magnus, Irving B. Kravis, and Robert E. Lipsey. 1988. Multinational firms and manufactured exports from developing countries. NBER Working Paper no. 2493. Cambridge, Mass.: National Bureau of Economic Research, January.

Chen, Edward K. Y., and Teresa Y. C. Wong. 1997. Hong Kong: Foreign direct investment and trade linkages in manufacturing. In *Multinationals and East Asian integration,* ed. Wendy Dobson and Chia Siow Yue. Ottawa: International Development Research Centre; Singapore: Institute of Southeast Asian Studies.

Chia Siow Yue. 1997. Singapore: Advanced production base and smart hub of the electronics industry. In *Multinationals and East Asian integration,* ed. Wendy Dobson and Chia Siow Yue. Ottawa: International Development Research Centre; Singapore: Institute of Southeast Asian Studies.

Dobson, Wendy, and Chia Siow Yue, eds. 1997. *Multinationals and East Asian integration.* Ottawa: International Development Research Centre; Singapore: Institute of Southeast Asian Studies.

Kumar, Nagesh. 1997. Multinational enterprises and export-oriented industrialization in the host countries: An empirical analysis for the U.S. and Japanese affiliates. UNU/INTECH Discussion Paper no. 9704. Maastricht: United Nations University Institute for New Technologies, September.

Lipsey, Robert E. 1998. Trade and production networks of U.S. MNEs and exports by their Asian affiliates. In *Globalization, trade, and foreign direct investment,* ed. John H. Dunning. Oxford: Elsevier.

Lipsey, Robert E., Magnus Blomström, and Irving B. Kravis. 1990. R&D by multinational firms and host country exports. In *Science and technology: Lessons for development policy,* ed. Robert E. Evenson and Gustav Ranis, 271–300. Boulder, Colo.: Westview.

Lipsey, Robert E., Magnus Blomström, and Eric D. Ramstetter. 1998. Internationalized production in world output. In *Geography and ownership as bases for economic accounting,* Studies in Income and Wealth, vol. 59, ed. Robert E. Baldwin, Robert E. Lipsey, and J. David Richardson. Chicago: University of Chicago Press.

Lipsey, Robert E., and Irving B. Kravis. 1985. The competitive position of U.S. manufacturing firms. *Banca Nazionale del Lavoro Quarterly Review,* no. 153 (June): 127–54.

Mataloni, Raymond J., Jr., and Lee Goldberg. 1994. Gross product of U.S. multinational companies, 1977–91. *Survey of Current Business* 74, no. 2 (February): 42–65.

NBER World Trade Database. 1997. Cambridge, Mass.: National Bureau of Economic Research. CD-ROM.

OECD (Organization for Economic Cooperation and Development). 1998. *International direct investment statistics yearbook.* Paris: Organization for Economic Cooperation and Development.

Pangestu, Mari. 1997. Indonesia: Trade and foreign investment linkages. In *Multinationals and East Asian integration,* ed. Wendy Dobson and Chia Siow Yue. Ottawa: International Development Research Centre; Singapore: Institute of Southeast Asian Studies.

Ramstetter, Eric D. 1993. Prospects for foreign firms in developing economies of the Asian and Pacific region. *Asian Development Review* 11 (1): 151–85.

———. 1996. Estimating economic activities by Japanese transnational corporations: How to make sense of the data? *Transnational Corporations* 5 (2): 107–43.

———. 1997. Thailand: International trade, multinational firms, and regional integration. In *Multinationals and East Asian integration,* ed. Wendy Dobson and Chia Siow Yue. Ottawa: International Development Research Centre; Singapore: Institute of Southeast Asian Studies.

Sieh Lee Mei Ling and Yew Siew Yong. 1997. Malaysia: Electronics, autos, and the trade-investment nexus. In *Multinationals and East Asian integration,* ed. Wendy Dobson and Chia Siow Yue. Ottawa: International Development Centre; Singapore: Institute of Southeast Asian Studies.

Tu Jenn-hwa. 1997. Taiwan: A solid manufacturing base and emerging regional source of investment. In *Multinationals and East Asian integration,* ed. Wendy Dobson and Chia Siow Yue. Ottawa: International Development Centre; Singapore: Institute of Southeast Asian Studies.

U.S. Department of Commerce. 1981. *U.S. direct investment abroad, 1977.* Washington, D.C.: Department of Commerce, Bureau of Economic Analysis, April.

———. 1985. *U.S. direct investment abroad: 1982 Benchmark survey data.* Washington, D.C.: Department of Commerce, Bureau of Economic Analysis, December.

———. 1992. *U.S. direct investment abroad: 1989 Benchmark survey, final results.* Washington, D.C.: Department of Commerce, Bureau of Economic Analysis, October.

———. 1998. *U.S. direct investment abroad: Operations of U.S. parent companies and their foreign affiliates, revised 1995 estimates.* Washington, D.C.: Department of Commerce, Bureau of Economic Analysis, October.

Comment

Hong-Tack Chun

Lipsey examines the role of U.S. and Japanese manufacturing affiliates in the production and exports of eight developing Asian countries between 1977 and 1995. He obtains several interesting findings.

First, Japanese and U.S. manufacturing affiliates in this region had different specializations in 1977. Japanese affiliate exports were relatively larger in foods, electrical machinery, and particularly other manufacturing, mainly textiles and apparel, whereas U.S. affiliate exports were more concentrated in machinery, particularly electrical machinery. The difference in specialization between U.S. and Japanese affiliates is in large part due to the difference between home country comparative advantages of the two countries, as Lipsey points out. Electrical machinery, chemicals, and nonelectrical machinery are all industries in which the United States possessed comparative advantages, while the Japanese had comparative advantages in the electrical machinery and transport equipment industries. Japanese MNEs also must have had a comparative advantage in textiles and apparel, at least until 1977.

Second, by 1977, U.S. and Japanese MNEs were drawn to developing Asian countries mainly to produce for export, and in some industries, such

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as chemicals and transport equipment, to produce for sale to the host countries. It would be interesting to compare the effects on host countries of direct investment with the different objectives of producing for export and for sale to host countries.

Another interesting finding is the drastic changes in the R&D intensities of major export industries in developing Asian countries over the fifteen to twenty years after 1977. The exports of developing Asian countries in 1977 were mostly from industries of low R&D intensity such as foods, metals, textiles and apparel, lumber and furniture, and leather products. However, the 1995 export distributions of developing Asian countries, especially those of Singapore, Malaysia, and Taiwan, were much more tilted toward high-R&D industries. In fact, in all the developing Asian countries except Indonesia, the share of high-R&D industries in manufactured exports was significantly greater than in such advanced countries in Europe as France and Germany.

Lipsey investigates the role of U.S. and Japanese affiliate companies in this transformation. In terms of source of exports, the importance of U.S. and Japanese affiliates declined in most industry groups, as the share of U.S. and Japanese affiliate exports fell from 14 to 9 percent between 1977 and 1995. However, the R&D intensity of parent companies suggests that direct investment by U.S. and Japanese affiliates might have played some role in this transformation. This is because the parent companies investing in developing Asian countries, even in 1977, were not only in relatively high R&D industries but, within those industries, were very R&D intensive relative to other firms. Parent companies in the nonelectrical machinery and electrical machinery industries with direct investments in developing Asian countries in 1977 were 40 to 50 percent more R&D intensive than those with investments in Europe. This difference may be due to the special treatment of foreign investment in high-R&D industries by developing Asian countries or to industrial policies that favor these industries in the region.

At any rate, the fact that foreign direct investment in this region was highly R&D intensive relative to other regions in 1977 must have had a positive effect on the drastic changes in the R&D intensity of exports by developing Asian countries between 1977 and 1995, particularly in the late 1970s and early 1980s. Supporting evidence might be found in a microlevel study that focuses on a few selected industries such as electrical and nonelectrical machinery for the period covering the late 1970s and early 1980s.

Interestingly, there seems to be a difference between the roles of U.S. and Japanese affiliates in the drastic change in R&D intensity of manufactured exports by developing Asian countries. U.S. manufacturing affiliates in developing Asian countries have generally been more export oriented than Japanese affiliates. The importance of U.S. affiliate exports of electrical machinery, especially in the early stages of development of the industry,

stands out. Why were U.S. affiliates more export oriented than Japanese affiliates, especially in the earlier years?

The author does not give a direct answer himself and cites the interpretation of the data suggested by Kumar: "U.S. MNEs tend to relocate production of intermediate products for home consumption, whereas Japanese MNEs seem to shift production of more finished goods in relatively simpler technology industries. The offshore production by U.S. MNEs would seem from this more of 'globalized production' which links subsidiaries in home and host countries vertically."

However, the difference in the behavior of U.S. and Japanese affiliates after 1977, especially until the early 1980s, may reflect a difference in the stages of development of U.S. and Japanese MNEs. Japanese MNEs are newcomers relative to their U.S. counterparts. During the early stage of outward direct investment, the major objective of direct investment by Japanese MNEs might have been to sell to the host countries. This is partly confirmed by Kumar's finding that developing Asian countries were not attractive to Japanese MNEs as locations for export-oriented investment before 1989. Japanese outward direct investment increased rapidly after the mid-1980s, and Japanese MNEs became mature, more like their U.S. and European counterparts. This explanation is also consistent with the data that show Japanese affiliates becoming more export oriented as time passed.

Comment

Yuzo Honda

Exports or Foreign Direct Investment as a Strategic Variable

Both exports and foreign direct investment generate income to host country people. This is an obvious fact, but it has a strategic meaning in economic development. People cannot purchase valuable goods or services when they are poor. They can buy these goods only when they have sufficient income. With little income, however, they may still be able to purchase valuable goods if they can export their own goods abroad and earn income. Alternatively, if multinational corporations happen to start their businesses in host countries, they might hire local people and provide them with income. Therefore, exports or foreign direct investment can be a good starting point from which low-income countries can take off.

At an early stage after the Second World War, Japan adopted the same strategy. The Japanese government took various measures to promote exports. For example, it provided various tax exemptions and larger allowances for depreciation for export-related industries. The government chan-

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neled necessary funds for these industries through government financial institutions with interest rates lower than the market rate. Also recall that the Export-Import Bank of Japan, a Japanese government financial institution, originally started operation as the Export Bank of Japan in 1951 and extended its operations to imports as well only in 1952.

In short, exports and foreign direct investment are sources of income to host country people and may play crucial roles in the take-off of an economy. Two comments pertain to this point.

First, the paper by Lipsey mainly discusses foreign direct investment or export structures in Southeast Asian countries, as well as the role played by affiliates of U.S. and Japanese multinationals in the region. Why is it interesting to examine these? The above discussion provides motivation for the paper. It is interesting simply because foreign direct investment and exports are important strategic variables in the take-off of an economy.

Second, the paper points out that the share of U.S. multinational sales to local markets relative to export markets tends to increase as time elapses. Two interpretations are possible. First, U.S. multinationals know more about export markets than host country markets at the start, but as time passes, they come to know local markets as well. Second, host country markets do not develop until after production for export starts.

Here again, however, I want to emphasize the role of the income that multinationals generate. When multinational companies start to operate, most newly employed workers are local people. The income they earn is just like an exogenous increase in endowment to the country. A rise in income increases the purchasing power of the local people and gradually increases sales to local markets. It is the income that host country people earn at multinational corporations that increases sales to host countries.

I have not empirically investigated yet, but I suspect that multinational enterprises can be kick-off players that create the series of income generation in a region.

Relative Values or Absolute Values?

The paper discusses whether the region's dependence on U.S. and Japanese affiliates together as sources of exports declined for some time periods. However, it is important to make clear whether we are discussing the issue in *relative* terms or in *absolute* terms. Both U.S. and Japanese affiliates have consistently expanded their activities in the region in absolute terms, even if their relative shares might have shrunk for some periods.

Look at the case of Japanese affiliates, for example. The paper compares exports by Japanese affiliates between 1989 and 1995 in table 5.7. Now figure 5C.1 plots the average exchange rate of U.S. dollars against yen on the vertical axis versus the annual Japanese current account measured in yen

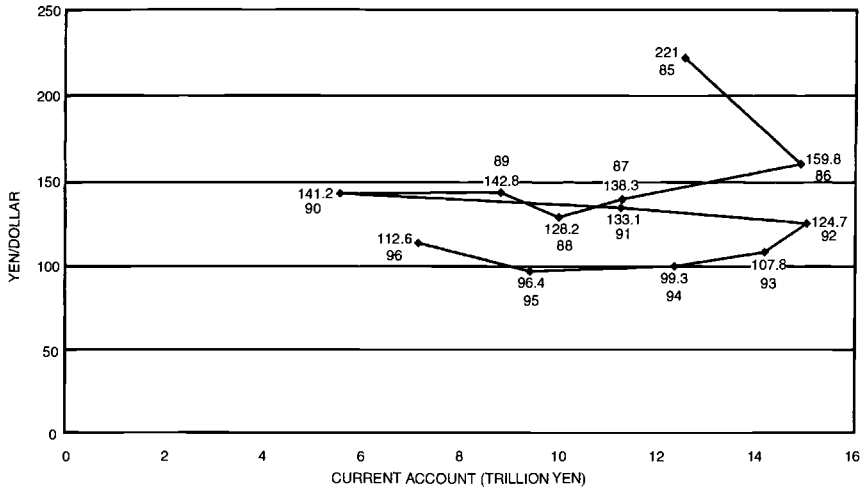

Fig. 5C.1 Japanese foreign exchange rate and current account

on the horizontal axis. During the six-year period 1989–95, the yen appreciated from about 142 to 96 yen per U.S. dollar, as shown in the figure.

During that period, the grand total of sales by Japanese affiliates both in the NIE-4 (Hong Kong, Korea, Singapore, and Taiwan) and in the ASEAN-4 (Indonesia, Malaysia, the Philippines, and Thailand) has increased by 2.3 times, and the grand total of the corresponding estimated exports by 2.4 times. (Compare appendix tables 5A.3 and 5A.4.) In particular, total sales and exports by Japanese affiliates in the ASEAN-4 have increased by 5.4 times and 5.9 times, respectively, in the electrical machinery industry.

In fact, around the end of 1994, many Japanese manufacturers established affiliates in Southeast Asian countries due to the deepening of appreciation of yen at that time. Incidentally, I believe this is one very important reason why we are having such a serious and lingering recession in Japan today.

The second point I want to emphasize is that both U.S. and Japanese affiliates vigorously expanded their activities in the region in absolute terms at least up until 1995.