

Chapter 3

American Firms, Foreign Firms: Contributions to the Nation

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American Firms, Foreign Firms: Contributions to the Nation

SUMMARY AND FINDINGS

Both American and foreign companies are becoming more international, investing in a variety of activities outside their home countries. This is especially true of foreign companies, whose investment abroad rose at a much faster rate than that of U.S. firms in the 1980s—with a substantial share being made in the United States.¹

At the same time, most advanced nations are undertaking programs to promote competitiveness. Combined with the trend toward more international investment by private companies, this puts pressure on political systems to decide how or whether multinational firms can participate in competitiveness programs. Nominally, the OECD² nations subscribe to the principle of national treatment, which means no discrimination against or in favor of any firm based on the nationality of its owners. Exceptions are routinely made for national security reasons to assure that nations retain sovereignty and the ability to command military production in times of national emergency. However, the distinctions between national security and economic competitiveness are becoming blurred, as military needs increasingly depend on industries whose primary business is in the civilian sector. Especially in advanced nations, decisionmakers are increasingly confronted with uncomfortable decisions on how to treat foreign firms and their affiliates. Less developed nations have long wrestled with policies towards foreign multinationals, but the issue was secondary for advanced nations until the last couple of decades.

The United States is a newcomer to this realm of political decisionmaking, as it is facing rapidly rising foreign assets and control for the first time in its modern history. European nations have long had higher participation by multinationals but have not yet determined how to treat foreign affiliates, especially now that Japanese multinationals, with deep pockets, advanced technologies, and outstanding records of successful market penetration, are on the European scene. Japan, the outlier among industrialized countries in the degree to which multinationals are *not* participants in its economy, is

being pressured by many other nations to open its markets to both imports and investment.

There is some agreement among policy analysts that whatever principles govern the treatment of foreign affiliates (*vis-à-vis* their participation in programs to promote economic competitiveness), they should not be based narrowly on ownership. There is disagreement on what other principles should apply. One point of view is that national treatment should be the only principle, and that the standards for handling international investment should be the same as those that govern international trade in the GATT---i.e., openness and nondiscrimination based on nationality. Foreign affiliates, it is argued, behave very much like domestic firms, with only minor exceptions. Therefore, political intervention that treats foreign affiliates differently from domestic firms introduces distortions that decrease economic well-being for everyone.

Another view is that reciprocity should be the governing principle. Reciprocity means that affiliates of foreign firms are given the same treatment in the host country as the host country's firms are given in the nation they call headquarters. Reciprocity is already applied in a few instances in the United States, for example, in mineral leasing on public lands.

A current, controversial approach focuses on performance standards. Both in Europe and the United States, there is serious talk of establishing standards that any firm must meet to qualify for government-funded or government-sponsored programs. Standards generally have to do with how much production, R&D, employment, and value added firms do in the host country, compared with domestic firms.

Existing data give limited insight into how foreign affiliates behave in the United States. Foreign direct investment (FDI) in the United States is on the rise, especially in manufacturing, where foreign affiliates now account for over 10 percent of the sales of all U.S. manufacturing. These affiliates contribute in various ways to the U.S. economy and, although there are some distinctions between their behavior and that of U.S.-owned firms, they are similar in some important ways.

Foreign manufacturing affiliates are generally the equals if not the superiors of U.S. manufacturing firms in yearly investments in new plant and equipment. They do considerably less R&D, as a percentage of sales, than U.S. manufacturing firms. These two measures are the most direct aggregated data we have on how foreign affiliates contribute to U.S. technology, knowledge, and productivity. They are not adequate to make complete judgments of those contributions and will not resolve the ongoing debate over whether foreign affiliates contribute to U.S. technology on balance or make net transfers of technology and other economic benefits mostly to their home countries.

In terms of employment practices, foreign affiliates are hard to distinguish from domestic companies. "In manufacturing, they pay about the same compensation as domestic firms, and more than American firms overall, but this is due more to their disproportionate investment in high-wage service industries than to any propensity to pay more than comparable American establishments. Foreign affiliates are neither more nor less reliable employers than U.S. companies; affiliates are about as likely to lay off workers during economic downturns as U.S. companies."³ Their qualitative contributions to the competence and knowledge of American employees is based on anecdotal evidence. Some foreign firms have made special contributions to American managers' and workers' knowledge and skills, as, for example, the New United Motor Manufacturing, Inc. (NUMMI) joint venture with Toyota did for General Motors' managers, engineers, and shop-floor workers. In other cases, foreign control seems to have made little difference in the behavior or attitudes of managers or workers; and in a few cases, foreign control has been a source of strife.

The most noticeable difference between foreign affiliates and U.S. firms is in their propensity to import. Firms invest abroad mainly to sell abroad; to differing degrees, that means selling products made at home. The overall trade deficit associated with foreign affiliates is sizable--a merchandise trade deficit in 1988 of \$90 billion, compared with an overall U.S. merchandise trade deficit of \$120 billion. Affiliates of U.S. firms in other countries have in the past generated substantial trade surpluses for the United States, but those surpluses are declining. In 1988, trade between U.S. parent companies and their foreign affiliates produced a merchandise trade surplus of about \$8 billion.

Japanese affiliates have by far the greatest propensity to import of any foreign affiliates, and most of what they import is made in Japan. European investors import more, per dollar of sales, than American firms or Canadian affiliates, and most of what they import is from other countries in Europe; their inclination to import from all of Europe is not as great as that of Japanese affiliates to import from Japan.

It is simplistic, however, to hold imports by foreign direct investors responsible for the high U.S. trade deficits. The fundamental causes of our poor trade performance are the Nation's anemic savings rate and declining overall competitiveness of its manufacturers, based on the ability to make high-quality products at reasonable costs.⁴ Economic theory also argues that imports in any particular sector do not affect the overall trade balance, but rather exert their effect on the value of the dollar. Macroeconomic factors--specifically, domestic savings (including government surpluses or deficits) and domestic investment--are considered the determining factors in the overall size and direction of the current account trade balance. If foreign investors' imports persistently outweigh exports, and this makes for a greater U.S. trade deficit, then presumably the dollar will fall, which tends to promote U.S. exports and balance the current account.⁵ This process is costly. A persistently weak dollar can enfeeble the U.S. economy and lower the standard of living.

The furor over foreign direct investment (FDI) seems ironic to some, who point out that much of it is a natural response to nations' discriminatory trade policies. Firms invest abroad for many reasons; one is to continue to sell products abroad when exporting becomes difficult. Trade policy actions that limit Japanese exports are primary motivations for the heavy Japanese investments in the United States and Europe over the past decade or so. When the Japanese Government wished to protect Japanese firms from foreign competition in the postwar decades, it was obliged to limit both imports and direct investment (see ch. 6).

Another complication is the growth in international strategic alliances of all types, only some of which can be classed as direct investment. Cross-licensing agreements, some joint ventures, and small equity investments do not show up in statistics on direct investment, but they do affect things that

governments care about deeply. A current debate focuses on participation of foreign companies (or their offshore affiliates) in government-funded R&D consortia. Even when foreign firms or their affiliates are excluded, the web of technology development agreements between U.S. companies and foreign companies makes it likely that at least some of the knowledge generated in such programs will go abroad. It has never been possible for governments to control international dissemination of technology, even before firms had extensive international operations. However, with the proliferation of international activity of all types, the speed of technology diffusion is lessening and the control governments have over it are diminishing.

In the United States and Europe,⁶ the debate over how to treat foreign affiliates focuses heavily on Japanese affiliates. Japanese companies are the most feared, because they have reputations for manufacturing excellence and voracious appetites for technology, and also because they are perceived to behave in more nationalistic ways than firms from North America or Europe. Some anecdotal evidence bears out this perception. Besides differences in patterns and magnitude of trade, Japanese investors are more likely than other foreign investors to retain control of the operations by hiring Japanese, rather than host country, managers; more likely to equip their factories with Japanese machinery; and more likely to refer significant decisions to Japanese headquarters. These things are changing. Japanese firms in a recent MITI survey plan to give greater control and discretionary power to their foreign affiliates in the next 5 years, but the majority will still maintain control at home. The effect of Japanese management practices on the host country—good or bad—is not yet known. Nevertheless, differences in the behavior of Japanese investors, along with their formidable records in international competition, will continue to make Japanese direct investment a highly charged political focus.

INTRODUCTION

The interests of nations and firms are sometimes similar, sometimes not. Some of the things firms want—a stable business environment, productive workers, healthy profits and growth—are also attractive to governments, which is why so many governments try to improve the climate for private enterprise within their borders. But not all businesses are equally attractive to governments, and some of the

things businesses want may go counter to some government interests. Nations and firms often have different stakes in the international transfer of weapons, particularly advanced weapons and the high-technology equipment needed to make them. Some enterprises contribute disproportionately to pollution and other public safety hazards; some consume large quantities of scarce natural resources. Thus, while governments at many levels may be assiduous in attracting firms from outside the country or region to locate there, they may also regulate the activities of firms in ways that discourage investment.

The fit between corporate interests and governments' objectives is growing more important to the United States. With many State and local governments actively courting foreign investment, and foreign firms and their attendant lobbies becoming more prominent players in American public policy, the Federal Government is more and more often forced to deal with issues of foreign ownership and control. The issue comes up in various ways. There is increasing concern over foreign investment in real estate and its effect on local real estate prices, especially with respect to Japan, and particularly in areas such as Los Angeles and Hawaii.⁷ In the late 1970s and early 1980s, for example, Middle Eastern investment caused concern, and Japanese investment in American banking and finance is a current issue. National security is also a concern; in 1988 Congress authorized the President to suspend or prohibit any foreign acquisition of an American firm that is deemed to threaten defense production or the ability of domestic industries to meet national defense requirements.⁸ There is a burgeoning debate on the effect of FDI on American manufacturing competitiveness. While all of these issues are important, only the latter is of concern in this study. Before going on, however, we note that different issues may call for different definitions of what FDI is, and how concerned we are over regulating it; we will address only one of the issues in this chapter, and the discussion does not apply to all other foreign-investment issues.

Finally, we should consider whether multinational firms that are nominally American are so globalized that their interests and the Nation's interests are not likely to have much in common. This is the "Who Is Us?" question. Robert Reich, who framed the question in these terms, contrasted two hypothetical companies: one with headquarters

in the United States but with much of its R&D and most of its sales, assets, complex manufacturing, and jobs in foreign countries; the other, headquarters abroad but with much of *its* technology development and most of its jobs in the United States.⁹

The question of what foreign direct investors contribute to U.S. technology, competitiveness, and jobs is complex, and the major subject of this chapter. Whether the typical U.S. multinational fits the hypothetical picture of a stateless, thoroughly globalized company is easier to answer. There may be a few such companies, and there maybe more in the future, but for now that is a false picture. U.S.-based multinationals do most of their business in the United States, and most of their jobs and technology development are here. Overall, they are identifiably American companies, and their competitive performance is linked to that of the Nation.

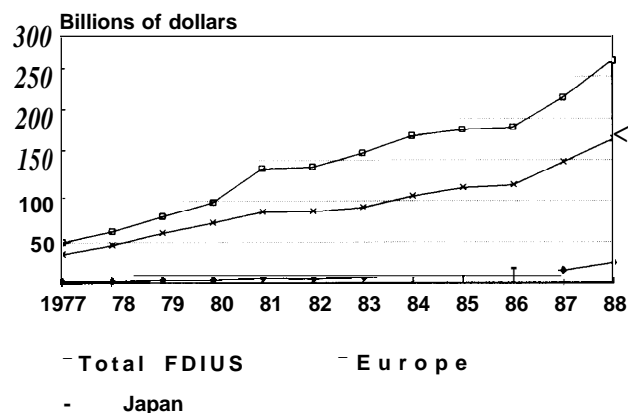
THE BASICS: WHO INVESTS WHERE AND IN WHAT

U.S. Multinationals' Activities at Home and Abroad

In 1988 (the latest year for which data are available), U.S. multinational companies had 78 percent of their total assets, 70 percent of their sales, and 74 percent of their employment in the United States.¹⁰ All these percentages were higher than in 1977 (the first year in this data series). There was no consistent trend in the 1980s toward more footloose operations by U.S. multinationals, slightly to the contrary in fact. Although direct investment abroad by U.S. multinationals increased during those years, so did their investments at home.

The data also indicate that U.S. multinationals are keeping good jobs and technology development at home. In 1988, compensation per employee in affiliated companies abroad was about 72 percent of that for employees of the parent company in the United States. Assets per employee in the affiliates were 77 percent of the figure for parent companies, which implies that the more productive jobs resided in the United States.¹¹ The same applies to R&D. The latest government figures for the location of R&D spending by U.S. multinationals date from 1982.¹² At that time, spending for R&D by foreign affiliates was under 9 percent of the total for parents and affiliates; this compared with affiliates' share of total sales, which in 1982 was 33 percent. R&D as

Figure 3-1—Foreign Direct Investment in the United States: Sales of Manufacturing Affiliates



SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates, 1977-80, 1985, table E-5, and subsequent series.*

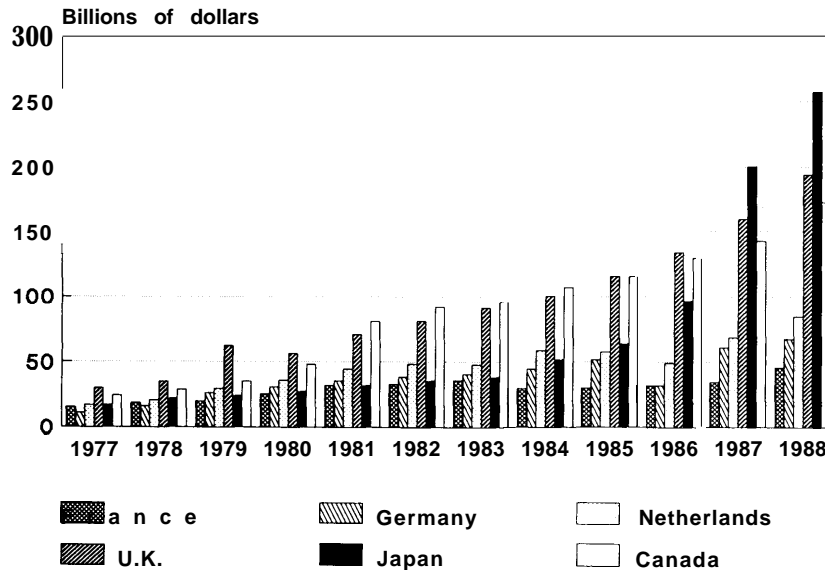
a percent of sales was nearly three times higher among U.S. parent manufacturing companies than among manufacturing affiliates abroad (3.33 percent v. 1.15 percent).

Some U.S. multinationals have important R&D facilities in other countries. For example, American automobile companies develop and sell unique products in Europe. It was two scientists in IBM's Zurich research laboratory who discovered high-temperature superconductivity in 1986; even so, IBM does 80 percent of its R&D in the United States, about 12 percent in Europe, and 8 percent in Asia.¹³ The overall picture may change. The European Community (EC) proposes to allow companies that have fully integrated operations, that include R&D, manufacturing, and sales within Europe, to participate in EC-funded R&D programs. This may have the effect of shifting more of U.S. multinationals' R&D, or more of their high value-added jobs, to Europe. As of now, however, much the greater part of these activities take place in the United States.

FDI in the United States

Direct investment in the United States rose from 16 percent of total world direct investment in 1980 to 25 percent in 1987, while the shares of Europe, Canada, Australia, and South Africa decreased.¹⁴ In 1990, foreign firms' total direct investments in the United States amounted to \$404 billion, compared with direct investments of \$421 billion by U.S. multinationals in foreign countries. The gross prod-

Figure 3-2—Foreign Direct Investment, 1977-88: Assets of Major Investors

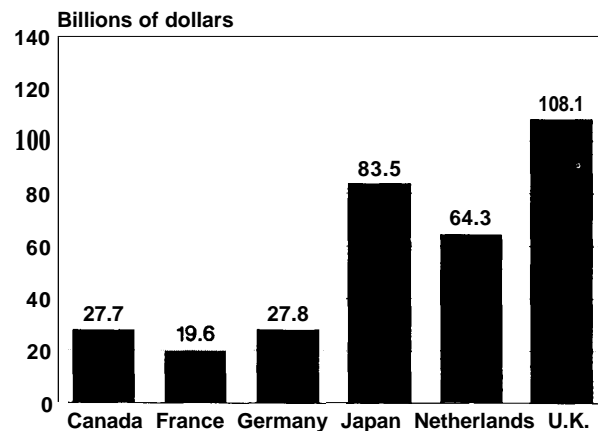


SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates, 1977-80, 1985*, table B-7, and subsequent series.

uct of foreign affiliates in the United States accounted for 3.4 percent of GNP in 1987, up from 1.8 percent in 1977.¹⁵

The rapidly increasing Japanese direct investment in manufacturing plants within the United States has made most of the news. There are three common measures of the importance of direct investment: sales, assets, and position.¹⁶ Japanese affiliates' share of the sales of all foreign manufacturing affiliates in the United States rose from 4 percent in 1977 to 9 percent in 1988 (figure 3-1). The Japanese share of the *total sales* of all foreign affiliates was 26 percent, the same at the beginning and the end of the period. But their investments in manufacturing during the period show up in their share of affiliates' *assets*, which rose from 12 to 24 percent of the total. By the late 1980s, the assets of U.S. affiliates of Japanese direct investors stood at \$275 billion, surpassing all the rest, including the United Kingdom, historically the largest foreign direct investor in the United States (figure 3-2). The total value of assets of U.K. affiliates stood at \$194 billion in 1988.¹⁷ However, the United Kingdom was still by far the leader in direct investment position, with investments valued at \$108 billion by the end of 1990 (figure 3-3). Japan was second, having passed the Netherlands in 1988; its direct investment

Figure 3-3—Foreign Direct Investment Position in the United States, 1990



SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, Russell B. Scholl, "The International Investment Position of the United States in 1990," *Survey of Current Business*, vol. 71, No. 6, June 1991, table 7, p. 32.

position in the United States amounted to \$70 billion in 1989.

Foreign firms' participation in U.S. manufacturing is greater than their overall participation in other sectors of the economy. Foreign affiliates accounted for 12.2 percent of the assets of U.S. manufacturing in 1987, compared with 8.9 percent of the total net worth of all nonfinancial corporations.¹⁸ Manufac-

turing jobs were still more skewed to foreign affiliates, which accounted for 9.0 percent of U.S. manufacturing employment in 1988 but only 3.4 percent of all U.S. civilian employment.¹⁹

The picture is different for Japanese direct investment. About 15 percent of the sales of Japanese affiliates in the United States is in manufacturing, compared to 38 percent of the sales of European affiliates.²⁰ Over 60 percent of Japanese investors' sales comes from wholesaling affiliates,²¹ a far higher percentage than for any other major direct investor. This implies that the Japanese interest in the American market is primarily in selling goods made in Japan. Of course, a main reason for any firm, from any nation, to invest in a foreign country is to sell more goods in that market. However, the heavy emphasis by Japanese investors on wholesaling suggests that Japanese firms, compared with those of other nations, are more interested in exporting and less interested in producing goods in the country where the goods are sold.

Trade figures for affiliates support this observation. Japanese affiliates' imports were significantly higher than those of European or Canadian affiliates throughout the period for which we have data (1977-88). In 1988, imports of Japanese affiliates in the United States were \$75.9 billion, accounting for 51 percent of the imports of all affiliates of foreign investors, and the Japanese affiliates' imports amounted to 34 percent of their sales, compared to 12 percent for European affiliates.²² Moreover, a detailed survey in 1987 showed that 93 percent of the imports of Japanese affiliates were from Japan. To be sure, all affiliates import mostly from the home country (or in the case of Europe, the home region); 70 percent of the imports of European affiliates were from Europe, and 73 percent of the imports of Canadian affiliates were from Canada.²³ But the Japanese affiliates have by far the highest ratio of home-country imports of all, as well as the highest imports relative to sales.

Direct investment in U.S. manufacturing between 1977 and 1988 shows annual increases of 16 percent in sales and almost 19 percent in assets (tables 3-1 and 3-2). The most rapid growth in manufacturing sales by foreign affiliates was in transportation equipment, where affiliates' sales increased at the rapid clip of 46.5 percent per year. Most of this was just where one would expect: in sales of motor vehicles from Japanese affiliates. If sales of motor

vehicles from wholesaling affiliates are added in, the influence of Japanese affiliates is even more apparent. In 1988, the combined total of wholesale and manufacturing sales of motor vehicles, by all foreign affiliates, amounted to \$80.9 billion. Two-thirds of this (\$52.9 billion) was from Japanese affiliates, and most of it (\$44.3 billion) was sales from wholesaling, not manufacturing, establishments.²⁴

Other industries with substantial manufacturing sales by foreign affiliates include chemicals and machinery (including electronic equipment); European affiliates are preeminent in both of these major sectors (table 3-3). About 29 percent of the sales of European affiliates is in chemicals and allied products, with Germany the leading foreign affiliate in the sector and the United Kingdom not far behind.

Several European countries have large sales in machinery, a category that includes machine tools and various types of production equipment used in nearly every other industry as well as semiconductors, computers, and consumer electronic goods. The United Kingdom is a leader in nonelectrical machinery, while France, Germany, and the Netherlands all have important affiliates in the United States making electronic products (Thomson, Siemens, and Philips, respectively).²⁵ Although there are also Japanese affiliates making or assembling electronic products in this country, most of America's huge purchases of Japanese electronic goods, from semiconductors to compact disk players, are imports. Japanese manufacturing affiliates' sales are concentrated in primary and fabricated metals (steel), electrical and electronic equipment, and transportation equipment (table 3-4).

Canada and the United States have long had substantial investment in each other's markets as a result of shared language, proximity, and similar culture and business environments. Canadian direct investment in the United States is heaviest in chemicals,²⁶ followed by primary metals and electrical and electronic equipment (table 3-5).

FDI AND U.S. MANUFACTURING COMPETITIVENESS

The relationship between FDI and U.S. manufacturing competitiveness is anything but straightforward. In some cases, foreign investment seems to have stimulated American manufacturers to improve

**Table 3-1—Foreign Direct Investment in the United States:
Manufacturing Sales, 1977 and 1988**

Industry	Sales 1977 (\$ millions)	Sales 1988 (\$ millions)	Annual average growth rate 1977-88 (percent)
Manufacturing	\$50,489	\$258,511	16.0%
Food and kindred products	6,983	32,995	15.2
Chemicals and allied products	16,303	63,245	13.1
Primary and fabricated metals	6,881	32,806	15.3
Primary metal industries	5,545	20,476	12.6
Fabricated metal products	1,336	12,330	22.4
Machinery	9,838	45,933	15.0
Machinery, excluding electrical	4,512	17,905	13.3
Electrical and electronic equipment	5,326	28,029	16.3
Other manufacturing:			
Textiles and apparel	1,072	3,746	12.0
Paper and allied products	1,803	8,033	14.5
Printing and publishing	1,741	12,386	19.5
Rubber and plastics products	916	11,295	25.7
Stone, clay and glass products	2,022	12,363	17.9
Transportation equipment	279	18,649	46.5

NOTE: Individual industries do not add to total manufacturing.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates, 1977-80, 1985*, table E-5, and *Foreign Direct Investment in the United States: Operations of U.S. Affiliates of Foreign Companies, Preliminary 1988 Estimates, 1990*, table E-7.

**Table 3-2—Foreign Direct Investment in United States:
Assets of Manufacturing Affiliates, 1977 and 1988**

Industry	Assets 1977 (\$ millions)	Assets 1988 (\$ millions)	Annual average growth rate 1977-88 (percent)
Manufacturing	\$41,759	\$281,316	18.9%
Food and kindred products	4,373	30,317	19.2
Chemicals and allied products	15,258	80,911	16.4
Primary and fabricated metals	5,931	34,018	17.2
Primary metal industries	4,670	17,495	12.8
Fabricated metal products	1,261	16,523	26.4
Machinery	7,508	45,857	17.9
Machinery, excluding electrical	3,754	20,507	16.7
Electrical and electronic equipment	3,754	25,351	19.0
Other manufacturing			
Textiles and apparel	726	4,132	17.1
Paper and allied products	1,416	7,015	15.7
Printing and publishing	1,361	15,075	24.4
Rubber and plastics products	606	10,164	29.2
Stone, clay and glass products	1,736	21,113	25.5
Transportation equipment	587	9,666	29.0

NOTE: Individual industries do not add to total manufacturing.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates, 1977-80, 1985*, table B-7, and *Foreign Direct Investment in the United States: Operations of U.S. Affiliates of Foreign Companies, 1988, 1990*, table B-5.

their competitive performance. An example comes from motor vehicles.

Japanese automakers began assembling motor vehicles in the United States in the 1980s, partly to bypass the voluntary restraint agreement that limited Japanese motor vehicle exports to the United States

from 1981 to 1985, and probably also to neutralize the effects of other forms of protection that might be imposed in the future. Honda was the pioneer.²⁷ With several years of experience making motorcycles in the United States, it built the first Japanese-owned assembly plant in Marysville, Ohio, and began producing cars there in 1982. Honda's entry

**Table 3-3-European Direct Investment in the United States:
Manufacturing Sales, 1977 and 1988**

Industry	Sales 1977 (\$ millions)	Sales 1988 (\$ millions)	Percent of total in 1988
Manufacturing	\$36,754	\$166,608	
Food and kindred products	4,594	25,547	15.3%
Chemicals and allied products	15,330	47,421	28.5
Primary and fabricated metals	3,694	14,148	8.5
Primary metal industries	2,886	6,187	3.7
Fabricated metal products	808	7,961	4.8
Machinery	6,701	28,385	17.0
Machinery, excluding electrical	3,006	11,839	7.1
Electrical and electronic eqp.	3,695	17,546	10.5
Other manufacturing			
Textiles and apparel	780	2,303	1.4
Paper and allied products	NA ^a	5,156	3.1
Printing and publishing	481	6,552	3.9
Rubber and plastics products	772	5,112	3.1
Stone, clay and glass products	1,878	9,964	6.0
Transportation equipment.	NA	8,923	5.4

^aData suppressed to avoid disclosure of information for individual companies.

NOTE: Individual industries do not add to total manufacturing.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis, *foreign Direct Investment in the United States: Operations of U.S. Affiliates, 1977-80, 1985*, table E-5, and *Foreign Direct Investment in the United States, Operations of U.S. Affiliates of Foreign Companies, 1988*, table E-8.

**Table 3-4-Japanese Direct Investment in the United States:
Manufacturing Sales, 1977 and 1988**

Industry	Sales 1977	Sales 1988	Percent of total in 1988
Manufacturing	\$2,255	\$33,180	
Food and kindred products	275	1,055	3.2%
Chemicals and allied products	121	2,060	6.2
Primary and fabricated metals	654	5,390	16.2
Primary metal industries	NA ^a	3,716	11.2
Fabricated metal products	NA	1,675	5.0
Machinery	497	8,992	27.1
Machinery, excluding electrical	317	3,276	9.9
Electrical and electronic equipment	180	5,716	17.2
Other manufacturing			
Textiles and apparel	67	346	1.0
Paper and allied products	NA	635	1.9
Printing and publishing	NA	1,094	3.3
Rubber and plastics products	17	2,842	8.6
Stone, clay and glass products	NA	1,043	3.1
Transportation equipment.	NA	8,584	25.9

^aData suppressed to avoid disclosure of information about particular companies.

NOTE: Individual industries do not add to total manufacturing.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U. S. Affiliates, 1977-80, 1985*, table E-5, and *Foreign Direct Investment in the United States, Operations of U.S. Affiliates of Foreign Companies, 1988, 1990*, table E-8.

into U.S. motor vehicle production was followed by Nissan, Mazda, Subaru-Isuzu, Toyota, and Mitsubishi (in a joint venture with Chrysler). By 1991, the Japanese transplants (including the joint ventures) are expected to be able to produce nearly 3 million vehicles in North America.²⁸

In the 1970s and early 1980s, the prevailing view among American automakers and their "suppliers" was that the Japanese advantage in the American market stemmed mainly from low labor costs. It took firsthand demonstrations of Japanese manufacturing prowess in America to convince them that the real

Table 3-5-Canadian Direct Investment in the United States:
Manufacturing Sales, 1977 and 1988

Industry	Sales 1977 (\$ millions)	Sales 1988 (\$ millions)	Percent of total in 1988
Manufacturing	\$11,650	\$38,307	
Food and kindred products	1,972	3,740	9.80/o
Chemicals and allied products	649	11,902	31.1
Primary and fabricated metals	2,068	5,842	15.3
Primary metal industries	1,747	4,644	12.1
Fabricated metal products	321	1,198	3.1
Machinery	3,108	5,248	13.7
Machinery, exe. electrical	1,489	1,343	3.5
Electrical and electronic equipment.	1,619	3,905	10.2
Other manufacturing			
Textiles and apparel	NA ^a	668	1.7
Paper and allied products	NA	1,990	5.2
Printing and publishing	1,171	3,463	9.0
Rubber and plastics products	125	2,024 ^b	5.3
Stone, clay and glass products	815	690	1.8
Transportation equipment	NA	490	1.3

^aData suppressed to avoid disclosure of information for individual companies.

^bIncludes only information for plastics; data for rubber products was suppressed to avoid disclosure of information for an individual company.

NOTE: Individual industries do not add to total manufacturing.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates, 1977-80, 1985*, table E-5, and *Foreign Direct Investment in the United States, Operations of U.S. Affiliates of Foreign Companies, 1988, 1990*, table E-8.

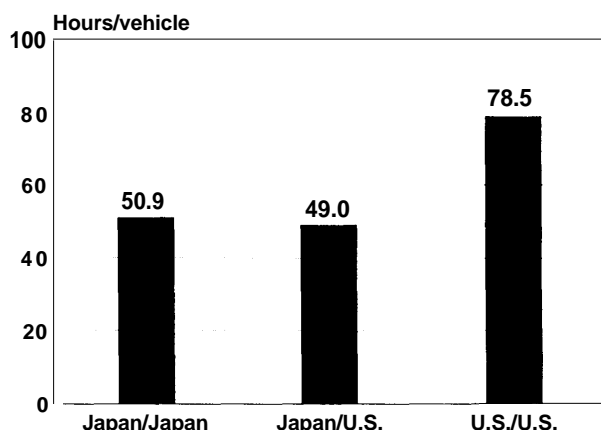
advantage of the Japanese manufacturers was their rigorous and ceaseless attention to quality and efficiency in manufacturing. The Japanese transplants have the best quality record (in terms of defects per 100 vehicles) and average productivity (in hours per auto) of any plants in North America, and the 'worst' Japanese transplants have about the same productivity as the average for U.S. plants in North America (figures 3-4 and 3-5).²⁹

For American auto parts makers, the lesson was more than just a demonstration. The exacting standards of quality, price, and delivery time that the Japanese auto assemblers held suppliers to in Japan were, according to the Japanese firms, beyond what most American auto parts and components makers were accustomed to providing to Detroit. In addition, business practices of the American and Japanese auto assemblers were quite different: Japanese assemblers had (and have) many fewer suppliers than the American assemblers, and those suppliers are expected to deliver whole assemblies instead of individual parts. Japanese assemblers also expected collaboration in initial design and quick turnaround on design changes, which required in-house engineering ability that American components makers were unaccustomed to providing and often did not have.³⁰ Few were able to establish relations with Japanese assemblers in North America. By 1987,

researchers from the MIT International Motor Vehicle Program estimated that the local parts content of the Japanese assemblers in North America was only 30 percent; this was forecast to increase to 50 percent by 1990.³¹

American suppliers who were able to negotiate arrangements with Japanese transplants report difficulties in establishing the relationship, but those who succeeded also made positive changes. These include improving product quality and inventory management, increasing productivity, and expanding engineering, design, and R&D.³² Many of the same kinds of changes are increasingly required by Ford, General Motors, and Chrysler in their own attempts to compete with Japanese imports and transplants.

FDI can also enhance technology development. For example, American manufacturers have benefited from the patient capital or technology-oriented strategies of their foreign investors. When the West German chemical firm Hoechst purchased Celanese Corp., Hoechst's objective was to find a technology-intensive strategy for competing in the U.S. market.³³ Rather than expand its own U.S. operation, Hoechst purchased Celanese, an existing American chemical company with well-recognized products, competent R&D, and established customer relation-

Figure 3-4—Automobile Assembly Plant Defects, 1988-89

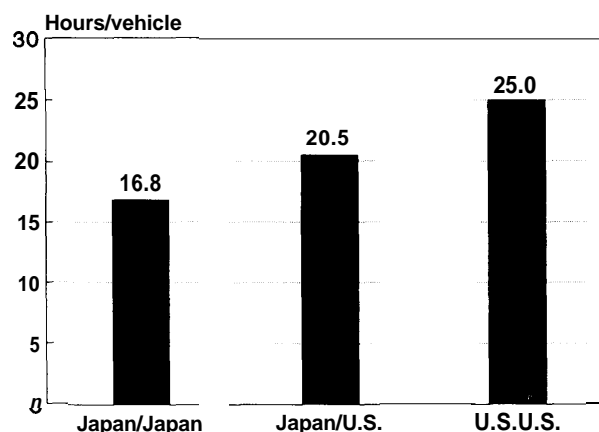
Japan/Japan = Japanese-owned Plants located in Japan
 Japan/U.S. = Japanese-owned plants and joint ventures in the United States
 U.S./U.S. = U.S.-owned plants in the United States

SOURCE: John F. Krafcik, "Training and the Automobile Industry: international Comparisons," contractor report prepared for the Office of Technology Assessment, February 1990, pp. 8-9.

ships. Despite initial difficulties in reconciling the corporate R&D cultures of the two firms, Celanese's R&D spending increased by 10 percent annually after the acquisition. Moreover, Hoechst was more willing to engage in long-term research than Celanese's management had been, and less reluctant to make major commitments to projects with uncertain and distant payoff.

While there are many examples of foreign investment that seem beneficial or at worst neutral in their impact on manufacturing competitiveness, there are worries as well. Most of the worry centers on Japan and several high-technology industrial sectors. In its simplest form, the fear is that Japanese investors, with their appetite for new technology, their deep pockets, and their perceived preferences for doing business with other Japanese companies, invest in American high-technology companies in order to gain access to new technologies, but that most of the benefits of such investment (jobs, economic growth, contributions to the national stock of technology) will end up in Japan. Another worry is that, since Japanese corporations investing abroad have commonly been followed by their Japanese suppliers, American businesses that could benefit from relationships with Japanese multinationals might be crowded out.

Such accusations surfaced recently, when two former executives of Ardent Computer sued Kubota

Figure 3-5—Automobile Assembly Productivity, 1988

Japan/Japan = Japanese-owned plants located in Japan
 Japan/U.S. = Japanese-owned plants and joint ventures in the United States
 U.S./U.S. = U.S.-owned plants in the United States

SOURCE: John F. Krafcik, "Training and the Automobile industry: international Comparisons," contractor report prepared for the Office of Technology Assessment, February 1990, pp. 8-9.

Ltd., a Japanese tractor company that had acquired a stake in Ardent in 1986. The two executives allege that Kubota forced Ardent to merge with Stellar Computer, and conspired to transfer the technology of the merged company (Stardent) to a Kubota subsidiary, Kubota Computers America.³⁴ Kubota denies the claims, saying instead that the U.S. executives were failed managers who demanded money and sued after they were denied payment.

Fear of Japanese dominance also colored American reaction to the investment by some of Japan's big electronics companies in R&D centers in the United States.³⁵ The companies are staffing these centers by hiring leading American computer scientists from American universities and corporate labs, with offers of high salaries, excellent equipment, and plenty of R&D money. Often, R&D investments within this country are used as a measure of the positive value of FDI. But some analysts see the hiring of America's best computer brains by powerful Japanese companies as threatening one of the last, best competitive advantages of U.S. computer companies—basic research in computer science.

These cases are part of the fear that some people have about Japanese firms. The danger, according to those who suspect Japanese investors of playing by nationalistic rules, is that American companies will end up depending on Japanese companies almost

exclusively for key components and equipment,³⁶ and even that the next big creative advances in technology may be locked up in patents held by Japanese companies. This dependence, they fear, will be the downfall of the American companies. What does this have to do with FDI? According to this analysis, Japanese investment is simply another way (along with exports) for Japanese companies to dominate their industries. Such fears are made more plausible by the fact that most Japanese businesses large enough to deal internationally operate in *keiretsu*, or groups that hold each other's stock and give preference to other group members in procuring supplies and services in ways that tend to exclude outsiders.

Fear of Japanese dominance may be rooted in xenophobia, jealousy, experience, common sense, or some combination of all of these. Many people familiar with Japanese business practices regard Japanese investors as more likely than Europeans or Canadians to direct the benefits of their investments in America to Japan. Evidence on either side of this debate is sparse. What little there is does suggest that there are good reasons to keep an eye on foreign investment in general, and Japanese investment in particular, and monitor the effects on American competitiveness.

What should we keep track of? More and more, developed nations are grappling with these issues, particularly as the strains on the postwar trade regime intensify. Most focus on the readily available measures of firms' behavior—R&D, employment, worker compensation, value added, and the like. A common problem is that many of these measures gauge inputs, rather than the outputs that nations are interested in. It is easy to argue about the effects of FDI without proper measures of what foreign investors contribute to the nation's stock of knowledge and overall well-being, since many of the arguments on all sides depend on unsatisfactory measures and anecdotes.

In the United States, the reevaluation of policies toward international investment is a result of the tremendous growth in FDI during the past two decades.³⁷ In large part, the European Community seems committed to making the benefits of 1992 reforms open to anyone, but there are some important questions and exceptions. In a few critical industries, principally microelectronics and motor vehicles, it appears that firms wishing to sell their

products in Europe under the same conditions as European firms will need to make substantial portions of the products in Europe. As this report is written, for example, European negotiators are discussing domestic content regulations ranging up to 85 percent on motor vehicles, and a transition period of 5 years, starting in 1993, during which Japanese automakers agree to limit exports to the European Community countries.³⁸ In electronics, the European Community has decided that the most significant part of semiconductor manufacture, diffusion in wafer fabrication, must be done in Europe for semiconductors to count as of local origin (and thus not be subject to the EC's 15 percent tariff). Some expect this decision to result in a boom in wafer fabrication in Europe, primarily on the part of American and Japanese companies.³⁹

Clearly, one thing the European Community is interested in is jobs—hence the emphasis on local content in big-ticket trade items like semiconductors and automobiles, which account for a large share of Europe's imports. There is more to it than jobs though. Countries are concerned about the extent to which foreign investors are players in the political process, add to a nation's stock of knowledge and technology, contribute to imports and exports, pay taxes, and enhance human resource development. All of these are things that can be expected to contribute to a nation's well-being, and to the competitiveness of its firms.

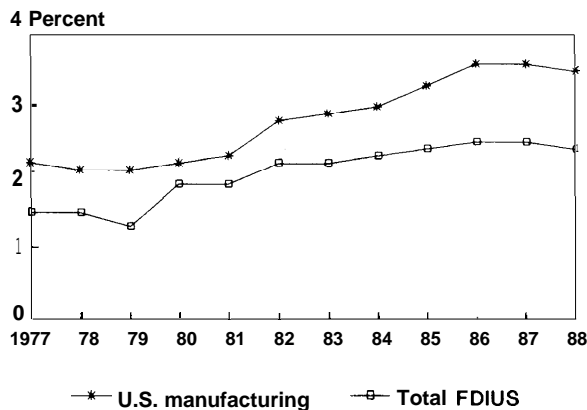
Contributions to Knowledge and Technology

Firms add to nations' technical and scientific knowledge in many ways, most of which are difficult to measure. One measure that *is* available is the amount spent on R&D.⁴⁰ R&D spending is often used as a proxy for all contributions foreign firms with domestic operations make to the nation's technical knowledge. Spending on plant and equipment and reinvestment of earnings in domestic operations are also sometimes used to indicate levels of contributions to technology. It is important to keep in mind, however, that such figures are only proxies and may obscure the complexities of what goes on in the real world.

The R&D Measure

R&D spending is usually measured as a percentage of net sales, known as R&D intensity. Figure 3-6 and table 3-6 show that the manufacturing affiliates of foreign direct investors lag behind U.S. manufac-

Figure 3-6-R&D Intensity, U.S. Manufacturers and U.S. Affiliates of Foreign Manufacturing Firms



SOURCE: *Economic Report of the President, 1990* (Washington, DC: U.S. Government Printing Office, February 1990), table C-90; National Science Foundation, Division of Science Resources, unpublished data; and U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates, 1977-80, 1985*, table H-3, and subsequent series.

turers in R&D intensity.⁴¹ This means that domestic firms perform a greater share of their R&D here than foreign firms operating here do, which is just what might be expected. As noted, U.S. multinational firms' R&D intensity is much higher in the United States than it is in their various foreign outposts.

Data showing R&D of foreign affiliates by country and industry exist for only one year, 1987. In that year, R&D (by manufacturing firms) as a percent of manufacturing sales of European affiliates was 2.3 percent, close to the average for all foreign affiliates. However, the R&D intensity for Japanese manufacturing affiliates was much below average, 1.1 percent.⁴² It is likely that Japanese manufacturing multinationals, like U.S. multinationals, were doing most of their R&D at home.

There is good reason for R&D intensity to be higher in the home country of multinational companies than in their foreign affiliates. R&D comprises a variety of activities, some of which are not particular to specific markets. For example, much basic and applied research done by firms is not dependent on the eccentricities of different markets, and can probably be done most efficiently at a central R&D facility. Development and design work, on the other hand, might need to be apportioned to each of a company's major markets in order to be tailored to the tastes and specifications of local

Table 3-6-Manufacturing Research and Development Intensity: Foreign Direct Investors and U.S. Firms, 1977-88 (in percent)

Year	Total U.S. manufacturers (in percent)	Company funded (in percent)	All FDIUS* (in percent)
1977	2.2%	NA	1.570
1978	2.1	NA	1.5
1979	2.1	1.470	1.3
1980	2.2	1.5	1.9
1981	2.3	1.6	1.9
1982	2.7	1.9	2.2
1983	2.9	2.0	2.2
1984	3.0	2.1	2.3
1985	3.3	2.3	2.4
1986	3.6	2.5	2.5
1987	3.6	2.4	2.5
1988	3.5	2.2	2.4

*Manufacturing R&D as a percent of sales by manufacturing affiliate.

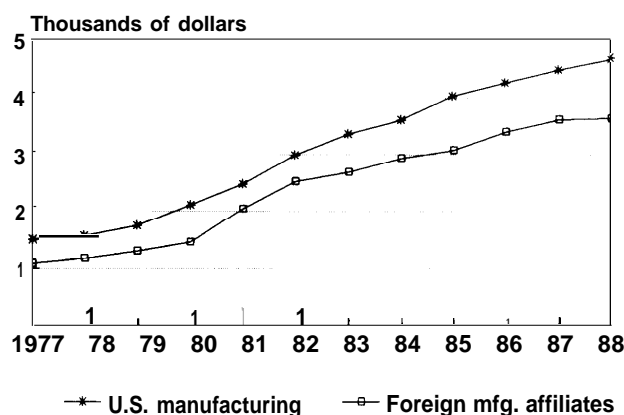
NOTE: Total R&D intensity includes all funding for industrial R&D supplied by companies, the Federal Government and other sources; whereas company-funded R&D includes all funded industrial R&D work performed within company facilities from all sources except the Federal Government.

SOURCES: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates, 1977-80, 1985*, table H-3, and subsequent series; and National Science Foundation, Division of Science Resources Studies, unpublished data.

consumers. For example, all the major Japanese auto companies do design work (mainly styling) in the United States.

Another way of gauging R&D contributions is in terms of spending per employee.⁴³ By this measure, foreign direct investors appear quite similar to U.S. firms (figure 3-7). There are complications in comparing R&D figures across nations, since the U.S. Government and foreign governments contribute different amounts for different purposes (e.g., defense v. civilian) to industrial R&D. All in all, however, there appears to be rough parity in R&D spending per employee between U.S. firms and foreign direct investors. Why should this be so, when R&D intensity is substantially higher for American firms? Interpretation is rather risky, since detailed knowledge of the underlying factors is lacking. However, it seems likely that affiliates or subsidiaries of foreign firms, no matter how firmly entrenched in countries outside of headquarters, are not as fully integrated to include all line and staff functions of the company as is headquarters. The affiliates may have a full production and sales staff, but are less likely to include functions such as accounting, finance, strategy, and planning in the foreign location.

Figure 3-7-R&D/Manufacturing Employee FDIUS and U.S. Manufacturers



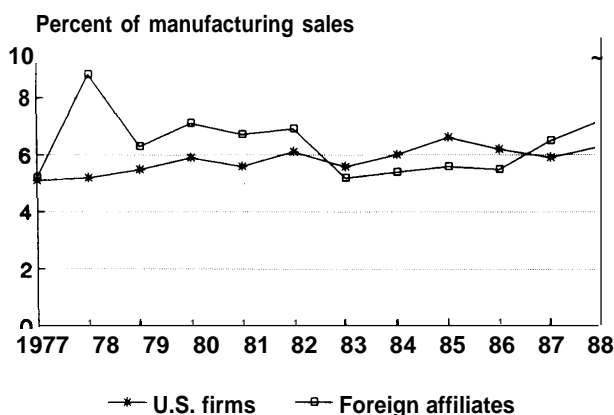
SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, "Employment and Earnings, November 1988," table B-1; National Science Foundation, Division of Science Resources, unpublished data; and U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates, 1977-80, 1985, tables F-1 and H-3, and subsequent series.*

Investment in Plant and Equipment

Besides R&D, another possible measure of a firm's contribution to the nation's technological proficiency is its investment in plant and equipment. While plant and equipment are not all there is to technology, they do embody and contribute to technology. Advanced equipment and well-designed plants, together with well-trained workers, can make a significant contribution to productivity and product quality. Investment in plant and equipment may make a less direct or certain contribution to technology than R&D. Investment in R&D is sometimes embodied in products or patents that can be widely diffused, while investments in plant and equipment may raise the productivity of only a few plants, and the lessons learned from such investments are difficult to transfer. Nonetheless, modern plant and equipment and intelligent use of workers and machinery do improve productivity and familiarity with modern methods of production: therefore plant and equipment investment is commonly associated with improved productivity and advancing technology.

For the period 1977-88, foreign manufacturing affiliates have been at least the equal of U.S. manufacturing firms in their yearly spending for new plant and equipment (figure 3-8). They far surpassed the American firms in the late 1970s and early

Figure 3-8-Swandin~ for New Plant and Equipment, Foreign-Manufacturing Affiliates and U.S. Manufacturers



SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates, 1977-80, 1985, tables D-29 and E-1, and subsequent series; Economic Report of the President 1990* (Washington, DC: U.S. Government Printing Office, February 1990), table C-90; and U.S. Department of Commerce, Bureau of the Census, "Plant and Equipment Expenditures and Plans," *Unit@ States Department of Commerce News*, Sept. 13, 1990, table 4.

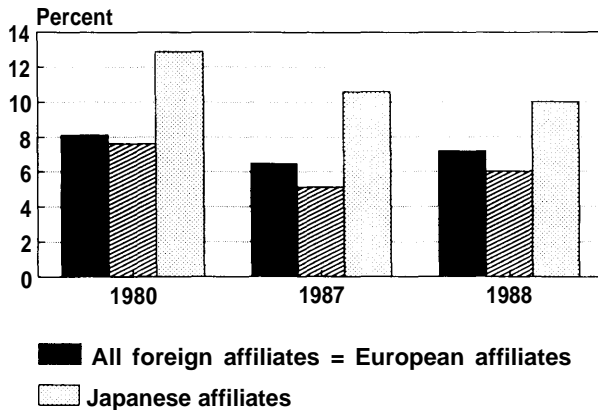
1980s, fell behind for a few years in the mid-1980s, and more recently pulled ahead.

Figures are available for 3 years (1980, 1987, and 1988) on property, plant, and equipment investment as a percentage of sales for manufacturing affiliates by country of the parent company.⁴⁴ These data show that the Japanese far outstripped their European counterparts, and foreign manufacturing affiliates in general, in such investments per dollar of sales (figure 3-9). One likely reason is the Japanese propensity to invest directly in new plants rather than to acquire or buy a share in existing ones, as the European investors are more prone to do.⁴⁵ Another is that the concentration of investment in capital-intensive industries--disproportionate investments in motor vehicles and electronics--means higher investment/sales ratios.

Japanese FDI: A Special Case

Japanese direct investment in the United States differs from that of other countries in more than one way. As noted, the very high proportion of sales from wholesale affiliates suggests that a dominant interest in Japanese investment is to sell goods made in Japan. This accords with the responses of firms surveyed by MITI in a recent survey.⁴⁶ Over 80 percent of respondents indicated that their motive

Figure 3-9—investment in Plant, Property and Equipment as a Percent of Sales of Manufacturing Affiliates



SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States, 1980, October 1983, tables D-9 and E-1, and subsequent series.*

for investing offshore was to increase sales in local markets. This motive ranked highest on the list of all reasons in all markets.⁴⁷ Other motives also strongly suggest that the main reason for investing was to increase sales; nearly 50 percent of respondents said they invested in the United States because of U.S. trade regulations (implying that they were substituting local production for exports); about 25 percent invested in the United States “to obtain a good partner in the local market.”⁴⁸

Another main interest (greater than that evident in other countries’ investments) seems to be gaining access to advanced technologies.⁴⁹ For example, contrary to the general Japanese characteristic of majority ownership in foreign affiliates, minority Japanese investments in small American high-technology firms almost doubled from 1988 to 1989, rising from \$176 million to \$320 million. This can be seen as an effort by Japanese companies to gain access to U.S. technology and diversify into new businesses. It does not necessarily imply that Japanese firms are somehow siphoning technology from the United States, for the U.S. firms get something in return. Many find that FDI is a good entree to foreign markets, and a large Japanese partner may have distribution channels that small firms could not duplicate.⁵⁰

The advantages of a tie-up between a small American company and a big Japanese firm maybe illustrated by two recent agreements signed between

Nicolet Instruments Corp. and Matsushita Communication Industrial Co. Ltd. The agreements grant Matsushita the right to sell a line of Nicolet’s oscilloscopes in Japan under Matsushita’s name (something Matsushita doubtless has an advantage in doing), and provide for cooperation and exchange of technical information between the two companies in the development of electronic measurement products. According to the CEO of Nicolet, the alliance greatly enhances Nicolet’s market penetration for its new oscilloscope in Japan, while the technical exchanges between the two companies will allow them to develop a new line of instruments to be marketed worldwide.⁵¹ While the agreement between Nicolet and Matsushita may or may not involve direct investment, the mechanics are familiar; many Japanese investments in American high-technology companies involve similar arrangements.⁵² Moreover, the different interests of the Japanese investors may prove a boon to American high-technology companies as well. According to one source, Japanese firms are interested in one thing: long-term gain, which translates to a strong interest in R&D. Typically, Japanese middle managers have the authority to commit significant funds to R&D or joint development programs. U.S. investors in high-technology firms—venture capitalists—want to cash in their gains in a relatively short time (in 7 or fewer years), a constraint the Japanese investors to not impose.⁵³

While many American companies find alliances with (and investment from) Japanese companies beneficial, there is still worry about the long-term consequences. For example, many observers worry that, in alliances with large Japanese firms, small American companies may end up losing control of their technologies and products. Another concern is that Japanese investment in high-technology electronics firms and their suppliers will result in U.S. semiconductor and systems makers being overly dependent on Japanese firms for critical components. That dependence, in turn, could be used as a competitive or political weapon.

For example, the recent decision of the Administration to allow the Japanese company Nippon Sanso to purchase the American firm Semi-Gas Systems, a supplier of high-quality gas equipment to semiconductor makers (and a participant in Sematech), could make the U.S. semiconductor industry vulnerable in several ways. The purchase will mean that Japanese companies will control over 40 percent of the world

market and nearly half the U.S. market for high-quality gas equipment.⁵⁴ It fight, for instance, mean that Nippon Sanso could cut off supplies to Sema-tech or its member companies in response to trade policy decisions like the 1989 naming of Japan as an unfair trader under the Super 301 section of U.S. trade law. Or the pressure could be more in the realm of business operations than politics: Nippon Sanso could selectively favor its Japanese customers with new products, low prices, and quick deliveries.⁵⁵ Allegations of such discriminatory practices on the part of Japanese companies have surfaced in the past, but are difficult to pin down.⁵⁶

The situation in semiconductor manufacturing equipment as a whole is not so stark as that in high-quality gas equipment. According to the International Trade Administration of the Department of Commerce, Japanese firms' investments accounted for 10 percent of the market in 1983, and had increased to 15 percent in 1988. VLSI Research estimated that the share would reach 26 percent in 1993.⁵⁷ These investments are a significant but not yet overwhelming share of the U.S. market, but combined with imports of semiconductor manufacturing equipment from Japan, they contribute to fears of Japanese dominance.

Whether allegations of discriminatory practices are true or not, dependency is always worrisome, particularly in technologies or industries considered critical to a nation's well-being. This category includes products for maintaining national security and agricultural commodities in most advanced nations. Increasingly, dependence on foreign companies or countries for high-technology products has become a source of anxiety. The problem becomes acute when foreign competitors control the most advanced equipment, materials, and supplies needed to produce something as vital as semiconductor chips, especially when, as in the case of Japanese electronics companies, a few large firms are in a position to wield oligopolistic market power. Because of the particular nature of Japanese business, many fear that this control could be more costly than possible temporary disruptions in supplies or control of prices, in the end costing the United States the ability to produce advanced components and products at any price.

There is also fear that Japanese investment could mean increased economic and political influence over American business and government. This

concern is typical of nearly every country facing heavy FDI. Developing nations have long maintained strict controls over foreign firms, and sometimes nationalized them, to avoid foreign economic dominance or excessive interference in domestic affairs. In this respect too, however, many nations worry that Japanese corporate investment is somehow different from investment by firms of other nationalities.

Another worry is that Japanese investment is shaped by the aims and goals of headquarters and is therefore unresponsive to local concerns. Even in developed nations, Japanese firms are unwilling to relinquish headquarters control of local operations. A symptom of this is the sparse representation of native managers in Japanese affiliates abroad. A recent report from the American Electronics Association showed that, while 71 percent of American electronics firms in Japan have Japanese CEOs, only 2 percent of Japanese electronics firms in the United States have American CEOs.⁵⁸ Another report is that Japanese companies in America have difficulty recruiting qualified American management, because many U.S. executives believe that Japanese companies will keep non-Japanese staff out of important decisions,⁵⁹ or force them to check with the Japanese headquarters for all decisions of consequence.

This phenomenon is not limited to the United States. A study of 62 multinational companies doing business in Australia (42 American or European and 20 Japanese) showed the same pattern.⁶⁰ Most American or European operations in Australia were managed by Australians, but only one of the Japanese operations was wholly Australian-run, and even when Australian managers were used, their discretionary power was curtailed by Japanese advisors.⁶¹ Some Americans working for Japanese companies complain that they have few opportunities for advancement, and fear that Japanese companies are more likely than companies of other nationalities to keep high-paying jobs at home.⁶²

These complaints are consistent with the responses of Japanese companies to a recent MITI survey of their international operations. As of 1989, over 93 percent of the respondents managed their international operations from Japan, either by letting each functional division (e.g., marketing, manufacturing, or administration) manage both domestic and international business, or through an international business division that controls all overseas activi-

ties.⁶³ Less than 6 percent of respondents have established a supervising corporation overseas to control manufacturing and sales in local markets, and less than 2 percent have overseas managing and supervising corporations that control all activities in local markets. Five years ago, however, less than 3 percent controlled any offshore operations from the local market. Nearly a third of respondents claimed that they would establish overseas managing and supervising corporations to control some or all of local operations by the mid- 1990s.

Another hallmark of Japanese investment abroad is its pattern of purchasing capital equipment from the home country. The study of multinational companies doing business in Australia reported that the American and European companies' equipment showed no national purchasing pattern; their equipment was made in America, Japan, and several European countries. Japanese companies, on the other hand, bought the overwhelming preponderance of their equipment from Japan. The study's author said:

When an American or European company buys machinery to set up a plant, they take competitive bids. But the Japanese go directly to Japan.⁶⁴

Finally, for all industrialized countries, there is a fundamental asymmetry between Japanese investment abroad and foreign investment in Japan. The United States is just waking up to a reality that some nations in the industrialized world has long faced—the presence of strong foreign commercial interests in the domestic market and is reacting to it in what is probably typical fashion. Some people welcome the foreign investors, and see the increase in FDI as a response to market forces that will benefit U.S. consumers. Some react with heightened concern, even xenophobia, and regard any foreign influence as potentially suspicious. Opinions come in every shade between these two extremes.

If Americans just awakening to these issues, Japan still slumbers. It is still the exception among industrial nations in the degree to which foreign investors are constrained from participating in its economy. While Japanese investors have aggressively stepped up investment in America, and recently in Europe, investment in Japan is still restricted. In 1985, assets of Japanese affiliates in the United States and those of U.S. affiliates in Japan were equal, both standing at \$64 billion. In the next 3 years, assets of Japanese affiliates in this country

multiplied more than fourfold, rising to \$275 billion, while U.S. affiliates' assets in Japan rose only to \$129 billion. Leaving aside financial institutions, assets of Japanese affiliates in the United States rose 106 percent while U.S. affiliates' assets in Japan grew 70 percent. American companies investing in Japan, particularly in preceding decades, were often obliged to license technologies, take a Japanese firm as a partner, or promise to limit market shares in return for permission to invest there; Japanese companies, in contrast, have been relatively free to invest in America, though the ambient political atmosphere surrounding their recent investments influenced their decisions.

The asymmetry is not just bilateral. In 1986, FDI in manufacturing accounted for 10 percent of U.S. sales, 7 percent of employment, and 9 percent of assets in the manufacturing sector. Corresponding figures for major European economies are: for France, 27 percent of sales and 21 percent of employment; for Germany, 18 percent of sales, 13 percent of employment, and 17 percent of assets; and for the United Kingdom, 20 percent of sales, 14 percent of employment, and 14 percent of assets. In Japan, in stark contrast, FDI in manufacturing accounted for 1 percent of sales, employment, and assets.⁶⁵ Between 1960 and 1987, direct investment in Japan increased from 0.6 percent of the world total to 0.8 percent. During the same period, inward investment in the United States increased from 9.4 percent of all inward investment in the world to 25.2 percent, and Europe's share increased from 29.8 to 37.6 percent.⁶⁶ While the United States and Europe debate the merits of foreign investment and how it contributes to national well-being, the Japanese seem to have made a clear choice: domestic firms are preferred to foreign firms in Japan.

It is hard to say whether differences in Japanese investment behavior at home and abroad are a problem. Japanese firms are quite effective at selling in the markets they invest in. They are more likely than other foreign firms to build new plants and retain greater control over their affiliates (although their investment position is lower overall than those of European or Canadian investors), which could work to either the benefit or the detriment of the nation (or be neutral). For example, if Japanese affiliates invest heavily in training, R&D, and capital equipment, as Japanese parent firms generally do, then America may stand to gain more from Japanese investment than from investments by firms

of other nationalities. In at least one industry, motor vehicles, Japanese affiliates have a good record of investment in training (see the discussion below), and the few figures available on the point indicate that their manufacturing affiliates invest more in plant and equipment, per dollar of sales, than foreign affiliates generally. R&D data by country of affiliate are even less adequate, but the scanty available figures suggest that Japanese affiliates' R&D intensity is low. European firms fall closer to the average in all areas, but this is partly because European investment is so large that it has a greater effect on the average. In 1988, assets of European affiliates were 48 percent of the assets of all affiliates of foreign firms in the United States, while Japanese affiliates accounted for less than 24 percent. In manufacturing, where most of the R&D spending and capital investments take place, European affiliates had 63 percent of assets, and Japanese affiliates 10 percent.

Japanese documents acknowledge that the international operations of Japanese companies have been mostly aimed at exporting, but there are indications that new strategies are emerging. As noted, MITI's survey showed that many more firms are planning to transfer significant control to foreign affiliates. Perhaps more significantly, increasing numbers of Japanese firms are also planning to spread R&D to offshore locations. At the time of the survey, 55 percent of respondents had R&D overseas only to provide technical support for sales and post-sale service; another 33 percent maintained foreign R&D bases to support local manufacturing. Another 10.5 percent maintained local R&D to design products specifically for local markets, while less than 2 percent maintained foreign R&D that was not directly in support of local market needs.⁶⁷ By the mid-1990s, however, 11.6 percent of the respondents planned to have foreign R&D aimed at general, rather than strictly local, corporate objectives. In addition, MITI's white paper maintains that Japanese corporations are in the first stage of global investment, and as investments mature, the expectation is that Japan's trade surplus will diminish. Such plans, if implemented, will make Japanese investment both more acceptable and more beneficial to host nations. Some American observers also expect Japan's trade surplus to dwindle as planned foreign investments are made. One member of MIT's International Motor Vehicle Program maintains that exports of Japanese automobiles will eventually be

replaced largely by production in overseas markets, partly because Japanese firms are becoming more confident about their ability to manage overseas facilities and partly because overseas markets will be increasingly unwilling to sustain large auto trade deficits with Japan.⁶⁸

A caution is in order, however. The plans of Japanese corporations are in line with the demands of foreign markets and governments, but it is not clear how much responsibility or R&D will be transferred offshore without such pressure, or whether plans to replace Japanese exports with offshore production will materialize absent the increasing trade friction of recent years. Selling abroad is not, of course, the only reason for international investment, and many Japanese firms will invest abroad even without pressure from foreign governments. But if there is a lessening of trade tensions (at this point, that does not appear likely) there may also be less change in the behavior of Japan's offshore affiliates than the MITI survey suggests. Finally, it is always well to bear in mind that plans and expectations are often different from reality; unforeseen circumstances could well cause the respondents to MITI's survey to change their plans.

Perhaps the best way of viewing the issue right now is summed up in a quote:

The fears of some Americans, that the Japanese industrial presence in the United States is a mixed blessing, are not irrational. Japanese firms are not simply responding to trade friction by building an industrial presence in the U. S., but are pursuing a long-term strategy of creating an infrastructure which will enable them to sustain their market share above present levels, insulated from currency fluctuations and the vagaries of protectionist sentiment.⁶⁹

EMPLOYMENT AND EMPLOYEE COMPENSATION

If it comes to a choice, most nations prefer foreign investment to imports, because foreign investment provides jobs, while the connection of imports with jobs is indirect at best. For example, one of the interests of the European Community, France and Italy in particular, in easing the adjustment to more open trade in motor vehicles is the employment they stand to lose if cars exported from Japan are allowed free access. The insistence of some in the EC on high levels of domestic content for foreign cars built in member countries. is additional evidence of the

concern for domestic workers and jobs. The effect of this demand will be either that of guaranteeing a market to domestic firms, or of ensuring that domestic workers get some of the benefit of foreign firms' sales in the consuming country.

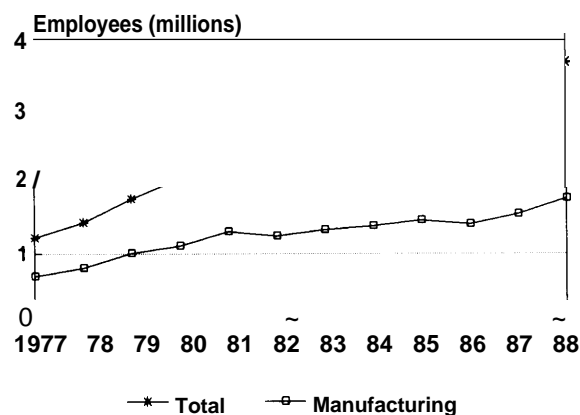
Affiliates of foreign parents accounted for 1.7 million manufacturing employees in the United States in 1988; this was 8.9 percent of all U.S. manufacturing employment, up from 3.5 percent in 1977. While foreign corporations are, therefore, a growing force in U.S. manufacturing employment (figure 3-10), they are not necessarily creating jobs at the same rate that their employment has grown. Not all the jobs held by workers in companies called affiliates of foreign companies are jobs that the foreign company created through investment. DuPont is a good case in point; it is a foreign affiliate because a Canadian family owns 23 percent of the stock, yet it is difficult to believe that even 23 percent of DuPont's workers in the United States owe their jobs to the Canadian investment.

On the other hand, the greenfield auto plants of the major Japanese auto companies, such as Nissan, Honda, Mazda, probably do represent net additions of jobs that would not exist otherwise. How many of the jobs these greenfield investments added is unknown; we do not know whether, in the absence of Japanese investment, other domestic producers would have made more cars, or if imports would have increased,⁷⁰ or what tradeoffs between production and price would have been made. Even in the case of these wholly new investments, the number of jobs involved almost certainly exceeds the upper bound of what could reasonably be called job creation resulting from FDI.⁷¹

Although FDI does not create as many jobs as there are employees in affiliated establishments, it does affect employment in qualitative as well as quantitative ways. Where the foreign investor's influence is significant, and therefore results in different training or a different business culture and management style, there are effects. Whether they are positive or negative is another matter.

Training has been most carefully studied in Japanese-owned automobile assembly plants in the United States. They have a distinct edge over U.S.-owned assembly plants in the training they provide their employees—not only shop-floor production workers, but also supervisors and manufacturing engineers (table 3-7). For newly hired produc-

Figure 3-10-Employment in U.S. Affiliates, 1977-88



SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates, 1977-80, 1985, table F-4, and subsequent series.*

tion workers, the difference is enormous (279 hours v. 46 hours), but there are substantial differences in every category. Note, too, that training for most categories of employees is still greater in Japanese-owned plants in Japan than in the Japanese transplants in America.

In some cases, Americans working for foreign-owned companies speak glowingly about the lessons they have learned from their foreign parents. Managers at New United Motor Manufacturing Inc. (NUMMI), a joint venture of General Motors and Toyota, attribute much of the turnaround in the plant's performance to their newly learned Japanese way of doing business. NUMMI operates from a plant in Fremont, California. The plant was formerly owned and run by General Motors and was often described as one of GM's worst plants. In 1982, it was shut down, presumably for good. It reopened 2 years later as NUMMI, with a crew of senior managers from Toyota and a work force largely drawn from former UAW employees of the Fremont plant (80 percent of the workforce of NUMMI worked for GM Fremont). By 1986, when NUMMI was running at full capacity, its quality record matched that of Toyota's Takaoka assembly plant in Japan, while its productivity record was somewhat worse (19 assembly hours per car, compared with 16 at Takaoka). Its parts inventory averaged 2 days, compared with Takaoka's 2 hours, but this was still substantially better than GM's Framingham plant,⁷² where inventory averaged 2 weeks. GM says it is busy trying to pass the lessons it learned at NUMMI

Table 3-7—Training Hours

	Japan/Japan	Japan/U.S.	U.S./U.S.
<i>Production workers:</i>			
New hires ^a	315.5	279.3	45.7
Experienced workers	87.0	53.3	28.8
<i>Supervisors:</i>			
New hires	160.0	260.0	166.7
Experienced workers	109.2	80.0	60.4
<i>Manufacturing engineers:</i>			
New hires	864.0	466.7	155.0
Experienced workers	156.7	100.0	72.3

^aNewly hired employees, first 6 months on the job.

SOURCE: John F. Krafcik, "Training and the Auto Industry: International Companies," contractor report prepared for the Office of Technology Assessment, February 1990.

on to managers at its other plants, though this has proved difficult, for it changes the job of every worker and manager at GM.⁷³

Even at NUMMI, the employment effects are not uniformly positive. There have been complaints about the pace of work and lack of seniority benefits in work assignments,⁷⁴ although no real strife has erupted. Also, it is not clear how much or how fast GM is able to transfer the knowledge the workers and managers of NUMMI have obtained from their experience with Toyota. Nevertheless, the venture's experiences have the potential of changing for the better the way some managers and workers think and work. So, too, do the other Japanese transplants.

Other experiences are more problematic. In 1984, the Japanese firm NKK bought half of National Intergrupp, Inc., making National Steel Corp. a Japanese affiliate. The Japanese chairman arrived in 1986, and the company's productivity has improved 16 percent since 1984-85, but it still remains one of the least profitable in the steel industry. Despite a \$200 million annual capital improvement program, the company needs repairs for its blast furnaces, while unscheduled maintenance problems abound. The union there has one of the industry's most generous contracts, including a job security provision that restricts layoffs, but labor relations have been rocky, and the local unions have fought "efficiency-boosting job flexibility."⁷⁵ Whatever lessons Japanese managers have to teach have been hard to pass on at National Steel.

Finally, as noted above, Japanese firms may be less inclined to assign discretionary responsibility to American managers than other investors; certainly, they are less likely to hire American managers in

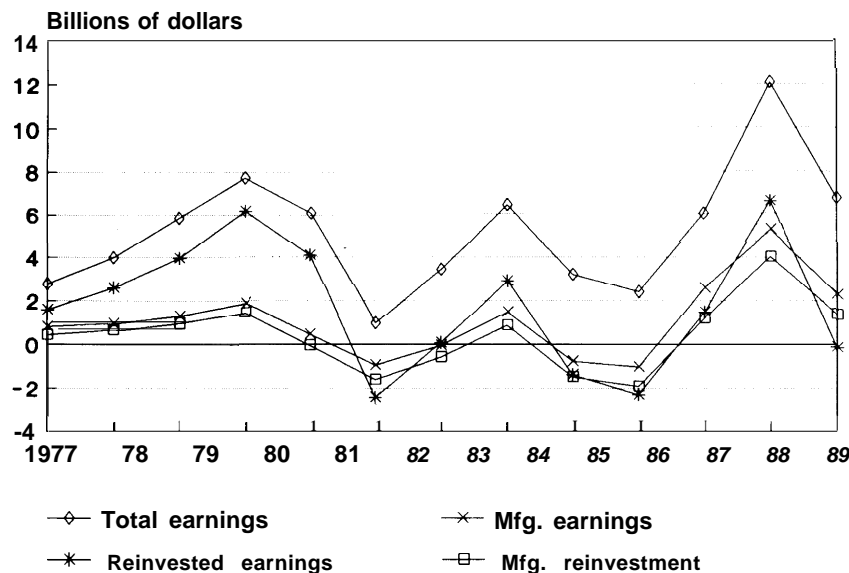
America than U.S. firms are to hire Japanese managers in Japan.

Can American workers and managers learn more from foreign direct investors than they already have? Probably, but there are limits. In some cases, the foreign parent is more a financial than a managerial presence, and many foreign affiliates are run the same as, or only slightly different from, American companies. In other cases, foreign companies may not have much to teach. In 1988, European affiliates had nearly 3 billion dollars' worth of investment in motor vehicles and equipment in North America, but the quality and productivity records of the European auto manufacturers are worse than those of the Big Three American companies.⁷⁶ Unlike the Japanese case, there are few lessons to be learned from European auto production management.

In terms of compensation and layoffs, foreign affiliates behave more or less like American companies. During the 1982 recession, U.S. manufacturing employment dropped 7 percent from the previous year's employment, while sales dropped 5 percent. Foreign manufacturing affiliates' employment dropped 4 percent, although sales increased 1.5 percent. Foreign affiliates' manufacturing employment also dropped in 1985, as did U.S. manufacturing employment generally. While American firms have reputations abroad as fickle employers (it has sometimes been hard for them to recruit good employees in Japan because of their reputations as unstable employers during downturns), many foreign affiliates behave in similar ways when they do business in the United States. For example, in 1985, when the semiconductor industry worldwide went into a steep slump; at least two Japanese affiliates producing chips in U.S. plants (NEC and Toshiba Semiconductor) laid off workers in much the same way as their American counterparts in Silicon Valley.⁷⁷ NEC official Koichi Shimbo told the *San Jose Mercury News*: "When we are in the U. S., we do like the Americans."⁷⁸

In terms of compensation, foreign affiliates and American firms are very little different. While foreign affiliates pay higher compensation per employee overall than U.S. firms, this is due to the relatively heavy concentration of affiliates in high-wage industries like banking. Within manufacturing, foreign affiliates and American firms pay nearly the same compensation to workers.⁷⁹ This is not surprising; if foreign firms failed to pay as much as

Figure 3-n-Earnings and Reinvested Earnings: Foreign Direct Investors in the United States



SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, "Foreign Direct Investment in the United States," *Survey of Current Business*, various August and October issues covering the years 1977 through 1989, table 4.

U.S. firms, they would have difficulty attracting workers.⁸⁰

PROFITS

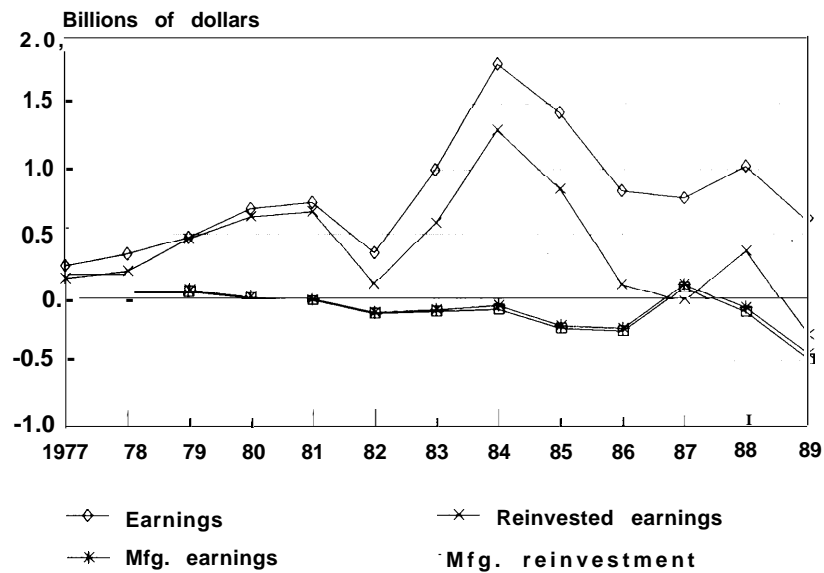
The way a multinational uses its profits also is an indicator of its commitment to foreign markets. In the 1960s, when American multinationals were investing heavily in Europe, concerns were raised about whether profits were reinvested or repatriated. Now, with FDI rising rapidly in the United States, we have come full circle, and Americans are wondering whether foreign companies use the profits made in the United States to benefit U.S. citizens, or instead send most of them back to the home country.

According to Bureau of Economic Analysis (BEA) data, reinvestment depends heavily on earnings. The amount reinvested, particularly by manufacturing affiliates, bears a very close relationship to earnings, for all foreign direct investors in general, and for European and Japanese investors in particular (figures 3-11, 3-12, and 3-13). The difference between earnings and reinvested earnings is distributed earnings, which are quite small for Japanese manufacturing affiliates and a bit larger for European affiliates. This fits with the well-known fact

that Japanese manufacturing firms generally pay out very small dividends, compared with European or American manufacturers.

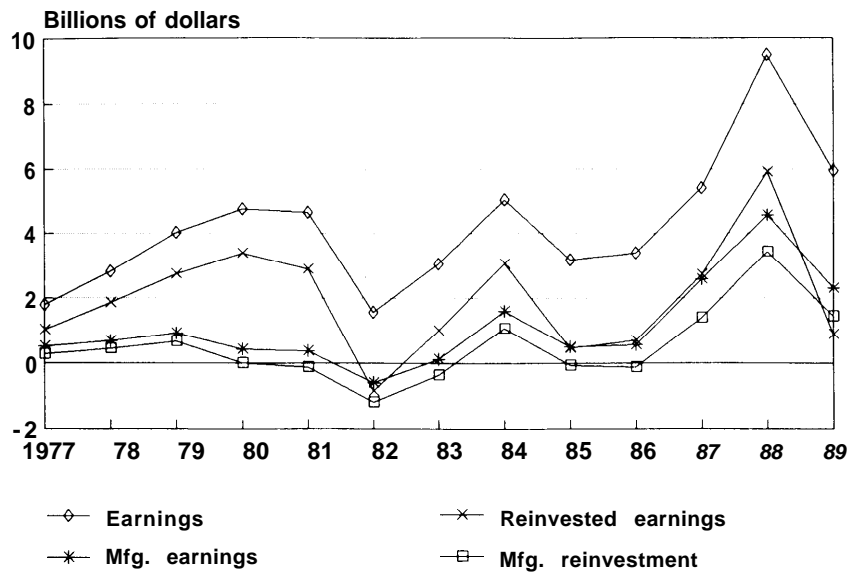
If we look more broadly at all FDI (not just in manufacturing), distributed earnings are increasing, although the relationship with earnings is still strong. This is particularly striking for Japanese investment, whose distributed earnings increased modestly between 1982 and 1984, and then rapidly after 1984 (figure 3-12). The increase occurred in wholesale trade and a category called "other," which includes retail trade, banking, finance, insurance, and real estate. In 1989, 95 percent of Japanese affiliates' distributed earnings came from these wholesale trade and the group labeled "other," and in 1990, 96 percent. European affiliates' distributed earnings originated differently; they came mainly from petroleum, "other," and manufacturing, with very little from wholesaling. In 1988, manufacturing accounted for the largest reported share, 32 percent. European affiliates' distributed earnings in 1988 and 1989 were reported in neither petroleum nor "other" separately, to avoid disclosure of data of individual companies. In 1988, the two sectors combined accounted for 58 percent of all distributed earnings, and in 1989, 68 percent.

Figure 3-12—Earnings and Reinvested Earnings: Japanese Direct Investors in the United States

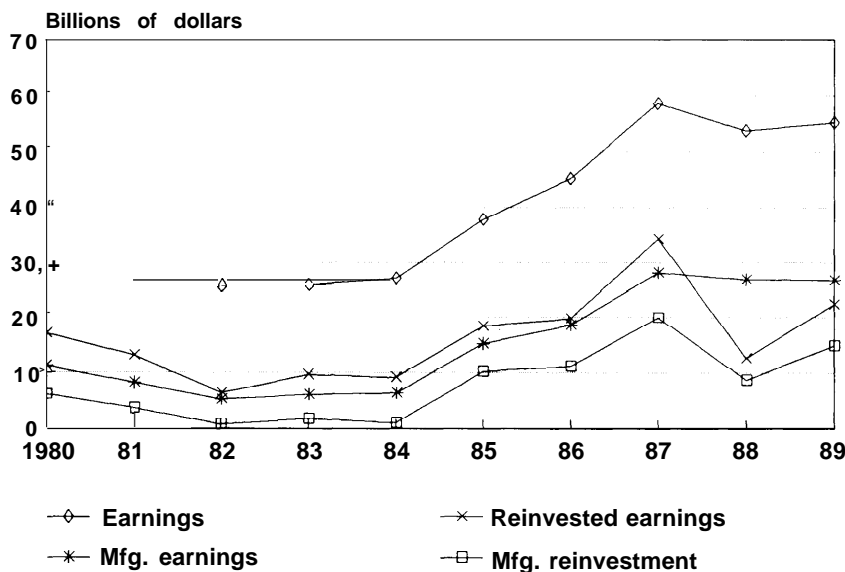


SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, "Foreign Direct Investment in the United States," *Survey of Current Business*, various August and October issues covering the years 1977 through 1989, table 4.

Figure 3-13—Earnings and Reinvested Earnings: European Direct Investors in the United States



SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, "Foreign Direct Investment in the United States," *Survey of Current Business*, various August and October issues covering the years 1977 through 1989, table 4.

Figure 3-14—Earnings and Reinvested Earnings: U.S. Direct Investment Abroad

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, "U.S. Direct Investment Abroad," Survey of Current Business, various August and October issues covering the years 1977 through 1989, table 20.

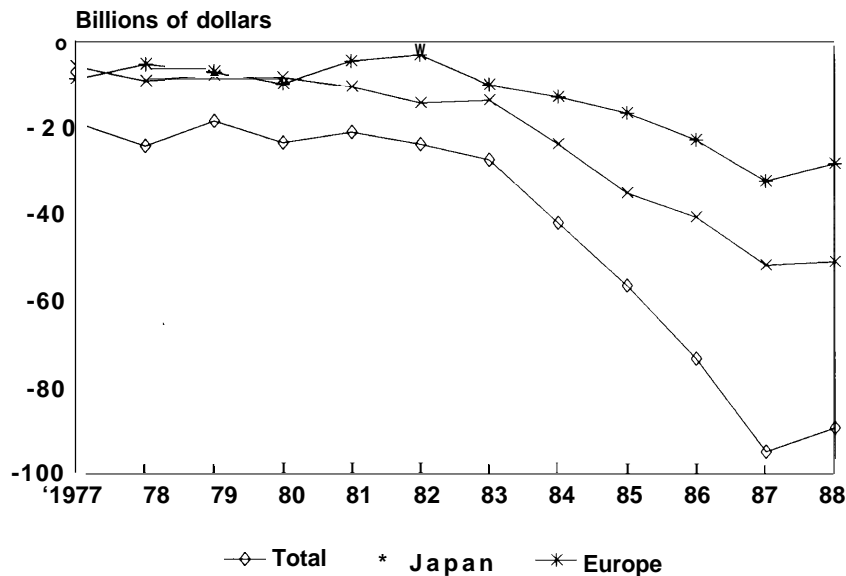
One noteworthy feature of the data, going back to 1977, is that earnings of manufacturing affiliates are often small or negative. For Japanese affiliates they are hardly ever positive; since 1980, Japanese manufacturing affiliates' earnings have been positive only once, in 1987, European manufacturing affiliates' earnings dipped into the red only once, in 1982, a recession year. This observation raises several questions about how earnings are viewed. One possibility is that foreign investors in manufacturing, and Japanese investors in particular, are here mainly to gain market share, not profit, and can afford to sustain many years of financial losses. Eventually, of course, the firms must expect to profit from the increase in market share, but perhaps not yet; substantial Japanese direct investment in manufacturing is fairly recent. Another possibility is that foreign affiliates' earnings are calculated with an eye to where the parent company would most like to pay corporate taxes and get tax breaks. Suggestions that affiliates in the United States are charged higher-than-market prices for both goods imported from the parent organization or for intangibles (e.g., R&D) come up from time to time, but so far are unresolved. It is possible that earnings of foreign affiliates are understated because parent firms prefer to deal with corporate taxes at home rather than in the United States.

Whatever the resolution, Japanese affiliates in America are acting differently in making or reporting earnings and in reinvestment. American multinationals' earnings and reinvested earnings in their overseas affiliates, overall and in manufacturing, have been positive throughout the 1980s (figure 3-14). This may reflect the fact that, compared with Japanese firms, American firms are under heavier pressure to make and distribute earnings, or it may have to do with differences in corporate tax rates and incentives here and abroad.

INTERNATIONAL TRADE

Foreign affiliates have a higher propensity to import than American firms, and the overall trade deficit associated with the operations of affiliates is substantial (figure 3-15). In 1988, the deficit in merchandise trade associated with U.S. affiliates of foreign investors (about \$90 billion) was 75 percent of the total U.S. merchandise trade deficit (\$120 billion). Between 1977 and 1988, U.S. affiliates of foreign firms increased their merchandise imports 11.3 percent annually, from less than \$46 billion to nearly \$150 billion, while their merchandise exports increased from \$21 billion to \$52 billion, 8.6 percent per year. The affiliates' trade deficit accordingly increased from \$21 billion in 1977, when the United States had an overall merchandise trade deficit of

Figure 3-15-Merchandise Trade, FDIUS Affiliates



SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates, 1977-80, 1985*, table H-3, and subsequent series.

\$27 billion, to nearly \$90 billion in 1988. In 1977, European affiliates accounted for 42 percent of the trade deficit associated with FDI, but their share dropped to 32 percent by 1988, while Japanese affiliates' share increased from 28 percent of the total deficit to 57 percent (figure 3-15).⁸¹

The nature of affiliates' imports varies by country. In 1988, Japanese affiliates imported mostly through their wholesale trade establishments in the United States; 93 percent of their imports came to wholesalers and only about 7 percent to manufacturers. Forty-four percent of the merchandise imports of all Japanese affiliates were motor vehicles shipped to affiliated Japanese wholesalers (\$33.4 billion of a total of \$75.9 billion). Motor vehicle imports to wholesalers dwarfed the next largest category of Japanese affiliates' imports, \$12.8 billion in imports to electrical goods wholesalers. All this supports the point made earlier, that the preponderance of Japanese FDI operations in the United States is related to selling goods made in Japan, and this shows up in trade figures as much as in sales.

While Japanese affiliates account for a substantial trade deficit in motor vehicles, there is a noteworthy countertrend. Honda, the first Japanese automaker to set up U.S. manufacturing operations, now exports cars from the United States—in fact, it expects to

export 70,000 cars from the United States this year. If it does, its exports will exceed auto exports by the Big Three U.S. automakers to all nations except Canada (which has a longstanding free trade agreement with the United States in motor vehicles).⁸² The U.S. content of Honda's motor vehicles was low, only 25 percent, when the company began operations here in 1982, but Honda claims it will have 75 percent North American content in its U.S. and Canadian operations by 1992.⁸³ So while the balance of bilateral motor vehicle trade between the United States and Japan is still heavily tipped in favor of a Japanese surplus, the irony is that Japanese direct investment in the United States may end up contributing disproportionately to U.S. motor vehicle exports, too.

European affiliates' imports in 1988 also came mostly through wholesalers, but to a much smaller extent than Japan's: 54 percent of European affiliates' imports were done by wholesalers. Manufacturing affiliates accounted for 34 percent of all European affiliates' merchandise imports. Like the Japanese, European affiliates' largest single category of imports was motor vehicles imported by wholesalers, but autos were a much smaller proportion of their total merchandise imports, only 25 percent. The second largest category was imports by

manufacturers of electric and electronic equipment (6.6 percent of total merchandise imports).

Altogether, foreign affiliates accounted for imports of motor vehicles and parts totaling \$50.7 billion in 1988 (including imports by manufacturers and wholesalers), and a motor vehicle trade deficit of \$46.1 billion.⁸⁴ This compares with a total U.S. trade deficit in motor vehicles of \$49.2 billion in the same year. Manufacturing affiliates accounted for \$21 billion in merchandise exports, and \$29.3 billion in imports; wholesale trade affiliates accounted for a total of \$35 billion in exports and \$109.6 billion in imports. Clearly, the FDI deficit in auto imports by manufacturing affiliates is small compared to auto imports by wholesalers.

Firms wishing to sell in Japan cannot do it so easily by establishing a wholesaling affiliate in that country, nor would many small U.S. firms have the resources to do so even if there were no institutional barriers against it. Many of the small American high-technology firms that have formed alliances with foreign partners cite as one of the benefits their increased access to the Japanese market (see the Nicolet example above). Sometimes the arrangements are more complicated: the Japanese tractor maker, Kubota, bought a stake in the American company Cummins Engine to take advantage of Cummins' extensive European network, in preparation for European market integration in 1992.⁸⁵

Although FDI is associated with a large negative effect on the U.S. trade balance, it is misleading to think of FDI as the *cause* of our trade deficit. The fundamental causes are our puny national savings rate (greatly exacerbated by the Federal budget deficit), and the failure of U.S. manufacturing to keep up technologically with increasingly able competitors, principally Japanese.⁸⁶ According to economic theory, a nation's current account trade balance (which includes trade in services, transfer payments from governments, and income from property abroad, as well as trade in goods) is determined by the national rates of savings and investment; over time, the current account trade deficit (or surplus) is equal to the difference between domestic investment and domestic saving. If foreign investors' imports are persistently larger than their exports, this would tend to widen the U.S. current account trade deficit, but then the value of the dollar would presumably drop, making U.S. exports cheaper and returning the trade deficit to the level deter-

mined by the relation between domestic savings and domestic investment. In such circumstances, weakening of the dollar might be postponed if foreigners invested enough of *their* savings in the United States to sustain a widening current accounts trade deficit; this is what happened during the early 1980s. Later in the decade, the dollar declined and the merchandise trade deficit and current account deficit narrowed. However, this process is costly. A lower dollar raises the price of imported goods, and in the long run, reliance on a cheap dollar to right the trade balance tends to undermine the U.S. standard of living.⁸⁷ The most constructive way to get rid of the U.S. trade deficit is to produce goods that the world will buy because they are well-made and of good value.

NATIONAL INTERESTS, BUSINESS INTERESTS

What do nations want from firms, and what do firms do? Nations want things that make citizens better off: well-paid jobs, additions to knowledge and productivity, exports, investment. In some ways, foreign firms' affiliates in the United States measure up well on many counts, compared with firms whose headquarters are in the United States, and less so on others. Foreign affiliates and U.S. firms are similar in their compensation of workers. Foreign affiliates do less R&D here per dollar of sales than do American firms, and they have a much greater propensity to import. In the latter regard, Japanese affiliates are noteworthy for their heavy importing, almost all of it from Japan. Some affiliates have made valuable contributions to workers' skills and to managers' competence, through training and on-the-job lessons; others operate in very much the same way as U.S. firms. They are about as reliable, in terms of job security, as American firms. All of this, of course, is on average. Japanese firms are particularly oriented to selling here; European firms' investments apparently represent a more diverse set of goals.

What all this means is that most of the differences in behavior between American and foreign firms are not very striking. Decisions about who ought to be allowed access to programs designed to improve competitiveness and living standards for Americans would therefore be more discriminating if they were made on the basis of individual firms' behavior and performance, rather than strictly on nationality.

This begs the question of political influence, deliberately. Whether foreign firms or interests have undue influence in national, state or local politics, or whether their influence is exerted in ways that will harm American competitiveness and living standards or aid it, is beyond the scope of this report. Political and national security concerns are relevant to the debate over access to publicly funded programs to enhance competitiveness, and they ought to be; their absence is not a dismissal.

*The Policy Environment:
How America Treats FDI*

The above sections suggest that there are many dimensions of foreign investment to consider if the U.S. Government wants to adopt performance criteria for deciding how to treat affiliates of foreign firms. The discussion so far has focused on what measures might be appropriate if the decision were about whether affiliates were permitted to participate in government-funded programs to promote industrial competitiveness. So far, the Federal Government has not dealt with this issue systematically. It has come up a couple of times, but not specifically as a competitiveness issue. For example, a few European firms want to participate in Sematech, just as a few American firms want to participate (and as IBM has been allowed on a limited basis) in the European semiconductor manufacturing and development consortium, JESSI.⁸⁸ The decision in the United States has been to limit participation to American firms whose headquarters are in the United States and without a controlling foreign ownership position. Part of the rationale for the decision may have been national security. If that is so, then the position of the United States is either changing or is inconsistent with its stated principles and goals.

The official position of the U.S. Government on direct investment, both U.S. direct investment abroad and FDI in the United States, is that firms investing offshore should be treated no differently from domestic firms. This so called "national treatment" standard is the mirror of the official U.S. position toward international trade in the GATT, but the legal principles and policies are not so well defined in the investment arena as they are in trade.⁸⁹ In a few sectors, this principle of neutrality is abridged by one of reciprocity, which stipulates that American firms must be treated abroad as foreign firms wish to be treated here.⁹⁰ The United States, like most nations,

makes a number of exceptions to these standards. The most prominent is for national security.

Exceptions to national treatment for national security reasons are made for two reasons: political sovereignty and military capability. Many nations have discriminated against foreign firms to keep them from gaining too great an influence over the nation's economy or political decisionmaking. The standard for what constitutes "too great" an influence is soft, and often handled case by case. Nations also seek to assure that the capacity to produce military goods and services will be at the government's disposal when needed, and that there will be no unauthorized transfers of sensitive technologies or products.⁹¹ These concerns are recognized by most nations as legitimate, and international agreements covering direct investment permit nations to make exceptions for national security purposes.⁹²

The ability of the government to make exceptions to the national treatment standard for national security purposes was recently strengthened, at least in theory, in the Omnibus Trade and Competitiveness Act of 1988, which added section 721, often called the Exon-Florio amendment, to the Defense Production Act. This provision allows the government to block foreign mergers, acquisitions, or takeovers of U.S. firms if there is a threat to national security.⁹³ Implementation of the provision is done by the Committee on Foreign Investment in the United States (CFIUS), whose members come from various Federal departments and agencies.⁹⁴ So far, CFIUS has not ventured beyond a fairly narrow interpretation of national security. Critics argue that it should interpret national security more broadly to encompass strategic areas of the civilian economy, in the same way that Sematech received DoD funding on grounds that the ability to produce high-performance electronics products for national security depends on a competitive civilian industry.

A crucial test of CFIUS's willingness to interpret national security more broadly was its recent decision to permit a Japanese company to acquire Semi-Gas Systems Inc., the leading U.S. producer of high-purity gas systems for semiconductor manufacture. The President, acting on CFIUS recommendation, decided that the purchase of Semi-Gas by Nippon Sanso would not threaten national security, and the Justice Department decided the sale would not violate antitrust laws. Semi-Gas and Nippon Sanso are first and second in world sales of

semiconductor gas equipment, with Semi-Gas having 21.5 percent of the world market and Nippon Sanso 17 percent. After the acquisition, Nippon Sanso will control nearly 40 percent, far ahead of the next competitor, Air Products, which has 14 percent of world sales.⁹⁵

Although CFIUS has not yet broadened the definition of national security to include competitiveness of dual-use industries, the distinction between what is done for national security purposes and what is done to promote civilian industrial competitiveness is blurred. In some critical industries, such as electronics and telecommunications, the demarcation between the defense industrial base and overall U.S. industry is blurred; DoD must rely on technologies, people, and productive capacity that serve both civilian and military markets. If the Nation's electronics sector's competitiveness declines, so too might DoD's ability to be able to fulfil the military's production needs for either defense preparedness or for times of national emergency or war.

Moreover, the Nation's economic performance is at least equal in importance to military security, and policymakers are searching for ways in which the U.S. Government and industry can collaborate to strengthen America's competitive position.⁹⁶ However, the U.S. Government, particularly the last two Administrations, has steadfastly maintained positions in favor of free markets and against national intervention to promote economic competitiveness. This has led, some argue, to a tendency to find national security rationales for programs designed to promote economic competitiveness, including exceptions to national treatment standards for foreign firms investing in the U.S. market. The United States probably cannot continue to invoke national security for all programs to promote civilian industrial competitiveness. The United States is behind on too many fronts, and in too many high-visibility industries, not to confront the issue of economic competitiveness, and the government's proper role relative to it, for its own sake.

Anew government program with the unambiguous purpose of improving commercial technology is the Advanced Technology Program in the U.S. Department of Commerce. The law states that the program's mission is to improve "the competitive position of the United States and its business" and to "help United States businesses create and de-

velop generic technologies with commercial potential.' ⁹⁷The Program may help joint R&D ventures with technical advice or may take part in the ventures, providing start-up funding or a minority share of the cost. Created in 1988, the Program got its first funding (\$10 million) in fiscal year 1990; the next year Congress upped the amount to \$36 million and at the same time defined conditions under which foreign firms may participate in fiscal year 1991.

The approach is to apply performance standards to both foreign affiliates wishing to participate and U.S.-owned companies. The performance standards stipulate that participating companies shall have investments in U.S. R&D and manufacturing (not limited to "screwdriver" assembly of imported components); a significant employment base; agreements to promote U.S. manufacture arising from any technologies developed in such ventures and to procure materials and components from the United States or Canada. The Secretary of Commerce is given the authority to find companies eligible for participation, using the performance standards as evidence that participation would be "in the economic interest of the United States." In addition, reciprocity provisions apply to foreign participants. They may take part if the Secretary finds that their home country offers U.S.-owned companies comparable opportunities to participate in joint ventures, allows U.S. companies to invest on equal terms with other countries, and affords adequate protection of the intellectual property rights of U.S. companies.⁹⁸

For participation in government-sponsored programs such as the Advanced Technology Program, performance standards can be applied as a kind of screen, or they can be used on a case-by-case basis. While most observers seem to prefer performance requirements to discrimination based solely on ownership,⁹⁹ performance requirements are controversial, too. Graham and Krugman argue that performance requirements can introduce economic distortions, just as trade protection can, that could reduce economic well-being' and serve as a vehicle for political tampering.

The use of performance standards to govern foreign affiliates' participation in Federal programs, and other policy options, are discussed in chapter 2. While considerable information is available about the behavior and performance of foreign affiliates in the U.S. market, the kind of information that would allow an executive agency like CFIUS to discrimi-

nate between investments that are likely to contribute to U.S. competitiveness and those that could endanger it is not always available, and some that is available is not used in today's permissive climate. The issue is very likely to heat up, however, in which case there will be increasing interest in how foreign affiliates contribute to the U.S. economy and technology. The data that exist tell us much, but they can also mask significant differences in contributions at the firm, industry, and country levels. Some of the most pressing questions, for example, about the flow of technology and value added when Japanese investors acquire control of high-technology American firms, cannot be fairly addressed with the data we have from government sources, and may require additional investigation. The behavior of foreign affiliates in general, and Japanese affiliates in particular, is similar enough to U.S. firms in many ways that it is not a simple thing to decide to exclude them on the basis of ownership alone. Neither is their behavior so similar to that of U.S. firms that national treatment standards are a matter of no consequence.

1 John W. Rutter, "Direct Investment Update: Trends in International Direct Investment" U.S. Department of Commerce, International Trade Administration staff report, September 1989. A U.S. affiliate of a foreign direct investor is defined as one in which an investor from another country owns or controls at least 10 percent of a domestic company's voting stock (or equivalent amount in an unincorporated enterprise). Definitions are given in U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: 1987 Benchmark Survey, Final Results* (Washington DC: U.S. Government Printing Office, 1990).

2 OECD is the Organization for Economic Cooperation and Development. Its members include Austria, Belgium, Canada Denmark France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden Switzerland, Turkey, the United Kingdom, and the United States.

3 This refers to the behavior of U.S. affiliates only; Japanese and many European countries have laws and traditions that make them much less prone to lay off workers at home.

4 For discussion of these conclusions, see U.S. Congress, Office of Technology Assessment, *Paying the Bill: Manufacturing and America's Trade Deficit, OTA-ITE-390* (Washington DC: U.S. Government Printing Office, June 1988) and *Making Things Better: Competing in Manufacturing, OTA-ITE443* (Washington DC: U.S. Government Printing Office, February 1990).

5 The dollar may not fall if, as in the early 1980s, interest rates are high enough and confidence in the U.S. economy great enough that foreign investment is sufficient to offset the deficit in merchandise trade and support the dollar at a high level—temporarily, at least.

6 Discussion of how the European Community treats foreign investors is in ch. 5.

7 Edward M. Graham and Paul R. Krugman, *Foreign Direct Investment in the United States* (Washington DC: Institute for International Economics, 1989), pp. 21-24.

8 Public Law 100418, 100th Cong., Title V, part II, sec. 5021, which amended the Defense Production Act of 1950, adding sec. 721.

9 Robert B. Reich "Who Is Us?" *Harvard Business Review*,

January-February 1990.

10 Raymond J. Mataloni, Jr., "U.S. Multinational Companies: Operations in 1988," *Survey of Current Business*, June 1990, pp. 31-44.

11 These measures of the characteristics of jobs in U.S. parent companies versus those in their foreign affiliates were put forth by Laura Tyson in her paper, "Us, Them, and Competitiveness," *The American Prospect*, winter 1990-91. Tyson points out that even in developed countries, jobs in foreign affiliates are not the equal of those in the parent companies, although the discrepancies are not so great. Compensation per employee in developed country affiliates is 90 percent of that in parent companies, and assets per employee, 87 percent.

The comparative data are from Mataloni, *ibid*.

12 U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. Direct Investment Abroad: 1982 Benchmark Survey Data* (Alexandria, VA: National Technical Information Service, 1985), tables III.D.1, 111.H.1, and III.Q.1. The data on R&D spending are for majority-owned affiliates and parent companies of U.S. multinationals; other data are for "non-bank affiliates," which include foreign companies in which a U.S. investor directly owns or controls at least 10 percent of the voting stock (or an equivalent portion in unincorporated enterprises).

13 OTA interview with Jean-Jacques Duby, Group Director, Science and Technology, IBM Europe, Paris, Oct. 8, 1990.

14 Rutter, *op. cit*.

15 Jeffrey H. Lowe, "Gross Product of U.S. Affiliates of Foreign Companies, 1977-87," *Survey of Current Business*, June 1990, pp. 45-53; and Russell B. Scholl, "The International Investment Position of the United States in 1990," *Survey of Current Business*, June 1991, pp. 29, 32. Historical series understate the value of U.S. direct investment abroad, and in comparison overstate the value of foreign direct investment in the United States, as the value of both is measured in book value. This valuation does not capture all the appreciation of investments, and the older an investment, the more likely it is to be undervalued in the official figures. Since for many decades the United States invested more abroad than foreign companies and governments invested here, comparisons of foreign direct investment with U.S. direct investment abroad can be somewhat misleading. However, there are significant inaccuracies in attempting to measure the true value of investments as well. Historical costs are used throughout this report.

16 The investment "position" of a foreign direct investor means its total equity in and net outstanding loans to, its U.S. affiliates. In contrast, the "assets" of an affiliate are equal to the equity of all owners, domestic and foreign, in the affiliate, less all liabilities of the affiliate. "Sales" is, as implied, the sales made by the affiliate in the United States.

17 U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates of Foreign Companies, Preliminary 1988 Estimates* (Washington, DC: U.S. Government Printing Office, 1990), table A-2.

18 Graham and Krugman, *op. cit.*, p. 13.

19 U.S. Department of Commerce, Bureau of Economic Affairs, *Foreign Direct Investment in the United States, Preliminary 1988 Estimates*, *op. cit.*, table A-1, and "The U.S. National Income and Product Accounts, Revised Estimates," *Survey of Current Business*, July 1989, table 6.6B.

20 U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States, Preliminary 1988 Estimates*, *op. cit.*, table E-8.

21 Wholesaling affiliates handle inventories of manufactured products and their sales and distribution to retailers.

22 U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States, Preliminary 1988 Estimates*, *op. cit.*, tables G-6 and A-2.

23 U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States, 1987 Benchmark Survey*,

Final Results (Washington, DC: U.S. Government Printing Office, August 1990), p. 148.

24 U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States, Preliminary 1988 Estimates* (1990) op. cit., table E-8.

25 Most of these European affiliates were purchased, not built from scratch (e.g., Thomson Consumer Electronics consists of the old RCA consumer products group, which General Electric bought and then sold to Thomson SA).

26 This figure is a good illustration of the caution with which data on foreign direct investment should be treated. It is not so difficult for Americans with any knowledge of business to name a few European chemical companies, but most of us would have trouble thinking of a big Canadian company. Who are the big Canadian chemical companies investing in America? In this case, one is DuPont, the picture of an American company. A Canadian family, the Bronfman family, owns 23 percent of DuPont's stock, however, making it a foreign affiliate. Source: Michael Hodges, "The Japanese Industrial Presence in America: Same Bed, Different Dreams," *Millennium*, winter 1989, p. 362.

27 For good reason. Honda was considered somewhat of an outsider in Japan, both by other companies and by the Ministry of International Trade and Industry (MITI); its share of the Japanese market was relatively small, while in the United States, Honda cars were becoming the most popular imports. Honda is also very dependent on exports, and was therefore more vulnerable to protectionist moves in other countries. Exports account for 70 percent of Honda's Japanese production. James P. Womack, Daniel T. Jones, and Daniel Roos, *The Machine That Changed the World* (New York NY: Rawson Associates, 1990), pp. 215-216.

28 James P. Womack and Daniel Roos, "Case Study: The Automotive Industry," contract report for the Office of Technology Assessment, May 13, 1988. The 3 million figure also includes estimated production of 220,000 vehicles in a Suzuki-GM plant in Ontario.

29 John F. Krafcik and John Paul MacDuffie, "Explaining High Performance Manufacturing: The International Automotive Assembly Plant Study," paper prepared for the International Motor Vehicles Program International Policy Forum May 1989.

30 U.S. General Accounting Office, *Foreign Investment: Growing Japanese Presence in the U.S. Auto Industry*, GAO/NSIAD-88-111, March 1988, p. 33. This is not true of all U.S. parts makers; some are large, integrated companies like Rockwell and TRW, which have experienced engineering staffs. However, the American industry is more characterized than the Japanese or European industries by small firms with little or no ability to contribute to design and manufacturing engineering.

31 General Accounting Office, op. cit., p. 29. Another reason for sourcing major subassemblies like engines and transmissions from abroad is economies of scale, as noted in the GAO report. Because of the level of investment in assembly needed to support a facility for making engines, it may be more cost effective to increase engine production in existing overseas facilities than to create new capacity to support new assembly transplants.

32 General Accounting Office, op. cit., p. 11.

33 All material about Hoechst's purchase of Celanese is from Robert R. Miller, "The Impact of Merger and Acquisition Activity on Research and Development in U.S.-Based Companies," contract report to the Office of Technology Assessment November 1989.

34 See, for example, Stephen Kreider Yoder, "Kubota Is Sued by Founders of U.S. Firm," *Asian Wall Street Journal Weekly*, July 16, 1990, p. 9; Christopher J. Chipello and Jacob M. Schlesinger, "Tractor Maker Kubota Is Plowing Funds Into U.S. High-Tech Firms," *Asian Wall Street Journal Weekly*, July 23, 1990, p. 6.

35 Gina Kolata, "Japanese Labs in U.S. Luring America's Computer Experts," *The New York Times*, Nov. 11, 1990, p. 1.

36 Kenneth Flamm argues that a small group of Japanese suppliers

of dynamic random access memory (DRAM) semiconductors had enough market power in the late 1980s to limit chip production raise prices in the world market and collect extraordinary profits, rather than aggressively compete with each other on price. (It should be noted that, according to some analysts, this behavior was, in effect, sanctioned by the U.S.-Japan Semiconductor Trade Agreement of 1986. Others believe that the trade agreement had little to do with the movements of DRAM prices.) At the same time, the integrated Japanese electronics companies used their chips (for which their cost was much lower than the world price) in their own computers, and began to compete very successfully for the first time in the U.S. personal computer market. See Kenneth Flamm, "Semiconductors," in Gary Clyde Hufbauer (ed.) *Europe 1992: An American Perspective* (Washington DC: The Brookings Institution 1990), pp. 248-260.

37 The modem debate began in the late 1970s, when some proposed that the United States require a certain percentage of domestic content in cars assembled here.

38 Jean-Christophe de Gouvill, "European Carmakers Get Ready To Battle the Japanese," *Japan Economic Journal*, July 28, 1990, p. 16.

39 Electronic Engineering Times, "Europeans May Miss Own Fab Boom" July 16, 1990.

40 Other measures might include the patenting and licensing activity, and citations to technical articles. Data for these measures are not available for foreign firms investing in the United States.

41 It is possible that virtually all R&D done by foreign affiliates in the United States is done for, if not by, manufacturing affiliates. However, R&D intensity of U.S. firms is usually presented in terms of manufacturing R&D as a percent of manufacturing sales, so the data for foreign affiliates are presented here in the same way, for consistency.

42 R&D intensity may have been unusually low for Japanese manufacturing affiliates in 1987; all R&D spending, taken as a percent of sales of Japanese manufacturing affiliates, was unusually low that year-1.3 percent, compared to figures as high as 2 percent in other years. However, all R&D spending as a percent of manufacturing sales was consistently lower for Japanese affiliates than for European affiliates throughout the period 1977-88 (data for manufacturing R&D, by country, are available only for 1987).

43 Graham and Krugman, op. cit., pp. 58-62.

44 Data for investments in new plant and equipment are not available by country and by industry, so the more comprehensive figure for capital investments-property, plant and equipment-is used. No comparable figure for U.S. manufacturing firms is readily available.

45 Japanese investment in transportation equipment, almost all in greenfield motor vehicle plants, increased fivefold from 1985 to 1988, rising from \$715 million (7 percent of all Japanese manufacturing assets in the United States) to \$3.5 billion (12 percent) in the 3 years. Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States*, op. cit., 1985, table B-7 and 1988, table B-5.

46 Tsusho-sangyosho (MITI), *Tsusho Hakusho* (Commerce White Paper) Heisei 2 nen (1990), 7 gatsu, p. 192.

47 The overseas markets were the United States, the EC, the newly industrializing economies (NIEs), and ASEAN nations. The percentage of respondents citing increased local sales as the main reason for investing exceeded 80 percent in all except the NIEs, where the percentage was between 70 and 75 percent.

48 Tsusho-sangyosho, op. cit., p. 192.

49 This is inferred from the pattern of investment in the United States, rather than from Japanese literature. According to a recent MITI survey of international investors, collecting technology and market information ranked eighth (out of nine) on the list of reasons for investing in the United States, cited by only about 12 percent of respondents. The same motive ranked eighth out of 10 on the list of reasons for investing in the EC (cited by about 18 percent of respondents); ninth of 9 on the list for the ASEAN nations (cited by less

than 10 percent of respondents); and did not figure in investments in NIEs.

50 "Japanese Investments in Small U.S. High-tech Companies Grow," *R&D Magazine*, September 1990, p. 18.

51 "Nicolet Signs With Matsushita," *Electronic Engineering Times*, Sept. 24, 1990, p. 2.

52 For example, in a recent article the president of Meitec America, George Leslie, says, ". . . Japanese firms are ideal candidates for strategic partnerships. In fact forging a strategic alliance with a Japanese firm not only can provide an additional source of funding but also can pave the way to Japanese market entry. . . ." See George Leslie, "Getting a Read on Strategic Alliances," *Electronic Engineering Times*, Sept. 3, 1990, p. 35.

53 Ibid.

54 Letter from Senators Jeff Bingaman and Lloyd Bentsen to James F. Rill, Assistant Attorney General, Antitrust Division, U.S. Department of Justice, Sept. 27, 1990. See also Sheridan Tatsuno, "U.S. Threatened by Rash of High-Tech Buyouts," *New Technology Week*, Monday, Aug. 6, 1990, p. 7.

55 For a short description of these arguments, see Tatsuno, *ibid*.

56 U.S. semiconductor manufacturers allege that seven types of semiconductor equipment became available to them 2 to 3 years after delivery to semiconductor firms in Japan. Bingaman and Bentsen, *op. cit.* In another example, the Manufacturers' Alliance for Productivity and Innovation states in 1990 that intra-keiretsu purchasing patterns allowed Japanese investors sufficient market power to avoid competition from U.S. companies. Source: Phyllis A. Genter and Donald H. Dalton, *Japanese Direct Investment in U.S. Manufacturing*, International Trade Administration (Washington, DC: U.S. Department of Commerce, June 1990), p. 9.

57 Ibid., p. 17.

58 "U.S. Electronics Strengthens Foothold in Japan," *New Technology Week*, Monday, Jan. 8, 1990.

59 "Shadow of Suspicion," *Far Eastern Economic Review*, July 26, 1990.

60 Quoted study was done by Mordechai Kreinin of Michigan State University, and written up in *The World Economy*, a British Journal.

61 Urban C. Lechner and Alan Murray, "Japanese Buying Binge Stokes U.S. Insecurity," *Asian Wall Street Journal Weekly*, June 25, 1990, p. 12.

62 Ibid.

63 Tsusho-sangyosho, *op. cit.*, p. 189.

64 Lechner and Murray, *op. cit.*

65 Graham and Krugman, *op. cit.*, p. 25.

66 Rutter, *op. cit.*, p. 15.

67 Tsusho-sangyosho, *op. cit.*, p. 188.

68 James Womack, Massachusetts Institute of Technology, personal communication with OTA staff.

69 Hodges, *op. cit.*, p. 361.

70 Throughout the 1980s, Japanese exports of automobiles to the United States have been constrained by a formal VRA and, after its expiration in 1985, an informal pledge. These agreements made it very difficult for Japanese producers to increase exports, and encouraged them to invest in North American production facilities to increase sales.

71 Supposing, for example, that production from the greenfield plants of foreign direct investors substitutes entirely for imports, rather than for output of a domestically owned and located firm. There are always some domestic jobs (e.g., in transportation, warehousing, and sales) associated with imports, so that not all the new jobs involved in making, storing, transporting, and selling the goods from the greenfield plant are net additions to the jobs that would have been associated with

imports.

72 Framingham is described as the worst American-owned auto plant. Womack et al., *op. cit.*, p. 85.

73 Womack et al., *op. cit.*, pp. 82-84.

74 See, for example, Mike Parker and Jane Slaughter, "Management by Stress," *Technology Review*, October 1988, pp. 36-44.

75 Clare Ansberry, "New Japanese Chief Seeks Turnaround at National Steel," *Asian Wall Street Journal Weekly*, Aug. 6, 1990, p. 23.

76 The high quality attained by the luxury auto manufacturers of Europe is not associated with high productivity and cost control. The mass production auto manufacturers of Europe have no better quality records and substantially worse productivity records than the American Big Three. John F. Krafcik and John Paul MacDuffie, "Explaining High Performance Manufacturing: The International Automotive Assembly Plant Study," paper prepared for the International Motor Vehicles Program International Policy Forum May 1989.

77 David Sheridan, "Worker Displacement in the California High-Tech Industry," contractor report to the Office of Technology Assessment May 1986.

78 Dedra Hauser, "Overseas Employees Favored in Cutbacks," *San Jose Mercury News*, Oct. 29, 1985, pp. B9-B10, cited in Sheridan, *op. cit.*

79 Graham and Krugman, *op. cit.*, pp. 56-57.

80 They are sometimes able to pay a great deal more, however. That would be unlikely in the United States, which generally has higher wages than other countries, but in developing nations, employees of foreign affiliates are sometimes the best-paid workers around.

81 U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates of Foreign Companies*, various years.

82 John M. Kline, "Trade Competitiveness and Corporate Nationality," *Columbia Journal of World Business*, fall 1989, p. 29.

83 Womack et al., *op. cit.*, p. 217. Domestic content claims, according to these authors, are "notoriously unreliable," but they judge Honda's claim is "not far off the mark."

84 U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates of Foreign Companies, Preliminary 1988 Estimates* (Washington DC: August 1990), tables G-3 and G-6.

85 Christopher J. Chipello, "Tractor Maker Kubota Is Plowing Funds Into U.S. High-Tech Firms," *Asian Wall Street Journal*, July 23, 1990, p. 6.

86 Evidence and arguments for this conclusion are detailed in U.S. Congress, Office of Technology Assessment *Paying the Bill: Manufacturing and America's Trade Deficit, OTA-ITE-390* (Springfield, VA: National Technical Information Service, June 1988).

87 A falling currency diminishes standards of living by making imports more expensive. In addition, unless all our international debts are denominated in dollars, it also obliges us to work harder to pay our debts to foreign creditors; a falling or volatile currency will also make it harder to obtain dollar-denominated loans.

88 JESSI stands for the Joint European Submicron Silicon Initiative. Ch. 5 has a more extensive discussion of JESSI.

89 Kline, *op. cit.*, p. 30.

90 Graham and Krugman point out that foreign or foreign-controlled companies cannot acquire gas pipeline rights-of-way or certain mineral leases on Federal land if the investor's home country denies such rights to American firms. Graham and Krugman, *op. cit.*, p. 96.

91 Kline, *op. cit.*, p. 27.

92 These exceptions do not necessarily limit defense production solely to domestic firms, however, as the large international trade in

military equipment attests. For example, the Department of Defense's "buy American" procurement regulations require not that the companies doing its production be American owned or controlled, but that the products involved must have at least a 50 percent U.S. content. The Department of Commerce's trade fairs permit any firm with 51 percent U.S. content in its products assembled or produced abroad to participate, and the U.S. Export-Import Bank will make loans or loan guarantees to anyone whose products have at least a 50 percent U.S. content. Source: Kline, *op. cit.*, pp. 26-27.

93 The Defense Production Act lapsed, temporarily at least, when in the closing hours of the 101st Congress, in October 1990, the Senate failed to adopt the conference report re-authorizing the act, and did not agree to concurrent resolutions passed by the House extending the act.

94 CFIUS members include representatives of the Departments of Commerce, Defense, Justice, and State; the Office of Management and Budget the U.S. Trade Representative, and the Council of Economic

Advisers.

95 Bingaman and Bentsen, *op. cit.* Information in the letter was based on Dataquest, Inc. figures.

96 For a discussion of options that might be adopted to strengthen such government-industry collaboration, see U.S. Congress, Office of Technology Assessment, *Making Things Better*, *op. cit.*

97 Omnibus Trade and Competitiveness Act of 1988, Public Law 100-418, Sec. 5131.

98 U.S. Congress, House of Representatives, *Conference Report 101-909 to Accompany HR. 5021, Making Appropriations for the Departments of Commerce, Justice and State, the Judiciary and Related Agencies for the Fiscal Year Ending Sept. 30, 1991, and for Other Purposes*, Oct. 20, 1990.

99 See, for example, Kline, *op. cit.*, p. 30.