Foreign Direct Investment in Japan
Empirical Analysis Based on Establishment and Enterprise Census

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ABSTRACT

In spite of the importance of FDI in Japan, Japan's official statistics on inward FDI have many drawbacks in comparison with U.S. statistics. Using micro-data of *the Establishment and Enterprise Census of Japan*, we compile new statistics on the employment of Japanese affiliates of foreign firms (JAFF) in Japan at the 3-digit industry level for the year 1996. According to our new statistics, JAFF with 33.4% or more foreign ownership in the service sector employed 308,000 workers in 1996, which is nearly five times greater than the number reported in MITI (1999). In the case of the manufacturing sector, JAFF with 33.4% or more foreign ownership employed 176,000 workers in 1996, which is 10% greater than the number reported in MITI (1999). The underestimation of MITI's survey is substantial in the case of the service sector. Using our statistics, we compare FDI in Japan with FDI in the United States at the 3-digit industry level. We also compare FDI in Japan with Japan's outward direct investment and international trade in goods and services.

Using our cross-industry statistics, we also estimate an empirical model explaining the determinants of Japan's inward FDI penetration. We found that the determinants of Japan's inward FDI penetration are very different for the manufacturing sector and the service sector. In the manufacturing sector, advantages in managerial resources and factor intensity were significant. In the service sector, policy variables were significant. This result implies that by eliminating its restrictions on inward FDI and reducing government activities, Japan can increase inward FDI in service sector. In the case of the *keiretsu* variables, we did not get significant results in both the manufacturing and the service sectors. This suggests that *keiretsu* does not act as an impediment to inward FDI in Japan.

1. Introduction

According to the standard theory (Caves 1982, Dunning 1988), foreign direct investment is a form of long-term international capital movement accompanied by investors' intangible assets, such as the stock of technological knowledge accumulated by R&D or the accumulation of marketing know-how from past advertising activity. The host country is expected to benefit from the inflow of such intangible assets. Especially in the case of the service sector, since many services are not tradable, customers in one country cannot enjoy the advanced services of foreign firms, if these do not establish affiliates in that country. Being aware of this issue, the Japanese Government has lifted its regulations and made efforts to promote inward FDI in recent years.[1] Although FDI in Japan is increasing rapidly, the FDI stock in Japan is still very small.

In spite of the importance of FDI in Japan, Japan's official statistics on inward FDI have many drawbacks in comparison with U.S. statistics as we will discuss in the next section. Probably due to the deficiency of data, there are not many empirical investigations on why FDI in Japan is so small. In this paper, we compile new statistics on the employment of Japanese affiliates of foreign firms (JAFF) in Japan at the 3-digit industry level for the year 1996. Our new statistics are based mainly on micro data of the Establishment and Enterprise Census of Japan, which is conducted by the Japan Management and Coordination Agency. Using our statistics, we compare FDI in Japan with FDI in the United States at the 3-digit industry level. We also compare FDI in Japan with Japan's outward direct investment and Japan's international trade in goods and services.

According to our new statistics, actual foreign activities in Japan are much greater than those reported in MITI(which is now the Ministry of Economy, Trade and Industry, METI)'s survey, *Gaishi-kei Kigyo Doko Chosa* (*Survey on Trends of Business Activities by Japanese Subsidiaries of Foreign Firms*).

Since our statistics are compiled at the 3-digit industry level, we can use them for cross-industry regression. We estimated an empirical model explaining the determinants of Japan's inward FDI penetration. We found that inward FDI penetration is closely related to several characteristics of industries.

The paper is organized as follows: In the succeeding section, we discuss existing data on Japan's international transactions of services through affiliates and explain how we compiled our new statistics on JAFF. In section 3, we provide a general overview of FDI in Japan. In section 4, we undertake an econometric investigation of the determinants of Japan's FDI penetration at the 3-digit industry level.

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[1] For detail of deregulations and promotion policies, see Japan Investment Council (various years) and

2. Existing Data on FDI in Japan and Compilation of the New Statistics

Probably the most commonly cited statistics on Japan's inward direct investment are those provided by the Ministry of Finance. (MOF 1999, the data are also available in OECD 1999). According to these data, Japan's outward direct investment stock in the service sector is nine times greater than the corresponding inward direct investment stock (Table 1). Since no other OECD country has an imbalance of this magnitude, it has been argued that this imbalance indicates the closedness of the Japanese economy to inward direct investment in the service industries (GATT 1995, MITI 1998, Stern 2000). In the case of the manufacturing sector, the outward direct investment stock is six times greater than the corresponding inward direct investment stock. But since the MOF data only record cross-border capital flows, they do not necessarily correspond to the extent of affiliates' actual activities. For example, because of Japanese regulations, many foreign banks and insurance companies entered the Japanese market by setting up branches rather than founding subsidiary companies. This fact makes their investment flows relatively small compared with the actual magnitude of their affiliates' activities measured by sales or employment.

INSERT TABLE 1

In the case of inward direct investment, the *Gaishi-kei Kigyo Doko Chosa* (*Survey on Trends of Business Activities by Japanese Subsidiaries of Foreign Firms*) by the Ministry of International Trade and Industry (MITI, which is now the Ministry of Economy, Trade and Industry, METI) is the only official source on the sales and employment of foreign firms' Japanese subsidiaries.[2] According to this survey (METI 2001a), foreign firms' Japanese subsidiaries employed 230,475 workers in manufacturing industries and only 85,386 workers in non-manufacturing industries at the end of March 2000. The survey is loosely based on the U.S. Department of Commerce's survey of foreign direct investment in the United States, but MITI's survey has the following serious drawbacks for the purpose of studies on inward direct investment.

(i) It is not mandatory and suffers from a low response ratio. In the case of the survey for the 1999 fiscal

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Japanese Government (various years).

[2] MITI's other survey, *Kigyo Katsudo Kihon Chosa* (*Basic Survey on Business Activities by Enterprises*), also collects data on JAFF as part of information obtained on Japanese firms. But this survey covers only the manufacturing and commerce sectors. Moreover, the response ratio of this survey is also low. In 1999, the Japan Management and Coordination Agency added questions on whether firms were majority owned by foreigners or not to their survey, *Service-gyo Kihon Chosa* (*Basic Survey on Service Sector*), which covers several service industries. An upcoming report of this survey will probably include some

year, only 56.3% of the questionnaires sent out were returned to MITI. Moreover, usually not all the questions in the returned questionnaires are answered.

(ii) The survey does not cover subsidiaries in real estate, finance, and insurance.

(iii) The survey covers only Japanese companies that are more than one-third foreign-owned and does not cover branches and other establishments directly owned by foreign firms.

(iv) In MITI's report on inward FDI, all the data on manufacturing subsidiaries are aggregated into 19 industries. Those on non-manufacturing subsidiaries are aggregated into transport and telecommunication, wholesale trade, retail trade, services, and others (agriculture, construction, etc.). In the case of outward FDI, the data on manufacturing and non-manufacturing subsidiaries are aggregated into twelve and six industries (agriculture, mining, construction, commerce, services, and others) respectively.   No data at a more detailed industry level are published.

Because of the low response ratio and the exclusion of real estate, finance, and insurance, the number of subsidiaries covered by MITI's survey is substantially smaller than that of other surveys on foreign subsidiaries conducted by private companies. For example, the number of subsidiaries covered by MITI's survey for the 1999 fiscal year was only 1,978. [3]

Concerning foreign subsidiaries of Japanese firms, MITI conducts the survey *Kaigai Jigyo Katsudo Doko Chosa (Survey on Trends of Japan's Business Activities Abroad)*, which covers foreign subsidiaries with more than a 10% Japanese ownership. This survey has similar setbacks as the survey on inward direct investment. It suffers from a low response ratio and does not cover Japanese-owned subsidiaries in the finance and insurance sector. According to this survey (METI 2001b), foreign subsidiaries of Japanese firms employed 3,161,000 workers at the end of March 2000.

Compared with these surveys by MITI, Toyo Keizai's micro-data, *Gaishi-kei Kigyo Soran: CD-ROM-ban (Directory of Japanese Subsidiaries Abroad: CD-ROM version)* and *Kaigai Shinshutsu Kigyo Soran: CD-ROM-ban (Directory of Japanese Subsidiaries Abroad: CD-ROM version)* have a substantially broader coverage of subsidiaries. The data cover all industries. In the case of JAFF in manufacturing sectors, the data for 1997 cover 831 subsidiaries, which employed 204,000 workers. In the case of non-manufacturing sectors, the data for 1997 cover 2,456 subsidiaries, which employed 287,000

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information on JAFF.

[3] Mainly focusing on manufacturing sectors, Kimura and Baldwin (1996) estimated sales and procurements by JAFF and FAJF using the results of MITI's surveys. They did not make adjustments to account for these problems.

workers.[4] Judging by the number of subsidiaries and number of workers employed by subsidiaries, the coverage of the Toyo Keizai data is much broader than that of MITI in the case of the non-manufacturing sectors.

Using Toyo Keizai's data as the basic statistics for the estimation, Fukao and Ito (2001) estimated sales and employment data for Japanese affiliates of foreign firms (JAFF) and foreign affiliates of Japanese firms (FAJF) in service sectors at the 3-digit level for the year 1995. Although the coverage is broader, the Toyo Keizai data have the following shortcomings.

(i) Industry Classification

In Toyo Keizai's data, information at the establishment level is not available. We need to classify affiliates according to their primary industry based on line-of-business. For example, computer makers sometimes supply computer-related services. However, the Toyo Keizai data do not allow us to treat their service and manufacturing activities separately.

(ii) Definition of Nationality

Toyo Keizai adopts multiple criteria in the coverage of Japanese subsidiaries. For listed or unlisted but large subsidiaries, the cut-off capital participation rate is 20%. For unlisted and small subsidiaries, the cut-off rate is 49%.

(iii) Coverage and Reliability

Toyo Keizai conducts its own surveys for this database.[5] Toyo Keizai also uses additional data such as financial reports for non-responding firms. But since firms are not obliged by law to report correct information, Toyo Keizai's data is not perfect in their coverage and reliability.

(iv) Branches and Other Establishments Directly Owned by Foreign Firms

In the case of the banking and insurance sector, the Toyo Keizai data cover Japanese branches and other establishments directly owned by foreign firms. However, the data only partially cover such establishments in other sectors.

Compared with MITI's statistics and Toyo Keizai's data, data collected in the *Jigyosho-Kigyo*

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[4] A private company, Teikoku Data Bank Ltd. provides the database "Cosmos" which covers 1.1 million Japanese firms for 1999. In the case of the non-manufacturing sector, the database contains information on 1,236 firms which were more than one quarter foreign-owned. The database was too expensive for us to use for this research. Some statistics on these firms are available at <www.tdb.co.jp>.

[5] In the case of inward FDI, Toyo Keizai and Dun & Bradstreet Japan Ltd. jointly conduct their surveys for this database.

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Tokei Chosa (*Establishment and Enterprise Census of Japan*), conducted by the Japan Management and Coordination Agency (which is now the Statistics Bureau, Ministry of Public Management, Home Affairs, Posts and Telecommunications) are advantageous in several respects. This is the most basic and important survey on Japanese establishments and covers all industries. Since it is mandatory, the data are more reliable. The survey collects both data on establishments and data on enterprises, and these two sets of data are linked. In the survey, companies are asked what percentage of their paid-in capital is owned by foreign firms. Therefore we can compile statistics at the establishment level and choose any cut-off ratio.[6] The data also include branches and other establishments directly owned by foreign firms. In Table 2, we compare the Establishment and Enterprise Census data with MITI's statistics and the Toyo Keizai data.

INSERT TABLE 2

Although the data collected in this survey are ideal for a compilation of statistics on the number of workers employed by all the JAFF, such statistics are unfortunately not included in the report on this survey. Therefore we compile micro-data of the survey by ourselves. In spite of the merits listed above, the micro-data of the Establishment and Enterprise Census have the following shortcomings.

(i) Information on Activities

Data collected in the Establishment and Enterprise Census do not include basic information on activities, such as sales and profits. They include information on employment, location, and date of establishment. Therefore we measure activities of JAFF by number of workers.

(ii) Years Covered

The question on the percentage of paid-in capital owned by foreigners was only added to the survey by the Japan Management and Coordination Agency in 1996. The same question was also included in their 2001 survey, which is not available yet. So the only available data at present are those for 1996 .

(iii) Linkage between Data on Establishments and Data on Enterprises

For about five percent of all establishments, we were not able to link them with any head office although they replied that they are neither a head office nor an independent establishment. We treated them as Japanese independent establishments. Our estimates on the employment of JAFF probably

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[6] Each establishment is asked about its major activity at the 4-digit industry level. If we compiled the data at an industry level this detailed, our data on many industries would include less than three JAFF and we would be forced to suppress the data for secrecy. For this reason, we compile the data at the 3-digit industry level. In the case of manufacturing industries, we basically use the *Standard Industry Classification for Japan* (Statistics Bureau 1993). In the case of non-manufacturing industries, we use our own classification (for details, see Fukao and Ito 2001).

underestimate the actual values because of this problem.

(iv) Definition of Nationality

In the 1996 survey, head offices and independent establishments were asked what percentage of their paid-in capital was owned by foreigners. When we set our cut-off capital participation rate at 10%, our data on JAFF include all the affiliates of which one or several foreigners owned 10 % or more in total. In the case of U.S. statistics on U.S. affiliates owned by foreign firms (USAFF), the data include only the affiliates of which a single foreigner owns 10% or more (U.S. Department of Commerce 1995a). Therefore our definition of JAFF (10% foreign-owned or more) is broader than the U.S. definition of USAFF (owned 10% or more). In the case of data on affiliates owned 50 % or more by foreign firms, there is no such gap between our statistics and U.S. statistics (U.S. Department of Commerce 1995b). Both the statistics include all the affiliates of which the ownership of one or several foreigners exceeds 50% in total. Substantial amount of stocks issued by Japanese prime firms are owned by foreign institutional investors as portfolio investments.[7] When we set our cut-off ratio at 10%, probably our data will include such portfolio investments. Taking account of this risk, we will mainly use the 33.4% or 50% cut-off ratio.

Table 3 and Table 4 present the number of establishments and number of workers of foreign-owned affiliates in the Japanese economy at the 3-digit industry level. We set our cut-off capital participation rate at 10 %, 33.4%, and 50%.

INSERT TABLE 3 and TABLE 4

In order to compare FDI in Japan with FDI in the United States, we adjusted corresponding U.S. statistics for the year 1992 which are reported in U.S. Department of Commerce (1995a) to our industry classifications. The results are reported in Table 5. For the U.S.-Japan comparison we also prepared Table 6, in which we compared the share of the number of workers employed by majority-owned foreign affiliates in the United States and Japan. The U.S. data is taken from the U.S. Department of Commerce (1995b). Since the U.S. data are not available at the 3-digit industry level, the U.S.-Japan comparison in Table 6 is done at the more aggregated industry level.

INSERT TABLE 5 AND TABLE 6

In order to compare our data on Japan's inward FDI with Japan's outward FDI, we prepared data on the outward FDI. In the case of the manufacturing sector, we compiled micro-data of MITI's *Dai 26-kai*

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[7] According to Japan National Conference of Stock Exchanges (2001), 11.9% of total market value in Japanese stock markets was owned by foreigners on March 31, 1996. On March 31, 2001, 18.8% was owned by foreigners.

Kaigai Jigyo Katsudo Doko Chosa (*Survey on Trends of Japan's Business Activities Abroad, 1996*). In the case of the non-manufacturing sector except the primary sector, we used the micro-data of Toyo Keizai Shinpo-sha's *Kaigai Shinshutsu Kigyo Soran 1996: CD-ROM-ban* (*Directly of Japanese Subsidiaries Abroad 1996: CD-ROM version*).[8] We should note that compared with the data on Japan's inward FDI, the data on outward FDI are probably smaller than the actual values because of the limited coverage of the MITI and Toyo Keizai data. In order to compare Japan's establishment transactions with Japan's cross-border transactions, we also adjusted the data of Japan's 1995 I-O tables to our industry classifications. Table 7 compares these data.

INSERT TABLE 7

3. An Overview of FDI in Japan

According to our new statistics (Table 3 and Table 4), JAFF with 33.4% or more foreign ownership in the non-manufacturing sector employed 308,000 workers in 1996, which is nearly five times greater than the number reported in MITI (1999). In the case of the manufacturing sector, JAFF with 33.4% or more foreign ownership employed 176,000 workers in 1996, which is 1.1 times greater than the number reported in MITI (1999). The underestimation of MITI's survey is crucial in the case of the service sector.

Figure 1 shows the industry composition of workers employed by JAFF (33.4% or more foreign-owned). In the case of the manufacturing sector, four industries, motor vehicles & parts, electronic parts & devices, electric equipment & computers, and drugs and medicines account for 51% of all the workers employed by JAFF in the manufacturing sector. In the case of the service sector, FDI is even more concentrated in a limited number of industries. Four industries, wholesale trade, eating and drinking places, retail trade, and computer programming and software account for 77% of all the workers employed by JAFF.

INSERT FIGURE 1

Using Table 7, we can compare Japan's inward FDI with its outward FDI. In the case of the service sector, imbalances between the activities of JAFF and those of FAJF are smaller than those reported in the MOF FDI statistics. In terms of employment, the JAFF (33.4% or more foreign-owned)/FAJF(10% or more foreign-owned) ratio is 0.34 (=308,000/909,000). The MOF statistics exaggerate the gap, probably for the following reasons.

First, during the second half of the 1980s, Japanese firms engaged in a large amount of FDI in the

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[8] For detail of this compilation, see Fukao and Ito (2000).

tertiary sector, especially in the United States. Stock market and real estate bubbles in Japan during this period enabled real estate companies, general construction companies, institutional investors and other small investors to borrow large funds to invest in foreign real estate (Wilkins 1990, Kenneth Leventhal & Company 1994). During this period, Japanese firms in the tertiary sector, especially banks and general construction companies, also expanded their business in purely domestic markets in foreign countries such as retail banking in California or Britain or the development of shopping malls in the United States (Wilkins 1990, Graham and Krugman 1991). Since a substantial part of FDI in the real estate sector was conducted as portfolio investment, activities by affiliates measured by sales or employment are relatively small compared with capital flows. And although many of Japan's FDI projects in the tertiary sector resulted in failure afterwards, withdrawals of equity investment or repayments of loans or bonds are not subtracted from the MOF statistics, which are gross data. These factors exaggerate Japan's outward FDI in the MOF statistics.

Second, as we have already pointed out, because of regulations of Japan's authorities, many foreign banks and insurance companies entered Japan through setting up branches instead of founding subsidiary companies. This fact makes their investment flows relatively small compared with the actual sizes of their affiliates' activities measured by sales or employment.

In the case of the manufacturing sector, imbalances between the activities of JAFF and those of FAJF are greater than those reported in the MOF FDI statistics. In terms of employment, the JAFF(33.4% or more foreign-owned)/FAJF(10% or more foreign-owned) ratio is 0.095 (=176,000/1,848,000).

Next we compare FDI in Japan with FDI in the United States. Using Table 6 and Table 7, we can compare Japan's and America's purchases of services from foreigners. For the service sector as a whole, Japan's ratio of imports to total domestic output is 2.11%, which is almost at the same level as the corresponding U.S. ratio at 2.07% (Table 7). But in the case of inward FDI (Table 6), Japan's ratio of the number of workers employed by majority-owned foreign affiliates to the total number of workers is 0.59%, which is less than one fifth of the corresponding US ratio of 2.77%. It seems that Japan's market for services is more closed for establishment transaction than for cross-border transactions.

In the case of the manufacturing sector, Japan's ratio of the number of workers employed by majority-owned foreign affiliates to the total number of workers is 0.79%, which is less than one-thirteenth of the corresponding US ratio of 10.48%. Compared with the case of the service sector, the gap between FDI in Japan and that in the United States is much larger in the case of the manufacturing sector.

In cases where cross-border transactions in goods and services are not difficult, multinational corporations will choose the location where the production costs are the lowest. Since Japan's wage rates

and land prices are relatively high, Japan probably has a locational disadvantage for manufacturing industries except those in which proximity to consumers plays an important role. We know that a substantial part of Japan's FDI in U.S. manufacturing industries was caused by US trade barriers, such as "voluntary" restraints on car exports and anti-dumping policies on electrical machinery exports from Japan during the 1980s. Therefore we cannot argue that Japan's low level of inward FDI itself is problematic. Compared with the case of the manufacturing sector, the low level of FDI in Japan's service sector is more serious issue. Since many services are untradable, Japanese customers cannot enjoy advanced services of foreign firms, if the foreign firms do not establish affiliates in Japan.

Using Table 6, we can compare Japan's and the United States' penetration of inward FDI, which we measure by the ratio of the number of workers employed by majority-owned foreign affiliates to the total number of workers at a detailed industry level. According to Table 6, this ratio is higher for Japan than that for the United States in only three industries: Finance except depository institutions, computer and data processing services, and other services (such as eating and drinking places and individual education facilities). It is also interesting to note that in Japan, differences in this ratio among industries are more remarkable than in the United States. Japan's variation coefficient of this ratio among manufacturing industries is 1.43 compared to a variation coefficient of only 0.93 for the United States (Table 6). In the case of non-manufacturing industries, Japan's variation coefficient is 1.26 compared to that of 0.74 for the United States (Table 6). In Japan, there are what may be labeled sanctuary sectors, such as medical services, utilities, and education, in which almost no foreign affiliate exists (Table 5). Inward FDI is impeded by a lack of market access. For example, private corporations which seek profits are prohibited to do business in major areas of education and medical services.

Table 8 reports correlation coefficients between Japan's inward FDI, outward FDI, imports, and exports. All the variables are normalized based on the size of the domestic industry. The correlations between the four variables are very different for the manufacturing and the service sector. In the manufacturing sector, there is no significant correlation between any pair of the four variables. In the service sector all the four variables are positively and significantly correlated. Especially the correlation coefficients between inward FDI and imports and between imports and exports are very high. The close correlation between inward FDI and imports indicates potential complementarities between activities by JAFF and their parent firms' services exports to Japan. Services imports and services exports are closely correlated probably because of the difference in the tradability of different types of services.

INSERT TABLE 8

So far, our analysis was static and mainly based on data for 1996. But we should note that FDI into

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Japan is growing at an amazing speed. Table 9 shows MOF statistics on FDI flows into Japan. According to the statistics, the inward direct investment stock in Japan's non-manufacturing sector has grown six-fold in the last ten years. The total of FDI flows in the last three years is greater than the FDI stock at the end of the 1996 fiscal year. In recent years, the number of cross-border M&A cases has been increasing especially.[9] In 1999, AT&T and British Telecom jointly bought a combined 30% share of Nippon Telecom. A British company, Cable & Wireless, acquired IDC (International Digital Communications) by a takeover bid. An American company, GE Capital acquired Japan Lease. In 2000, an American company, Ripplewood Holdings and others acquired The Long-Term Credit Bank of Japan.

INSERT TABLE 9

Probably the following two factors have contributed to the recent increase in inward FDI. First, in recent years, the Japanese government promoted important deregulatory and related measures in order to transform Japan's economic system into a one that is more open to the international community and based on the rules of self-responsibility and market principles. As a part of this deregulation program, the Japanese government relaxed or abolished several regulations on inward FDI. For example, all restrictions on foreign ownership and on foreign board members in Type I telecommunications carriers (except for NTT and KDD), including their radio station licenses, were removed in 1998. In 1999, all restrictions on foreign capital and the appointment of foreign directors in all cable TV businesses were removed.[10] Moreover, the recent stagnation of Japan's land and stock prices has created a kind of "fire-sale" situation, from which foreign investors have benefited. We can confirm the recent increase in FDI to Japan's service sector by our micro-data of the *Establishment and Enterprise Census of Japan*. Figure 2 shows distribution of 10% or more foreign-owned establishments by year of establishment. We can see that in the case of the manufacturing sector, the majority of establishments were started up before 1984.[11] In contrast with this, in the case of the service sector, many establishments were started up after 1990. Figure 3 shows the cumulative number of JAFF established before each year. In the case of information services and communication and broadcasting, the number of JAFF has increased drastically after 1990.

INSERT FIGURE 2 and FIGURE 3

Probably we can partly explain the recent rapid increase in JAFF in the service sector by the history of Japan's regulations on inward FDI. Japan's process of inward FDI liberalization and Japan's remaining

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[9] According to MITI (2000), there were 129 investments into Japan through cross-border M&A in 1999.
[10] For more detail on Japan's recent deregulation measures, see Japan Investment Council (various years).
[11] We should note that in cases of acquisitions and capital participation, the date of establishment can be earlier than the date of FDI.

major restrictions on inward FDI are summarized in Tables 10, 11 and 12. As Table 10 shows, after joining the OECD in 1964, Japan gradually and systematically liberalized its regulations on inward FDI. In the case of the manufacturing sector, Japan lifted almost all the regulations by 1980 except those on FDI in the petroleum and leather product industries (Table 10 and Table 12). In the cases of many service industries, Japan continued to restrict inward FDI by foreign exchange law and other regulatory laws until quite recently (Table 10 and Table 11).

<div align="center">INSERT TABLE 10, 11, 12</div>

4. Econometric Analysis on Determinants of Inward FDI Penetration

As we have seen in the previous section, there are significant differences in inward FDI penetration in the various industries and in Japan and the United States. What industry characteristics affect the inward FDI penetration of each industry? In this section we conduct an empirical study on this issue.

This type of cross-industry analysis on FDI into Japan has been conducted by Lawrence (1993), Weinstein (1996), Nakamura, Fukao, and Shibuya (1995, 1997), Horaguchi (1995), and Fukao and Ito (2001).[12] One of the most hotly debated issues in these studies was whether Japan's *keiretsu* relationships impede inward FDI. It has been argued that *keiretsu* relationships reduce inward FDI through cross share-holdings and long-term supplier relationships. Using MITI (1991) data on only ten industries, Lawrence (1993) did a cross-industry regression and found that *keiretsu* relationships significantly impeded inward foreign direct investment. By constructing panel data based on MOF data, Weinstein (1996) conducted a similar kind of regression and found that the coefficient on the shares of financial group member sales in each sector is negative but not significant in many cases. Nakamura, Fukao, and Shibuya (1995, 1997), using their newly compiled statistics on Japan's inward FDI penetration (the share of sales by JAFF in total sales) in 58 manufacturing industries from micro-data of MITI's *Kigyo Katsudo Kihon Chosa* (*Basic Survey on Business Activities by Enterprises*) conducted a cross-industry regression. They found that sales concentration as measured by the Herfindahl index has significant negative effects on Japan's inward FDI penetration, while capital intensity and skilled-worker intensity have significant positive effects on the FDI penetration. They also found that *keiretsu* variables and a government barrier dummy variable based on OECD (various issues) do not have a significant effect on FDI penetration. Horaguchi (1995) also found that a coefficient on the *keiretsu* share was not significant. For the Japanese service industries, Fukao and Ito (2001) conducted a cross-industry regression and found that the inward

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[12] In the case of FDI into the U.S., Ray (1989), Kogut and Chang (1991), and Pugel, Kragas, and Kimura

FDI penetration is low in industries where government-owned establishments are dominant. Moreover, they found that the relatively higher FDI restrictiveness in Japan compared to that in the United States has significantly negative effects on Japan's inward FDI. In the case of *keiretsu* variables, they did not get significant results, suggesting that *keiretsu* do not act as an impediment to inward FDI in Japan's service sector.

These previous empirical studies have some shortcomings with regard to the data bases used in the analyses. First, several studies such as Lawrence (1993) are based on a very small sample size. Second, although FDI in services is an important issue, except for Fukao and Ito (2001), there is no study on FDI in this sector. And third, as we mentioned in Section 2, the data these studies used are based on firm-level surveys. Yet, as one firm is often involved in diversified businesses spanning different industries, it is more appropriate to use establishment-level surveys to capture the size of activities in each detailed industry.

In this section we estimate an empirical model explaining the determinants of Japan's inward FDI penetration. The variables of this estimation are defined in Table 13. Further details on the definitions and sources of the variables are provided in Appendix. We use Japan's FDI penetration ratio as the dependent variable.[13] Japan's FDI penetration is defined by Japan's ratio of the number of workers employed by companies that are 10% or more foreign-owned to the total number of workers. In addition, taking into account the different attributes between manufacturing and service sectors, we assume different models for the estimations of the two sectors.

<div align="center">INSERT TABLE 13</div>

The standard FDI theory (see, for example, Caves 1982 and Dunning 1988) emphasizes intangible assets, such as the stock of technological knowledge accumulated by R&D or the accumulation of marketing know-how from past advertising, as a source of multinational enterprises' advantages. When a firm moves production overseas, it is in a disadvantageous position in relation to local firms because of differences in terms of language, customs and institutions. Multinational enterprises will exist only if the foreign establishments they control and operate attain lower costs or higher revenue productivity than the same establishments functioning under local management. According to this theory, we will observe more active FDI in R&D-intensive or advertisement-intensive industries. We would expect positive coefficients for *RDINT* (R&D intensity) and *ADINT* (advertisement intensity). If Japanese firms' productivity level is higher than that of foreign firms, Japanese firms would have a higher sales share in the world market and

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(1994) conducted similar types of cross-industry analyses.

[13] On the theoretical foundation of cross-industry estimation, see Kogut and Chang (1991), Petri (1991), and Lawrence (1993). On *keiretsu,* also see Saxonhouse (1993).

inward *FDI* will be limited. To take account of this factor, we used *DPROD* (an index comparing Japan's productivity in each industry with the U.S. equivalent) which was taken from Kawai (1996). We should note that it is problematic to use this variable for the following reasons. First, since Japanese firms compete not only with U.S. firms but also with other countries' firms, *DPROD* is not an appropriate variable. Second, in Kawai's (1996) methodology, if Japan's absolute producer price level in one industry is higher than the corresponding U.S. price level and if this gap cannot be explained by Japan-U.S. differences in factor prices and prices of intermediate inputs, then Japan's productivity in that industry is inferred to be lower compared to the United States. But there is a possibility that Japan's high absolute price level (relatively low *DPROD*) might reveal either Japan's higher industry rent or Japan's higher fixed costs. Third, there might exist a reverse causality. High inward FDI penetration might increase *DPROD* through either reducing the industry rent or improving that industry's productivity.

In cases where cross-border transactions are not difficult, for example due to low transportation costs or the characteristics of the services, multinational corporations will choose the location where the production costs are the lowest.[14] Therefore, the inward FDI penetration ratio will be affected by Japan's locational advantage for each industry. Since Japan's capital prices are relatively low and land prices and wages of unskilled workers are relatively high, Japan probably has a locational advantage for capital-intensive industries and a disadvantage for land-intensive or unskilled worker-intensive industries. Consequently, we would expect positive coefficients for *CLRATIO* (capital-labor ratio) and *UNIV* (skilled-labor intensity), and a negative coefficient for *LAND* (land intensity). Since it is considered that the capital intensity is a more important determinant in the manufacturing sector and it is difficult to get reliable data on capital intensity in the case of the non-manufacturing sector, we introduce *CLRATIO* only in the manufacturing sector regressions. It has been argued that firm-specific skills play a more important role in Japanese firms and that this feature has hindered the development of the secondary labor market in Japan. This fact might impede the entry of foreign firms (Weinstein 1996). In order to take this factor into account, we prepared *JOBSEP* (job separation rate).[15] We expect a positive coefficient for this variable.

Industrial organization theory, moreover, suggests that new entries are often deterred in an oligopolistic market. For example, an incumbent firm often takes strategic actions to deter new entries, and entry into an industry may be difficult where the minimum efficient scale is large relative to the market size.

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[14] Brainard (1993, 1997) discusses this issue for the case of manufacturing products. For the issue of locational advantage, also see Dunning (1988).

[15] Weinstein (1996) used data on wage gaps between JAFF and independent Japanese firms in order to test whether Japan's low liquidity of labor impedes inward FDI. But since this data is only available at quite an

Therefore, we introduced two variables representing market concentration, *HERF* (Herfindahl index) and *CR4* (top 4-firm concentration ratio), and would expect negative coefficients for both.

To find out the effects of government regulation on inward FDI, we prepared the variables, *REGCUR* and *REGPAST* for the manufacturing sector regressions, and *RINVJAUS* (Japan's FDI restrictiveness minus U.S. FDI restrictiveness) for service sector regressions. *REGCUR* is a dummy variable which takes 1 for currently regulated industries, and *REGPAST* is a dummy variable which takes 1 for industries regulated in the past. To construct *RINVJAUS*, following Hoekman (1996), we compiled a frequency measure for FDI restrictiveness at the 3-digit industry level, using data from GATS (General Agreement on Trade in Services) schedules for Japan and the United States, APEC (1996), OECD (various issues), Japan Investment Council (various years), and the Japanese Government (various years). The two countries' FDI restrictiveness indices are reported in Panel B of Table 5. According to these indices, Japan has not welcomed liberalization in the fields of transportation, medicine, postal services, temporary staffing services, agriculture-related services, ship repair, and electricity/gas. *RINVJAUS* is defined as the difference between the FDI restrictiveness of Japan and the United States. We expect a negative coefficient for this variable.

Moreover, inward FDI in an industry will be limited, if government-owned establishments dominate the industry. To study this effect, we used *PUBEMP* (the share of workers employed by local or central government). We expect a negative coefficient for *PUBEMP*.

In order to take account of the effects of the *keiretsu*, we used two *keiretsu* variables, *HORIZ* (the share of workers employed by horizontal *keiretsu* firms) and *VERT* (the share of workers employed by vertical *keiretsu* firms. If the *keiretsu* impedes inward FDI, we will have negative coefficients. In order to control for differences in the tradability of different goods and services, we used *FDIUS* (U.S. inward FDI penetration), though we think that tradability is a more important determinant of FDI in the service sector than in the manufacturing sector. We expect a positive coefficient for this variable.[16]

We conduct an ordinary least squares regression for the manufacturing sector and a Tobit estimation for the service sector, since there exists a lower bound, zero, for our dependent variable in the

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aggregated level, we do not use it.

[16] In his comment, Sadao Nagaoka pointed out that market growth might be an important determinant of inward FDI. Following this comment, we added a new variable, the growth rate of domestic demand from 1985 to 1995, which we obtained from Japan's Linked Input-Output Tables. The estimated coefficient of this variable was negative but insignificant both for the manufacturing and the service sector. Moreover, inclusion of this variable in our regression equations did not substantially change the estimated values and the significance of coefficients on other variables. Therefore, we only report the estimated results of the

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latter. The results are summarized in Tables 14 and 15. For the manufacturing sector, we integrated 58 manufacturing industries into 38 industries in order to be consistent with *keiretsu* data published in Dodwell Marketing Consultants (1995). For the service sector, among our 50 industries, we were unable to obtain data for nine industries, namely other insurance services, postal services, education, research institutes for natural sciences, research institutes for social sciences and humanities, health and hygiene, private non-profit organizations' services, social insurance and welfare, and unclassified services. Therefore, the maximum sample size is 41.

INSERT TABLE 14 AND TABLE 15

The determinants of Japan's inward FDI penetration are very different for the manufacturing sector and the service sector. In the manufacturing sector, we found advantages in managerial resources and factor intensity to be significant, while policy variables were significant in the service sector.

The results we obtained for the manufacturing sector are as follows: The estimated coefficients of *RDINT* (R&D intensity), *UNIV* (skilled-labor intensity) and *CLRATIO* (capital-labor ratio) are significantly positive and robust. Consistent with the standard theory of FDI, Japan's inward FDI penetration is relatively high in industries that have a higher R&D intensity, a higher skilled-labor intensity, and a higher capital-labor ratio. The coefficient of *ADINT* (advertisement intensity), however, is not significant. The estimated coefficient on *LAND* (land intensity) was negative as we expected but insignificant in most cases. In the case of the market structure variables, the estimated coefficient on *HERF* (Herfindahl index) is insignificant. Contrary to our expectations, the coefficient on *JOBSEP* (job separation rate) is negative but insignificant. The coefficient of *DPROD* is positive but insignificant. In the case of policy variables, the estimated coefficients on *REGCUR* (a dummy for currently regulated industries) and *REGPAST* (a dummy for industries regulated in the past) are not significant. The estimated coefficients on *PUBEMP* (the share of workers employed by local or central government) is negative and significant as we expected. The estimated coefficients on the two *keiretsu* variables, *HORIZ* (the share of workers employed by horizontal *keiretsu* firms) and *VERT* (the share of workers employed by vertical *keiretsu* firms) are not significant.

In the service sector, the estimated coefficients of *RINVJAUS* (Japan's FDI restrictiveness minus U.S. FDI restrictiveness) and *PUBEMP* (the share of workers employed by local or central government) are negative and significant. These results are consistent with the results obtained by Fukao and Ito (2001), and imply that by eliminating its restrictions on inward FDI and reducing government activities, Japan can

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equations without domestic demand growth.

increase inward FDI in the service sector. In the case of locational advantage variables for the service sector, as we expected, the estimated coefficient of *LAND* (land intensity) is negative while the coefficient of *UNIV* (skilled-labor intensity) is positive in many cases. However, they are not significant. Contrary to our expectations, the coefficient of *JOBSEP* (job separation rate) is negative but insignificant. In the case of the variables that stand for the importance of intangible assets, the estimated coefficient of *RDINT* (R&D intensity) is negative and the coefficient of *ADINT* (advertisement intensity) is positive. But both are not significant in many cases. The coefficient of *DPROD* is positive but insignificant. In the service sector, the estimated coefficient on *HERF* (Herfindahl index) is positive and significant in most cases. One interpretation of this result is as follows: The Herfindahl index tends to be higher when economies of scale work at the firm level; in such industries we will observe active inward and outward FDI.

In the case of the *keiretsu* variables, we did not get significant results in both the manufacturing and the service sectors, which is consistent with the results obtained in most of the previous studies. Again, this suggests that *keiretsu* do not work as an impediment to inward FDI in Japan.[17]

5. Conclusions

In this paper we compiled new statistics on the employment of Japanese affiliates of foreign firms (JAFF) in Japan at the 3-digit industry level for the year 1996, using micro data of *the Establishment and Enterprise Census of Japan*. According to our new statistics (Tables 3 and 4), JAFF with 33.4% or more foreign ownership in the service sector employed 308,000 workers in 1996, which is nearly five times greater than the number reported in MITI (1999). In the case of the manufacturing sector, JAFF with 33.4% or more foreign ownership employed 176,000 workers in 1996, which is 10% greater than the number reported in MITI (1999). The underestimation in MITI's survey is substantial in the case of the service sector.

Using our statistics, we compared FDI in Japan with FDI in the United States at the 3-digit industry level. We found that as of 1996, the share of employment by JAFF in the service sector reached one fifth of that of the United States. However, FDI into Japan is growing at an amazing speed. The total of FDI flows in the last three years is greater than the FDI stock at the end of the 1996 fiscal year. In the next 7 or 8 years, the share of employment by Japanese affiliates of foreign firms in the service sector may reach a level almost equal to that observed in the United States.

We also estimated an empirical model to examine the determinants of Japan's inward FDI

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[17] As Fukunari Kimura and Sadao Nagaoka pointed out, it is difficult to test the effect of impediments

penetration using our cross-industry statistics. We found that the determinants of Japan's inward FDI penetration are very different for the manufacturing sector and the service sector. In the manufacturing sector, we found advantages in managerial resources and factor intensity to be significant. In the service sector, policy variables were significant. This result implies that by eliminating restrictions on inward FDI and reducing government activities, Japan can increase inward FDI in service sector. In the case of the keiretsu variables, we did not obtain significant results in both the manufacturing and the service sectors. This suggests that *keiretsu* does not work as an impediment to inward FDI in Japan.

We found that compared with FDI in the U.S., FDI in Japan's service sector is more concentrated in a limited number of industries. Four industries, wholesale trade, eating and drinking places, retail trade, and computer programming and software account for 77% of all the workers employed by JAFF. In Japan, there are what may be labeled "sanctuary" sectors, such as medical services, utilities, postal services, and education. If international competition in these sectors were introduced through the participation of foreign capital, this would undoubtedly contribute to Japan's structural reform process. In order to remove government impediments to direct investment by foreign companies, not only should the principle of equal treatment irrespective of nationality be applied, but restrictions on market access should be eased. In the "sacred" sectors, restrictions on market access, which take precedence over equal treatment, impede direct investment by foreign companies. In fact, even Japanese corporations are sometimes prohibited from participating in those markets because of legal restrictions. The very existence of public entities also impedes participation by private companies. In order to encourage market participation by foreign companies in areas in which governmental involvement is high, there is a need to solve difficult issues such as how to introduce competitive principles without violating the public interest.

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which cover all industries (such as Japan's inferior accounting standards) by our cross-industry regression.

Appendix: Description of Variables and Data Sources

1. Notes to Table 5

Number of Workers in the United States:

Our data on the number of workers employed by the U.S. affiliates of foreign firms and that of workers employed by all the establishments in the United States are taken from *Foreign Direct Investment in the United States, Establishment Data for 1992* (U.S. Department of Commerce 1995a).

FDI Restrictiveness Index:

Following Hoekman (1996), we compiled a frequency measure for FDI restrictiveness at the 3-digit industry level, using data from GATS (General Agreement on Trade in Services) schedules for Japan and the United States. The GATS schedule of each country shows to which service sectors and under what conditions the basic principles of the GATS - market access and national treatment - are applied in that country. The GATS schedule covers 155 service sectors. The commitments and limitations are in every case entered with respect to each of the four modes of supply, i.e. cross-border supply, consumption abroad, commercial presence, and presence of natural persons. It seems that commitments on the commercial presence mode of supply have the most significant impact on inward FDI, so we used only information on this mode of supply. For sectors not covered by the GATS schedule, we obtained information on each country's FDI restrictiveness from APEC (1996), OECD (various issues), Japan Investment Council (various years), and the Japanese Government (various years).

2. Notes to Table 7

Imports, Exports, and Domestic Output:

Our data on Japan's imports, exports, and total domestic output are taken from the *1995 Japan Input-Output Tables* (Japanese Government 1998).

In the context of our analysis, cross-border service trade statistics in Japan's I-O tables have the following shortcomings:

(i) Imports and exports in I-O tables do not include payments and receipts for construction services which, if provided by non-residents, should be considered as service imports.

 (ii) As merchandise imports are on a CIF basis, I-O output tables omit those services - transportation and insurance - that are associated with the import of goods and already included in the value of goods imports.

(iii) The value of overseas whole-sellers' activities is included in the value of goods imports either on FOB basis or on CIF basis, while the value of domestic whole-sellers' activities for exported goods is properly

summed up in the output of wholesale trade sector.

In order to solve these problems, we used Bank of Japan (various issues) data on trade in construction and civil engineering, water transportation, and air transportation services. For imports of wholesale trade services which are included in the value of goods imports, we estimated distribution margins in the following way. We calculated the ratio of distribution margins for exported goods to total exports on an FOB basis, and estimated margins on imported goods by multiplying imports on an FOB basis by the commercial margin ratio. We obtained the value of goods imports on an FOB basis from Bank of Japan (various issues).

In the case of financial intermediary services, we calculated a measure of import quantities which is comparable to our measure of activities for this sector, that is, current income. We derived this by multiplying the industry's import/output ratio of the I-O tables with the industry's total current income.

We should note that, in the case of the manufacturing sector, imports are on a CIF basis and include the value of services that are associated with the import of goods.

Our data on U.S. imports and total domestic output are taken from the *1992 U.S. Input-Output Tables* (U.S. Department of Commerce 1995c). Due to the same shortcomings as in the case of Japan's Input-Output tables, we revised the data of the I-O tables, using data on cross-border transactions of U.S. International Services (U.S. Department of Commerce 1999) for construction and civil engineering, railway passenger and freight transportation, road passenger and freight transportation, water and air transportation, and supporting services for transport. Data on imports of financial intermediary services, telecommunications, eating and drinking places, and hotels and lodging places are also taken from U.S. Department of Commerce (1999). For imports of wholesale trade services, we estimated distribution margins that are included in the value of goods imports in the same way as with Japan's imports. We should note that imports data in U.S. Department of Commerce (1999) exclude imports from U.S. firms' foreign affiliates.

Number of Workers Employed by Foreign Affiliates of Japanese Firms:

Our data on the number of workers employed by foreign affiliates of Japanese firms in the manufacturing industries are compiled using the micro-data of MITI's Survey on Trends of Japan's Business Activities Abroad, 1996. In the case of the non-manufacturing sector except the primary sector, we use the micro-data of Toyo Keizai Shinpo-sha's Directory of Japanese Subsidiaries Abroad, 1996, CD-ROM version.

3. Notes to Table 13

Japan's Inward FDI Penetration (FDIJA):

      The share of the number of workers employed by JAFF (Japanese Affiliates of Foreign Firms) that are 10% or more foreign-owned in Japan's total number of workers in 1996. Our data are compiled using the micro-data of the 1996 Establishment and Enterprise Census of Japan.

R&D Intensity (RDINT):

      RDINT is defined as the ratio of R&D expenses to the gross value-added in each industry. In the case of the manufacturing sector, the data are compiled using the industry-level data provided in Nakamura, Fukao, and Shibuya (1995, 1997). In the case of the service sector, the data are taken from the 1995 Japan I-O Tables (Japanese Government 1998). R&D expenses are defined as the amount of input from the research industry to each industry.

Advertisement Intensity (ADINT):

      ADINT is defined as the advertising expenses per employee in each industry. In the case of the manufacturing sector, the industry-level data provided in Nakamura, Fukao, and Shibuya (1995, 1997) are used. In the case of the service sector, the data are taken from the 1995 Japan I-O Tables (Japanese Government: 1998). The advertising expenses are defined as the amount of input from the advertising industry to each industry.

Capital-Labor Ratio (CLRATIO):

      The industry-level data provided in Nakamura, Fukao, and Shibuya (1995, 1997) are used.

Land Intensity (LAND):

      Our data on *LAND* are taken from the Development Bank of Japan (2000) and Nikkei QUICK Information Technology (2000). We first calculated the ratio of the book value (unit: billions of yen) of owned land to the number of employees for each firm. *LAND* is a weighted average of the land/employee ratio in each industry. We used the number of employees of each firm as a weight. For water supply and sewerage systems industries, we calculated the land/employee ratio using MOF (Japan Ministry of Finance) (1996). We first regressed the ratio calculated using the Development Bank of Japan's data on the ratio calculated using MOF's data for the industries that have the ratios calculated by both data. We then took the adjusted ratios for water supply and sewerage systems industries by using the estimated regression equation.

Skilled Labor Intensity (UNIV):

      UNIV is defined as the ratio of the number of university graduate employees to the total number of employees in that particular industry. The data are taken from the Statistics Bureau, Japan Prime Minister's Office (1995) and Policy Planning and Research Department, Minister's Secretariat, Japan Ministry of

Labor (1996).

Herfindahl Index (HERF):

HERF is calculated from the each firm's share of the number of employees in the total number of employees in each industry. The data are complied using the micro-data of the 1996 Establishment and Enterprise Census of Japan.

Top 4-Firm Concentration Ratio (CR4):

CR4 is calculated from each firm's share of the number of employees in the total number of employees in each industry. The data are complied using the micro-data of the 1996 Establishment and Enterprise Census of Japan.

U.S. Inward FDI Penetration (FDIUS):

The share of the number of workers employed by foreign firms' U.S. affiliates in the total number of workers in the U.S. in 1992. The data are taken from the U.S. Department of Commerce (1995a).

Currently Regulated Industries (REGCUR):

REGCUR is a dummy variable which takes one for currently regulated industries, otherwise zero. According to the information in the OECD's Code of Liberalisation of Capital Movements (various years), the currently regulated industries are the petroleum and the leather and leather products industries.

Industries Regulated in the Past (REGPAST):

REGPAST is a dummy variable which takes one for industries regulated in the past, otherwise zero. According to the information in the OECD's Code of Liberalisation of Capital Movements (various years), the industries regulated in the past are food and related products, textile products and apparel, pharmaceuticals, miscellaneous chemicals, stone, clay, and glass products, special industry machinery, electric equipment and computers, and electronic parts and devices industries.

Differences between Japan's and U.S. FDI Restrictiveness (RINVJAUS):

RINVJAUS is defined as the difference between the FDI restrictiveness of Japan and the United States. For details of FDI restrictiveness, see the above description on FDI restrictiveness index.

Share of Public Services (PUBEMP):

PUBEMP is defined as the ratio of the number of workers employed by establishments owned by the central or local governments to the total number of employees in that particular industry in Japan. The data are taken from the Statistics Bureau, Japan Management and Coordination Agency (1998).

Productivity (DPROD):

DPROD is defined as the productivity of a particular industry in Japan relative to that in the U.S. The data are based on Kawai (1996). For this data, also see Kawai and Urata (1997).

Job Separation Rate (JOBSEP):

The data on *JOBSEP* are taken from the Policy Planning and Research Department, Minister's Secretariat, Japan Ministry of Labor (1995).

Vertical Keiretsu (VERT):

VERT is defined as the share of workers employed by vertical *keiretsu* firms in the total work force. In the case of the manufacturing sector, the industry-level data provided in Nakamura, Fukao, and Shibuya (1995, 1997) are used. In the case of the service sector, the data on *keiretsu* were taken from Toyo Keizai Shinpo-sha (1992, 2000). We treated all the firms that belong to forty-three independent corporate groups (Toyota, Nissan, Hitachi, Toshiba, Matsushita, Taisei, etc.) and all the subsidiaries of such firms as vertical *keiretsu* firms.

Horizontal Keiretsu (HORIZ):

HORIZ is defined as the share of workers employed by horizontal *keiretsu* firms in the total work force. In the case of manufacturing sector, the industry-level data provided in Nakamura, Fukao, and Shibuya (1995, 1997) are used. In the case of service sector, the data on *keiretsu* were taken from Toyo Keizai Shinpo-sha (1992, 2000). We treated all the firms that belong to the *Shacho-kai* (President Clubs) of seven corporate groups (Mitsui, Mitsubishi, Sumitomo, Fuyou, Sanwa, Ichikan, and Tokai) and all the subsidiaries of such firms as horizontal *keiretsu* firms.

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Table 1. Japan's Inward and Outward FDI: Position at the End of March 2001

(Billion Yen)

Panel A. Inward FDI

Industry	Inward FDI Stock
Manufacturing Total	5,324
Food and related products	110
Textile products	24
Rubber and leather products	82
Chemicals and allied products	1,272
Petroleum	443
Glass and stone products	30
Primary and fabricated metals	220
Machinery	2,978
Other manufacturing	165
Non-manufacturing Total	7,880
Construction	21
Real estate	339
Commerce	2,028
Business and personal services	1,526
Transportation services	48
Communication services	1,155
Finance and insurance	2,595
Others	168
Total Amount	13,203

Panel B. Outward FDI

Industry	Outward FDI Stock
Manufacturing Total	34,187
Food and related products	3,181
Textile products	1,508
Lumber and pulp	994
Chemicals and related products	4,478
Ferrous and nonferrous metals	3,419
Machinery	2,858
Electronics and electrical machine	9,126
Transportation equipment	4,751
Other manufacturing	3,873
Non-manufacturing Total	71,665
Agriculture and Forestry	424
Fishery	257
Mining	5,193
Construction	821
Commerce	11,016
Finance and Insurance	20,347
Business and Personal Services	11,398
Transportation Services	7,862
Real Estate	12,524
Others	1,824
Branches	1,656
Total Amount	107,669

Note: Cumulated value of FDI flows approved or notified from 1950 onwards.
Sources: MOF (1999) and <www.mof.go.jp>

Table 2. Comparison of Major Statistics on FDI in Japan

	Our statistics based on micro-data of "Establishment and Enterprise Census of Japan"			MITI "Survey on Trends of Business Activities by Japanese Subsidiaries of Foreign Firms"	Toyo Keizai Sinpo-sha "Directry of Japanese Subsidiaries of Foreign Firms"
Years Covered	1996 (Data of 2001 Survey is not available yet)			Annual data is available from 1970	Annual data is available from 1985
Industry Coverage	Covers all the industries			Does not cover finance, insurance, and real estate	Covers all the industries
Response Ratio	Mandatory.			Not-mandatory. Response ratio for 1996 Survey was 52.1%	Not mandatory. There is no information on response ratio
Industry Classification	Establishment level, 3-digit industry classification (Original micro-data is at 4-digit level)			Firm level, 24 industries (including 5 non-manufacturing industries)	Firm level, 55 industries
Definition of Nationality	We can choose any cut-off capital participation ratio			The cut-off ratio is 33.4%	For listed or major firms, cut-off ratio is 20%, otherwise 49%
Coverage of Branches Directly Owned by Foreign Firms	All covered			Not covered	Covered in the case of finance and insurance
Comparison for 1996					
Date of Survey	October 1, 1996			March 31, 1996	October, 1998
Cut-off Ratio	>10%	>33.4%	>=50%	>=33.4%	>=20% or >=49%
Primary Industry					
Number of Workers Employed by JAFF	2,338	407	248	N.A.	268
Number of Japanese Firms Owned by Foreign Firms	7	4	4	N.A.	3
Number of Japanese Establishments Directly Owned by Foreign Firms	66	10	6	N.A.	N.A.
Manufacturing Industry					
Number of Workers Employed by JAFF	1,025,450	176,186	102,155	163,135	286,933
Number of Japanese Firms Owned by Foreign Firms	600	370	311	480	828
Number of Japanese Establishments Directly Owned by Foreign Firms	2,714	986	857	N.A.	N.A.
All the Other Industry				Excluding Real Estate and Finance, including Mining	
Number of Workers Employed by JAFF	1,132,702	308,245	279,844	61,961	203,940
Number of Japanese Firms Owned by Foreign Firms	2,499	2,065	1,887	641	2,456
Number of Japanese Establishments Directly Owned by Foreign Firms	32,190	12,082	10,699	N.A.	N.A.
Available Information	Number of workers (in detailed category of male, female, full-time, part-time etc.), start-up date, form of ownership, location. No information on sales or profits.			Detailed information on business activities is available. But many firms do not answer to such detailed questions.	Number of workers and start-up date are available for most firms. Sales data are available for some firms.

Table 3. Summary Data of Foreign-Owned Establishments in the Japanese Manufacturing Sector, 1996

<Panel A. Number of Establishments Owned by Japanese Affiliates of Foreign Firms (JAFF)>

Industry	JAFF Owned 10% or More by Foreigners			JAFF Owned 33.4% or More by Foreigners	JAFF Owned 50% or More by Foreigners	Government-Owned Establishments	All Japanese Establishments
	Japanese Subsidiaries of Foreign Firms	Branches and Other Establishments of Foreign Firms	JAFF				
	a	b	a+b				
201 Livestock products	20	0	20	6	4	6	3,753
202 Seafood products	11	0	11	2	2	1	13,203
203 Flour & grain mill products	0	0	0	0	0	0	1,747
204 Miscellaneous food products	76	1	77	24	21	29	46,552
205 Beverages & tobacco	39	4	43	18	17	8	8,209
206 Prepared feed & fertilizers	1	1	2	1	1	22	1,462
207 Reeling plants & spinning mills	17	1	18	1	1	0	802
208 Woven & knitted fabrics	3	0	3	1	1	0	24,485
209 Dyed & finished textiles	4	0	4	1	0	0	8,283
210 Other textile mill products	6	0	6	1	1	0	17,382
211 Textile outer garments	28	2	30	16	15	1	47,928
212 Apparel	9	1	10	7	7	0	23,947
213 Sawmills & millwork	11	0	11	1	0	6	18,730
214 Wooden containers & wood products	0	0	0	0	0	4	8,653
215 Furniture & fixtures	12	0	12	5	2	1	39,409
216 Pulp & paper mills	11	0	11	1	1	1	3,012
217 Paper products	15	0	15	3	3	0	14,349
218 Newspaper industries	2	2	4	4	4	0	2,134
219 Publishing industries	29	4	33	28	28	0	5,792
220 Printing	189	2	191	16	15	21	59,241
221 Industrial inorganic chemicals	94	0	94	53	49	0	1,555
222 Industrial organic chemicals	135	0	135	59	54	0	1,868
223 Oil products & detergents	36	3	39	23	23	0	1,762
224 Drugs & medicines	120	1	121	72	71	1	1,859
225 Toilet preparations & others	87	5	92	51	48	0	2,267
226 Petroleum refining	9	0	9	7	7	0	113
227 Petroleum & coal products	54	0	54	7	5	1	1,325
228 Plastic products	74	1	75	36	33	0	31,291
229 Tires & inner tubes	3	0	3	3	3	0	152
230 Rubber & plastic footwear	19	2	21	9	9	0	9,058
231 Leather products & fur skins	1	0	1	0	0	0	13,144
232 Glass & glass products	14	1	15	12	7	0	2,734
233 Cement & cement products	58	0	58	2	2	1	9,841
234 Clay, pottery & stone products	59	1	60	8	6	2	19,916
235 Blast furnace & basic steel	43	0	43	2	2	0	2,422
236 Iron & steel	13	0	13	0	0	0	6,419
237 Nonferrous metals	36	0	36	10	10	0	854
238 Nonferrous rolling & castings	22	1	23	11	9	0	5,748
239 Fabricated structural metal	47	0	47	6	6	0	37,452
240 Miscellaneous metal work	82	2	84	32	25	3	57,478
241 Metal working machinery	50	0	50	15	11	0	15,084
242 Special industry machinery	63	2	65	38	33	0	15,371
243 Office & household machines	55	0	55	24	21	0	5,002
244 General industrial machinery	191	2	193	77	65	0	46,528
245 Electrical industrial machinery	77	4	81	42	31	0	15,166
246 Household electric appliances	35	0	35	3	2	0	3,064
247 Communication equipment	46	3	49	14	11	0	4,234
248 Electric equipment & computers	90	2	92	39	32	0	4,153
249 Electronic parts & devices	147	2	149	58	48	0	16,033
250 Miscellaneous electric equip.	53	0	53	18	15	0	5,871
251 Motor vehicles & parts	175	3	178	38	20	0	20,762
252 Miscellaneous transp. equip.	36	4	40	19	16	4	7,534
253 Medical instruments	24	0	24	14	14	1	3,042
254 Optical instruments & lenses	11	0	11	4	4	0	3,785
255 Watches, clocks & parts	2	0	2	0	0	0	845
256 Measuring & analytical inst.	33	1	34	18	17	0	5,646
257 Ordnance & accessories	1	0	1	0	0	0	32
258 Miscellaneous manufacturing	78	0	78	26	25	2	43,423
Manufacturing Total	**2,656**	**58**	**2,714**	**986**	**857**	**115**	**771,906**

Table 3. Summary Data of Foreign-Owned Establishments in the Japanese Manufacturing Sector, 1996
--- Continued ---

<Panel B. Number of Workers Employed by JAFF's Establishments>

Industry	JAFF Owned 10% or More by			JAFF Owned 33.4% or More by Foreigners	JAFF Owned 50% or More by Foreigners	Government-Owned Establishments	All Japanese Establishments
	Japanese Subsidiaries of Foreign Firms	Branches and Other Establishments of Foreign Firms	JAFF				
	c	d	c+d				
201 Livestock products	3,765	0	3,765	267	217	52	174,152
202 Seafood products	1,638	0	1,638	A	A	A	266,711
203 Flour & grain mill products	0	0	0	0	0	0	21,885
204 Miscellaneous food products	G	A	11,759	1,449	1,256	162	938,750
205 Beverages & tobacco	9,823	438	10,261	2,840	2,812	159	148,709
206 Prepared feed & fertilizers	A	A	A	A	A	58	21,819
207 Reeling plants & spinning mills	E	A	4,627	A	A	0	38,913
208 Woven & knitted fabrics	499	0	499	A	A	0	117,118
209 Dyed & finished textiles	1,430	0	1,430	A	0	0	93,117
210 Other textile mill products	1,190	0	1,190	A	A	0	113,898
211 Textile outer garments	E	A	3,520	1,489	1,446	A	592,303
212 Apparel	B	A	250	92	92	0	193,986
213 Sawmills & millwork	729	0	729	A	0	64	211,046
214 Wooden containers & wood	0	0	0	0	0	18	49,244
215 Furniture & fixtures	1,564	0	1,564	182	A	A	282,558
216 Pulp & paper mills	3,217	0	3,217	A	A	B	114,768
217 Paper products	1,194	0	1,194	340	340	0	207,719
218 Newspaper industries	A	A	72	72	72	0	80,588
219 Publishing industries	1,169	69	1,238	687	687	0	96,981
220 Printing	G	A	25,662	352	285	5,381	616,267
221 Industrial inorganic chemicals	9,903	0	9,903	2,282	1,902	0	62,318
222 Industrial organic chemicals	49,055	0	49,055	5,386	4,332	0	151,765
223 Oil products & detergents	6,160	365	6,525	1,354	1,354	0	69,022
224 Drugs & medicines	G	A	28,279	10,330	10,301	A	143,368
225 Toilet preparations & others	23,075	196	23,271	4,822	4,436	0	99,891
226 Petroleum refining	3,316	0	3,316	3,064	3,064	0	24,968
227 Petroleum & coal products	1,112	0	1,112	198	135	A	20,076
228 Plastic products	G	A	12,825	2,063	1,788	0	502,955
229 Tires & inner tubes	1,318	0	1,318	1,318	1,318	0	32,693
230 Rubber & plastic footwear	D	A	2,492	700	700	0	153,625
231 Leather products & fur skins	A	0	A	0	0	0	91,996
232 Glass & glass products	D	B	1,713	958	658	0	77,078
233 Cement & cement products	6,506	0	6,506	A	A	A	211,985
234 Clay, pottery & stone products	G	A	15,376	472	167	A	231,371
235 Blast furnace & basic steel	66,127	0	66,127	A	A	0	195,673
236 Iron & steel	2,741	0	2,741	0	0	0	125,239
237 Nonferrous metals	12,029	0	12,029	1,775	1,775	0	40,585
238 Nonferrous rolling & castings	G	A	11,558	1,650	991	0	172,099
239 Fabricated structural metal	12,058	0	12,058	1,098	1,098	0	407,913
240 Miscellaneous metal work	G	A	16,936	2,083	1,474	1,371	603,082
241 Metal working machinery	16,972	0	16,972	1,730	1,519	0	178,344
242 Special industry machinery	G	A	11,643	6,607	4,915	0	305,564
243 Office & household machines	27,632	0	27,632	7,104	5,349	0	164,759
244 General industrial machinery	G	A	48,853	6,443	4,782	0	655,238
245 Electrical industrial machinery	60,385	16	60,401	6,073	4,000	0	439,554
246 Household electric appliances	23,150	0	23,150	709	C	0	137,452
247 Communication equipment	45,240	293	45,533	1,736	1,486	0	255,198
248 Electric equipment & computers	H	A	66,717	19,145	10,318	0	241,010
249 Electronic parts & devices	J	A	116,629	16,251	12,245	0	768,677
250 Miscellaneous electric equip.	22,379	0	22,379	6,352	6,164	0	202,940
251 Motor vehicles & parts	169,154	7	169,161	43,575	3,096	0	923,198
252 Miscellaneous transp. equip.	22,182	14	22,196	9,520	1,344	135	208,665
253 Medical instruments	9,488	0	9,488	649	649	A	65,131
254 Optical instruments & lenses	3,027	0	3,027	93	93	0	88,290
255 Watches, clocks & parts	2,491	0	2,491	0	0	0	35,778
256 Measuring & analytical inst.	F	A	5,710	471	430	0	106,849
257 Ordnance & accessories	C	0	C	0	0	0	3,270
258 Miscellaneous manufacturing	16,701	0	16,701	2,101	2,067	A	352,084
Manufacturing Total	**1,022,925**	**2,525**	**1,025,450**	**176,186**	**102,155**	**8,201**	**12,930,235**

Note: A:1-199, B:200-499, C:500-999, D:1,000-2,499, E:2,500-4,999, F:5,000-9,999, G:10,000-49,999, H:50,000-99,999, J:100,000-

Table 4. Summary Data of Foreign-Owned Establishments in the Japanese Non-Manufacturing Sector, 1996

<Panel A. Number of Establishments Owned by Japanese Affiliates of Foreign Firms (JAFF)>

Industry	JAFF Owned 10% or More by Foreigners			JAFF Owned 33.4% or More by Foreigners	JAFF Owned 50% or More by Foreigners	Government-Owned Establishments	All Japanese Establishments
	Japanese Subsidiaries of Foreign Firms	Branches and Other Establishments of Foreign Firms	JAFF				
	a	b	a+b				
301 Construction and civil eng.	3,501	16	3,517	106	101	4	647,360
302 Electricity	34	0	34	2	2	118	2,420
303 Gas supply	0	0	0	0	0	96	776
304 Steam and hot water supply	0	0	0	0	0	0	142
305 Water supply	1	0	1	0	0	4,473	4,657
306 Sewerage systems	2	0	2	0	0	1,680	2,173
307 Sanitary services	6	0	6	0	0	3,439	15,568
308 Wholesale trade	8,462	509	8,971	4,827	4,581	9	447,355
309 Retail trade	3,487	43	3,530	1,476	777	2,639	1,547,533
310 Financial intermediary serv.	1,766	278	2,044	625	596	38	61,307
311 Life insurance	153	116	269	248	248	7	15,444
312 Casualty insurance	2,160	169	2,329	257	257	0	6,259
313 Other insurance services	53	14	67	29	29	322	25,188
314 Real estate	292	12	304	41	35	1,103	292,358
315 Railway transportion	2	0	2	0	0	369	5,524
316 Road passenger transp.	4	0	4	0	0	260	43,255
317 Road freight transportation	1,961	3	1,964	47	45	0	68,038
318 Water transportion	33	22	55	43	40	81	5,049
319 Air transportion	77	325	402	346	346	0	1,058
320 Storage facility services	268	0	268	28	21	2	9,195
321 Supporting serv. for transport	589	178	767	399	377	630	66,617
322 Postal service	0	0	0	0	0	20,153	24,644
323 Telecommunications	203	7	210	25	21	52	5,132
324 Broadcasting	14	0	14	1	0	27	1,953
325 Education	152	9	161	63	59	62,556	88,165
326 Research institutes (natural sci.)	242	7	249	79	66	1,623	4,175
327 Research institutes (soc. sci. &	0	0	0	0	0	332	652
328 Medical services	51	3	54	17	14	2,741	201,908
329 Health and hygiene	5	0	5	1	0	2,920	3,928
330 Private non-profit org. serv.	21	0	21	3	3	3,235	169,831
331 Advertising	44	5	49	38	35	0	12,252
332 Computer prog. & software	311	33	344	165	150	0	13,128
333 Information services	188	101	289	209	199	21	11,653
334 Goods & equip. rental & leas.	241	4	245	132	63	7	29,057
335 Automobile renting	15	0	15	9	9	0	5,376
336 Automobile repairing	30	2	32	11	8	66	69,978
337 Machine repairing	758	18	776	513	503	4	32,712
338 Building maintenance serv.	17	0	17	8	4	0	18,427
339 Legal & accounting serv.	0	0	0	0	0	0	58,677
340 Civil eng. & construct. serv.	82	10	92	24	22	3,519	64,917
341 Personnel supply services	19	1	20	18	14	0	1,704
342 Other business services	1,115	295	1,410	606	570	1,330	100,355
343 Amusement & recreation serv.	380	19	399	54	51	3,736	82,094
344 Eating and drinking places	1,897	9	1,906	1,387	1,269	89	836,446
345 Hotels and lodging places	1,156	15	1,171	119	67	1,497	87,416
346 Individual educ. facilities	108	8	116	96	96	0	138,959
347 Other personal services	42	3	45	23	18	1,323	475,474
348 Agricultural services	3	0	3	0	0	254	14,260
349 Social insurance & welfare	6	0	6	6	2	25,961	58,982
350 Unclassified services	4	1	5	1	1	706	1,260
Services Total	**29,955**	**2,235**	**32,190**	**12,082**	**10,699**	**147,422**	**5,880,791**
101 Agriculture excl. agric. serv.	11	0	11	3	0	123	7,524
102 Forestry excl. forestry services	8	0	8	0	0	1,826	3,229
103 Fishery	13	0	13	1	1	117	3,475
104 Mining	33	1	34	6	5	6	4,521
351 Government services	0	0	0	0	0	45,579	45,579
All Industries Total	**32,676**	**2,294**	**34,970**	**13,078**	**11,562**	**195,188**	**6,717,025**

Industry	JAFF Owned 10% or More by			JAFF Owned 33.4% or More by Foreigners	JAFF Owned 50% or More by Foreigners	Government-Owned Establishments	All Japanese Establishments
	Japanese Subsidiaries of Foreign Firms	Branches and Other Establishments of Foreign Firms	JAFF				
	c	d	c+d				
301 Construction and civil eng.	153,357	438	153,795	3,070	3,018	32	5,774,520
302 Electricity	1,766	0	1,766	A	A	2,943	168,204
303 Gas supply	0	0	0	0	0	2,280	47,973
304 Steam and hot water supply	0	0	0	0	0	0	1,803
305 Water supply	A	0	A	0	0	80,778	82,667
306 Sewerage systems	A	0	A	0	0	32,958	40,317
307 Sanitary services	123	0	123	0	0	91,649	256,194
308 Wholesale trade	286,278	8,309	294,587	116,693	111,054	60	5,061,402
309 Retail trade	157,959	732	158,691	26,597	18,820	37,816	9,071,160
310 Financial intermediary serv.	62,462	14,210	76,672	17,320	16,480	10,770	1,174,476
311 Life insurance	4,690	4,158	8,848	7,926	7,926	2,805	541,825
312 Casualty insurance	45,601	3,501	49,102	5,207	5,207	0	131,063
313 Other insurance services	588	78	666	229	229	2,125	128,381
314 Real estate	6,610	66	6,676	218	188	5,652	934,106
315 Railway transportation	A	0	A	0	0	20,478	277,467
316 Road passenger transp.	231	0	231	0	0	26,975	664,107
317 Road freight transportation	78,319	14	78,333	788	782	0	1,568,677
318 Water transportation	1,365	552	1,917	1,063	1,001	1,513	74,765
319 Air transportation	2,573	8,306	10,879	8,861	8,861	0	51,350
320 Storage facility services	4,237	0	4,237	583	180	A	141,126
321 Supporting serv. for transport	16,268	2,018	18,286	6,093	5,681	7,920	599,628
322 Postal service	0	0	0	0	0	374,335	384,263
323 Telecommunications	8,093	38	8,131	489	437	220	219,777
324 Broadcasting	3,624	0	3,624	A	0	141	69,782
325 Education	3,672	247	3,919	1,153	1,052	1,499,843	2,225,410
326 Research institutes (natural sci.)	48,509	231	48,740	7,230	3,832	63,183	244,691
327 Research institutes (soc. sci. &	0	0	0	0	0	9,115	19,983
328 Medical services	5,112	28	5,140	614	124	394,233	2,771,066
329 Health and hygiene	72	0	72	A	0	65,601	89,853
330 Private non-profit org. serv.	76	0	76	12	12	13,893	987,907
331 Advertising	2,390	17	2,407	1,807	1,799	0	149,996
332 Computer prog. & software	36,148	503	36,651	7,831	7,230	0	397,886
333 Information services	8,706	1,012	9,718	4,218	3,464	193	259,225
334 Goods & equip. rental & leas.	5,087	40	5,127	2,558	1,102	30	270,143
335 Automobile renting	233	0	233	113	113	0	33,442
336 Automobile repairing	C	A	845	422	351	1,130	350,573
337 Machine repairing	9,606	219	9,825	5,488	5,419	207	245,989
338 Building maintenance serv.	277	0	277	90	34	0	689,334
339 Legal & accounting serv.	0	0	0	0	0	0	250,586
340 Civil eng. & construct. serv.	1,547	311	1,858	416	397	109,246	568,481
341 Personnel supply services	D	D	2,908	2,868	1,693	0	240,876
342 Other business services	31,533	2,467	34,000	7,854	7,111	18,154	1,165,960
343 Amusement & recreation serv.	5,098	483	5,581	1,436	1,431	76,604	1,143,158
344 Eating and drinking places	75,965	124	76,089	65,167	62,448	763	4,115,138
345 Hotels and lodging places	9,310	452	9,762	1,809	856	8,910	911,763
346 Individual educ. facilities	1,390	134	1,524	1,254	1,254	0	544,323
347 Other personal services	1,030	13	1,043	379	219	5,761	1,566,518
348 Agricultural services	68	0	68	0	0	1,459	104,701
349 Social insurance & welfare	201	0	201	201	A	338,997	929,701
350 Unclassified services	A	A	30	A	A	9,255	15,915
Services Total	**1,082,803**	**49,899**	**1,132,702**	**308,245**	**279,844**	**3,318,029**	**47,757,651**
101 Agriculture excl. agric. serv.	375	0	375	158	0	2,201	83,204
102 Forestry excl. forestry services	45	0	45	0	0	19,034	36,765
103 Fishery	646	0	646	A	A	664	59,078
104 Mining	D	A	1,272	86	85	85	64,323
351 Government services	0	0	0	0	0	1,849,997	1,849,997
All Industries Total	**2,108,062**	**52,428**	**2,160,490**	**484,838**	**382,247**	**5,198,211**	**62,781,253**

Note: A:1-199, B:200-499, C:500-999, D:1,000-2,499, E:2,500-4,999, F:5,000-9,999, G:10,000-49,999, H:50,000-99,999, J:100,000-

Table 5 Inward FDI Penetration: U.S. (1992) - Japan (1996) Comparison

<Panel A> Manufacturing Industries

	Industry	Share of No. of Workers Employed by Affiliates of Foreign Firms in Total No. of Workers (%)			
		Japan - 50% or More Foreign Owned	Japan - 33.4% or More Foreign Owned	Japan - 10% or More Foreign Owned	U.S. - 10% or More Foreign Owned
201	Livestock products	0.12	0.15	2.16	6.11
202	Seafood products	0.01	0.01	0.61	13.73
203	Flour & grain mill products	0	0	0	14.63
204	Miscellaneous food products	0.13	0.15	1.25	13.41
205	Beverages & tobacco	1.89	1.91	6.90	8.99
206	Prepared feed & fertilizers	0.16	0.16	0.17	10.06
207	Reeling plants & spinning mills	0.01	0.01	11.89	8.57
208	Woven & knitted fabrics	0.00	0.00	0.43	4.40
209	Dyed & finished textiles	0	0.13	1.54	6.32
210	Other textile mill products	0.04	0.04	1.04	12.55
211	Textile outer garments	0.24	0.25	0.59	2.48
212	Apparel	0.05	0.05	0.13	3.53
213	Sawmills & millwork	0	0.00	0.35	2.41
214	Wooden containers & wood	0	0	0	1.74
215	Furniture & fixtures	0.04	0.06	0.55	3.71
216	Pulp & paper mills	0.02	0.02	2.80	9.23
217	Paper products	0.16	0.16	0.57	6.95
218	Newspaper industries	0.09	0.09	0.09	4.79
219	Publishing industries	0.71	0.71	1.28	13.49
220	Printing	0.05	0.06	4.16	5.00
221	Industrial inorganic chemicals	3.05	3.66	15.89	22.79
222	Industrial organic chemicals	2.85	3.55	32.32	36.49
223	Oil products & detergents	1.96	1.96	9.45	19.23
224	Drugs & medicines	7.19	7.21	19.72	33.30
225	Toilet preparations & others	4.44	4.83	23.30	20.32
226	Petroleum refining	12.27	12.27	13.28	26.79
227	Petroleum & coal products	0.67	0.99	5.54	17.81
228	Plastic products	0.36	0.41	2.55	10.41
229	Tires & inner tubes	4.03	4.03	4.03	51.07
230	Rubber & plastic footwear	0.46	0.46	1.62	13.36
231	Leather products & fur skins	0	0	0.02	5.29
232	Glass & glass products	0.85	1.24	2.22	22.13
233	Cement & cement products	0.00	0.00	3.07	19.39
234	Clay, pottery & stone products	0.07	0.20	6.65	18.07
235	Blast furnace & basic steel	0.02	0.02	33.79	23.86
236	Iron & steel	0	0	2.19	9.97
237	Nonferrous metals	4.37	4.37	29.64	19.01
238	Nonferrous rolling & castings	0.58	0.96	6.72	14.03
239	Fabricated structural metal	0.27	0.27	2.96	6.30
240	Miscellaneous metal work	0.24	0.35	2.81	7.65
241	Metal working machinery	0.85	0.97	9.52	6.85
242	Special industry machinery	1.61	2.16	3.81	16.18
243	Office & household machines	3.25	4.31	16.77	13.11
244	General industrial machinery	0.73	0.98	7.46	9.36
245	Electrical industrial machinery	0.91	1.38	13.74	17.03
246	Household electric appliances	0.51	0.52	16.84	20.10
247	Communication equipment	0.58	0.68	17.84	19.26
248	Electric equipment & computers	4.28	7.94	27.68	9.24
249	Electronic parts & devices	1.59	2.11	15.17	12.65
250	Miscellaneous electric equip.	3.04	3.13	11.03	13.36
251	Motor vehicles & parts	0.34	4.72	18.32	11.74
252	Miscellaneous transp. equip.	0.64	4.56	10.64	3.43
253	Medical instruments	1.00	1.00	14.57	10.10
254	Optical instruments & lenses	0.11	0.11	3.43	14.27
255	Watches, clocks & parts	0	0	6.96	14.23
256	Measuring & analytical inst.	0.40	0.44	5.34	16.66
257	Ordnance & accessories	0	0	29.30	12.36
258	Miscellaneous manufacturing	0.59	0.60	4.74	8.68
	Manufacturing Total	**0.79**	**1.36**	**7.93**	**11.01**

Sources: See Appendix.

Table 5 Inward FDI Penetration: U.S. (1992) - Japan (1996) Comparison
--- Continued ---

<Panel B> Non-Manufacturing Industries

Industry	Share of No. of Workers Employed by Affiliates of Foreign Firms in Total No. of Workers (%)				FDI Restrictiveness Index	
	Japan - 50% or More Foreign Owned	Japan - 33.4% or More Foreign Owned	Japan - 10% or More Foreign Owned	U.S. - 10% or More Foreign Owned	Japan	U.S.
301 Construction and civil eng.	0.05	0.05	2.66	1.97	0	0.05
302 Electricity	0.02	0.02	1.05	0.16	1	0.30
303 Gas supply	0	0	0.00	0.67	1	0.22
304 Steam and hot water supply	0	0	0	6.98	0.63	0.30
305 Water supply	0	0	0.00	8.69	0.25	0.30
306 Sewerage systems	0	0	0.06	8.69	0	0.05
307 Sanitary services	0	0	0.05	6.98	0.25	0.05
308 Wholesale trade	2.19	2.31	5.82	8.37	0.25	0.10
309 Retail trade	0.21	0.29	1.75	3.79	0.25	0.10
310 Financial intermediary serv.	1.40	1.47	6.53	6.62	0.50	0.53
311 Life insurance	1.46	1.46	1.63	14.34	0.50	0.26
312 Casualty insurance	3.97	3.97	37.46	14.34	0.50	0.26
313 Other insurance services	0.18	0.18	0.52	14.34	0.50	0.26
314 Real estate	0.02	0.02	0.71	1.97	0	0.05
315 Railway transportation	0	0	0.01	0	1	0.05
316 Road passenger transp.	0	0	0.03	6.75	1	1
317 Road freight transportation	0.05	0.05	4.99	1.92	0.63	0.78
318 Water transportation	1.34	1.42	2.56	8.34	1	1
319 Air transportation	17.26	17.26	21.19	12.02	1	1
320 Storage facility services	0.13	0.41	3.00	1.92	0.25	1
321 Supporting serv. for	0.95	1.02	3.050	8.71	0.53	0.80
322 Postal service	0	0	0	0	1	0.76
323 Telecommunications	0.20	0.22	3.70	0.37	0.75	0.53
324 Broadcasting	0	0.21	5.19	1.28	1	0.41
325 Education	0.05	0.05	0.18	6.44	0.15	0.68
326 Research institutes (natural	1.57	2.95	19.92	6.44	1	1
327 Research institutes (soc.	0	0	0	6.44	0	1
328 Medical services	0.00	0.02	0.19	2.72	1	0.86
329 Health and hygiene	0	0.01	0.08	2.72	0	0.05
330 Private non-profit org. serv.	0.00	0.00	0.01	0	1	1
331 Advertising	1.20	1.20	1.60	7.55	0	0.05
332 Computer prog. & software	1.82	1.97	9.21	4.08	0.25	0.29
333 Information services	1.34	1.63	3.75	4.08	0.17	0.21
334 Goods & equip. rental &	0.41	0.95	1.90	5.36	0.50	0.55
335 Automobile renting	0.34	0.34	0.70	5.67	0	0.05
336 Automobile repairing	0.10	0.12	0.24	0.64	0.25	0.05
337 Machine repairing	2.20	2.23	3.99	2.88	0.50	0.53
338 Building maintenance serv.	0.00	0.01	0.04	7.85	0	0.05
339 Legal & accounting serv.	0	0	0	0.06	0.25	0.22
340 Civil eng. & construct. serv.	0.07	0.07	0.33	1.44	0.13	0.05
341 Personnel supply services	0.70	1.19	1.21	6.79	0.63	0.05
342 Other business services	0.61	0.67	2.92	4.10	0.35	0.40
343 Amusement & recreation	0.13	0.13	0.49	4.32	0.06	0.17
344 Eating and drinking places	1.52	1.58	1.85	2.71	0.13	0.05
345 Hotels and lodging places	0.09	0.20	1.07	9.99	0	0.05
346 Individual educ. facilities	0.23	0.23	0.28	0.94	1	1
347 Other personal services	0.01	0.02	0.07	1.27	0.50	0.53
348 Agricultural services	0	0	0.06	0.82	1	0.53
349 Social insurance & welfare	0.00	0.02	0.02	n.a.	n.a.	n.a.
350 Unclassified services	0.01	0.01	0.19	n.a.	n.a.	n.a.
Services Total	**0.59**	**0.65**	**2.37**	**4.03**	**0.49**	**0.42**
101 Agriculture excl. agric. serv.	0	0.19	0.45	n.a.	n.a.	n.a.
102 Forestry excl. forestry serv.	0	0	0.12	0.32	n.a.	n.a.
103 Fishery	0.28	0.28	1.09	5.97	n.a.	n.a.
104 Mining	0.13	0.13	1.98	18.95	n.a.	n.a.
351 Government services	0	0	0	n.a.	n.a.	n.a.
All Industries Total	**0.61**	**0.77**	**3.44**	**5.84**	**n.a.**	**n.a.**

Sources: See Appendix.

TF8

Table 6. Number of Employees of Majority-Owned Foreign Affiliates:
U.S. (1992) - Japan (1995) Comparison

Sectors	Ratio of No. of Workers Employed by Majority-Owned Foreign Affiliates to Total No. of Workers (%)		Fukao-Ito Industry Classification Code
	Japan	U.S.	
Manufacturing	**0.79**	**10.48**	
Food and related products	0.28	15.38	201-206
Textile products and apparel	0.14	3.92	207-212
Lumber, wood, furniture, and fixtures	0.02	1.61	213-215
Paper and related products	0.11	5.99	216, 217
Printing and publishing	0.13	6.98	218-220
Miscellaneous plastic products	0.36	3.38	228
Rubber products	1.08	32.30	229, 230
Stone, clay, and glass products	0.16	20.84	232-234
Chemicals and related products	4.24	47.89	221-225
Primary and fabricated metals	0.35	9.37	235-240
General industrial machinery	0.98	9.97	241, 242, 244
Electronic and electrical equipment	1.36	18.87	245-247, 249, 250
Office and computing machines	3.86	12.06	243, 248
Motor vehicles and equipment	0.34	6.70	251
Other transport equipment	0.64	3.29	252
Instruments and related products	0.40	11.54	253-256
Construction	**0.05**	**1.05**	301
Wholesale trade	**2.19**	**6.66**	308
Retail trade	**0.21**	**3.26**	309
Finance, except depository institutions	**1.40**	**1.21**	310
Real estate	**0.02**	**2.79**	314
Transportation	**0.49**	**2.17**	315-321
Services	**0.60**	**2.06**	
Hotels and other lodging places	0.09	7.27	345
Computer and data processing services	1.63	1.41	332, 333
Motion pictures, including television tape and film	0.13	3.82	343
Health services	0.00	0.71	328, 329
Business services	0.45	3.21	331,334-342
Other services	1.03	0.49	344, 346, 347
Non-Manufacturing except primary industry	**0.59**	**2.77**	
Agriculture, forestry, and fishing	**0.08**	**1.75**	348, 102, 103
Mining	**0.13**	**5.55**	104
All Industries	**0.61**	**4.61**	

Sources: Panel B of Table 3; Panel B of Table 4; U.S. Department of Commerce (1995b)

Table 7. Japan's International Transactions : FDI v.s. Cross-Border Trade

<Panel A> Manufacturing Sector

Fukao-Ito Code	Industry	Inward		Outward		U.S. Inward	
		Ratio of No. of Workers Employed by JAFF to Total No. of Domestic Workers	Ratio of Imports to Total Domestic Output	Ratio of No. of Workers Employed by FAJF to Total No. of Domestic Workers	Ratio of Exports to Total Domestic Output	Ratio of No. of Workers Employed by USAFF to Total No. of Domestic Workers	Ratio of Imports to Total Domestic Output
		(%)	(%)	(%)	(%)	(%)	(%)
201-204	Food products	0.11	12.19	5.03	0.48	10.46	5.21
205	Beverages & tobacco	1.91	4.90	6.28	0.37	8.99	5.37
206	Prepared feed & fertilizers	0.16	0.89	6.51	0.08	10.06	0.96
207	Reeling plants & spinning mills	0.01	23.62	73.25	4.17	8.57	3.94
208	Woven & knit fabrics mills	0.00	13.59	18.73	26.21	4.40	12.66
209	Dyed & finished textiles	0.13	0.00	9.41	0.00	6.32	12.66
210	Other textile mill products	0.04	12.77	12.40	10.19	12.55	13.28
211, 212	Textile outer garments & apparel	0.20	27.83	7.48	0.62	2.75	54.97
213, 214	Sawmills & wood	0.00	22.54	2.32	0.16	2.26	10.98
215	Furniture & fixtures	0.06	6.59	0.66	1.00	3.71	12.74
216	Pulp & paper mills	0.02	8.19	8.28	2.74	9.23	14.00
217	Paper products	0.16	1.18	2.68	1.46	6.95	2.46
218-220	Publishing & printing	0.13	0.74	1.07	0.36	6.56	1.81
221	Industrial inorganic chemicals	3.66	9.58	16.58	1.11	22.79	13.24
222	Industrial organic chemicals	3.55	9.10	22.54	17.55	36.49	13.24
223	Oil products & detergents	1.96	4.44	61.86	3.36	19.23	4.65
224	Drugs & medicines	7.21	7.28	10.04	2.15	33.30	21.17
225	Toilet preparations & others	4.83	11.44	31.36	19.45	20.32	6.33
226	Petroleum refining	12.27	12.00	5.26	2.82	26.79	8.53
227	Petroleum & coal products	0.99	2.53	0.10	2.89	17.81	0.65
228	Plastic products	0.41	1.99	3.91	3.31	10.41	10.58
229	Tires & inner tubes	4.03	6.43	226.60	27.98	51.07	22.71
230	Rubber & plastic footwear	0.46	10.10	5.44	7.77	13.36	10.58
231	Leather products & fur skins	0.00	55.48	2.95	2.70	5.29	134.45
232	Glass & its products	1.24	5.60	43.99	10.70	22.13	12.01
233	Cement & its products	0.00	0.20	1.59	0.83	19.39	2.12
234	Clay, pottery & stone products	0.20	6.28	9.07	8.30	18.07	27.94
235	Blast furnace & basic steel	0.02	3.46	20.03	9.18	23.86	17.96
236	Iron & steel foundries	0.00	0.43	27.75	0.34	9.97	5.72
237	Nonferrous metals	4.37	108.04	16.81	7.42	19.01	20.01
238	Nonferrous rolling & castings	0.96	4.60	12.35	9.72	14.03	7.09
239	Fabricated structural metal	0.27	0.64	0.66	0.37	6.30	1.26
240	Miscellaneous metal work	0.35	2.78	2.74	5.00	7.65	9.38
241	Metal working machinery	0.97	2.42	8.17	24.90	6.85	34.66
242	Special industry machinery	2.16	5.19	13.65	27.14	16.18	19.40
243	Office & household machines	4.31	2.95	10.65	16.42	13.11	18.79
244	General industrial machinery	0.98	3.42	4.61	18.84	9.36	16.32
245	Electrical industrial machinery	1.38	6.12	6.82	22.79	17.03	18.53
246	Household electric appliances	0.52	3.19	147.76	5.01	20.10	82.65
247	Communication equipment	0.68	3.56	36.60	24.44	19.26	12.31
248	Electric equipment & computers	7.94	15.74	5.71	28.43	9.24	53.50
249	Electronic parts & devices	2.11	9.60	27.11	31.26	12.65	28.92
250	Miscellaneous electric equipment	3.13	7.57	31.52	24.80	13.36	31.19
251	Motor vehicles & parts	4.72	3.19	42.05	20.64	11.74	34.24
252	Miscellaneous transport equipment	4.56	9.12	6.02	28.02	3.43	11.48
253, 256	Miscellaneous precision instruments	0.65	14.65	7.43	17.13	13.99	16.78
254	Optical instruments & lenses	0.11	12.77	22.71	41.40	14.27	33.06
255	Watches, clocks & parts	0.00	42.62	30.77	40.75	14.23	360.39
257	Ordnance & accessories	0.00	8.07	0.00	0.13	12.36	3.64
258	Miscellaneous manufacturing	0.60	34.73	6.41	10.36	8.68	57.72
Manufacturing Total		**1.36**	**7.63**	**14.29**	**11.66**	**11.01**	**16.89**

Note: FAJF: Foreign Affiliates of Japanese Firms (10% or more Japanese-owned), JAFF: Japanese Affiliates of Foreign Firms (33.4% or more foreign-owned), USAFF: U.S. Affiliates of Foreign Firms (10% or more foreign-owned)
Sources: See Appendix.

Table 7. Japan's International Transactions : FDI v.s. Cross-Border Trade
--- Continued ---

<Panel B> Service Sector

Fukao-Ito Code	Industry	Inward		Outward		U.S. Inward	
		Ratio of No. of Workers Employed by JAFF to Total No. of Domestic Workers	Ratio of Imports to Total Domestic Output	Ratio of No. of Workers Employed by FAJF to Total No. of Domestic Workers	Ratio of Exports to Total Domestic Output	Ratio of No. of Workers Employed by USAFF to Total No. of Workers	Ratio of Imports to Total Domestic Output
		(%)	(%)	(%)	(%)	(%)	(%)
301	Construction and civil engineering	0.05	0.34	0.70	0.70	1.97	0.04
302	Electricity	0.02	0.00	0.12	0.15	0.16	0.36
303	Gas supply	0.00	0.05	0.08	0.01	0.67	0.00
304	Steam and hot water supply	0.00	0.00	0.00	0.00	6.98	0.00
305	Water supply	0.00	0.02	0.00	0.11	8.69	0.00
306	Sewerage systems	0.00	0.00	0.00	0.03	8.69	0.00
307	Sanitary services	0.00	0.00	0.01	0.01	6.98	0.00
308	Wholesale trade	2.31	3.32	5.85	4.87	8.37	9.45
309	Retail trade	0.29	0.03	0.66	0.05	3.79	0.00
310	Financial intermediary services	1.47	2.98	13.37	1.78	6.62	0.25
311	Life insurance	1.46	2.60	3.28	0.09	14.34	0.49
312	Casualty insurance	3.97	1.87	18.41	2.41	14.34	0.49
313	Other insurance services	0.18	n.a.	n.a.	n.a.	14.34	0.49
314	Real estate	0.02	0.01	1.38	0.01	1.97	0.00
315	Railway transportion	0.00	1.30	0.01	0.30	0.00	3.63
316	Road passenger transportion	0.00	1.26	0.01	0.21	6.75	4.10
317	Road freight transportion	0.05	0.00	0.27	0.03	1.92	0.77
318	Water transportation	1.42	20.96	17.34	19.53	8.34	48.85
319	Air transportation	17.26	46.36	12.61	14.23	12.02	8.16
320	Storage facility services	0.41	0.00	5.18	0.01	1.92	0.77
321	Supporting services for transport	1.02	18.78	4.34	16.72	8.71	18.71
322	Postal service	0.00	0.35	0.00	0.43	0.00	0.00
323	Telecommunications	0.22	0.68	0.19	0.39	0.37	3.36
324	Broadcasting	0.21	0.00	0.52	0.00	1.28	0.00
325	Education	0.05	0.00	0.00	0.00	6.44	0.84
326	Research institutes (natural sciences)	2.95	1.71	0.00	1.14	6.44	0.84
327	Research institutes (soc. sci. & humanitie	0.00	2.15	0.00	1.25	6.44	0.84
328	Medical services	0.02	0.00	0.01	0.00	2.72	0.00
329	Health and hygiene	0.01	0.00	0.11	0.00	2.72	0.00
330	Private non-profit organization services	0.00	0.84	0.00	1.01	0.00	0.00
331	Advertising	1.20	4.85	3.23	1.47	7.55	0.44
332	Computer programming & software	1.97	1.42	1.02	0.66	4.08	0.18
333	Information services	1.63	6.77	40.74	3.33	4.08	0.18
334	Goods & equipment rental & leasing	0.95	2.33	3.65	1.06	5.36	0.00
335	Automobile renting	0.34	0.00	1.76	0.00	5.67	0.00
336	Automobile repairing	0.12	0.00	0.31	0.00	0.64	0.01
337	Machine repairing	2.23	0.00	0.49	0.00	2.88	0.00
338	Building maintenance services	0.01	0.00	0.23	0.00	7.85	0.00
339	Legal & accounting services	0.00	5.87	0.01	2.18	0.06	0.25
340	Civil eng. & construct. Services	0.07	3.11	0.01	2.45	1.44	0.50
341	Personnel supply services	1.19	0.00	0.12	0.01	6.79	1.67
342	Other business services	0.67	3.02	2.98	2.10	4.10	0.45
343	Amusement & recreation services	0.13	1.62	0.52	0.20	4.32	0.24
344	Eating and drinking places	1.58	4.17	0.55	0.56	2.71	2.05
345	Hotels and lodging places	0.20	23.31	4.46	3.97	9.99	19.63
346	Individual education facilities	0.23	0.03	0.01	0.01	0.94	0.00
347	Other personal services	0.02	0.04	0.06	0.01	1.27	0.04
348	Agricultural services	0.00	0.00	0.18	0.00	0.82	0.10
349	Social insurance & welfare	0.02	0.00	0.00	0.00	n.a.	n.a.
350	Unclassified services	0.01	n.a.	n.a.	n.a.	n.a.	n.a.
Services Total		**0.65**	**2.11**	**1.89**	**1.48**	**4.03**	**2.07**

Note: FAJF: Foreign Affiliates of Japanese Firms (10% or more Japanese-owned), JAFF: Japanese Affiliates of Foreign Firms (33.4% or more foreign-owned), USAFF: U.S. Affiliates of Foreign Firms (10% or more foreign-owned)
Sources: See Appendix.
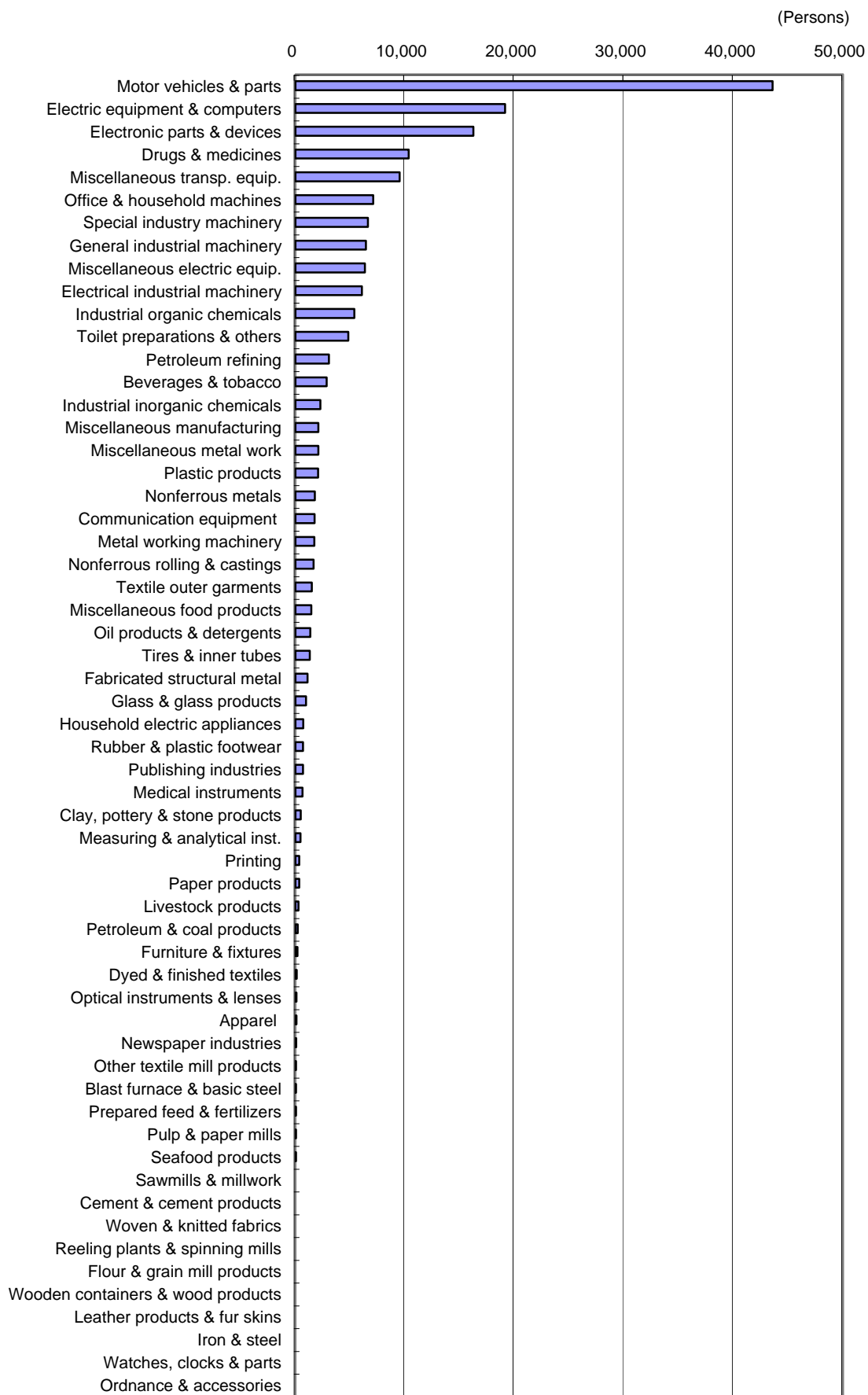
Figure 1-a. Number of Employees of 33.4% or More Foreign-Owned Affiliates in Japan
--- Manufacturing Sector ---

Source: Panel B of Table 3.

(Persons)

Wholesale trade	
Eating and drinking places	
Retail trade	
Financial intermediary serv.	
Air transportation	
Life insurance	
Other business services	
Computer prog. & software	
Research institutes (natural sci.)	
Supporting serv. for transport	
Machine repairing	
Casualty insurance	
Information services	
Construction and civil eng.	
Personnel supply services	
Goods & equip. rental & leas.	
Hotels and lodging places	
Advertising	
Amusement & recreation serv.	
Individual educ. facilities	
Education	
Water transportation	
Road freight transportation	
Medical services	
Storage facility services	
Telecommunications	
Automobile repairing	
Civil eng. & construct. serv.	
Other personal services	
Other insurance services	
Real estate	
Social insurance & welfare	
Broadcasting	
Automobile renting	
Building maintenance serv.	
Electricity	
Health and hygiene	
Private non-profit org. serv.	
Unclassified services	
Gas supply	
Steam and hot water supply	
Water supply	
Sewerage systems	
Sanitary services	
Railway transportation	
Road passenger transp.	
Postal service	
Research institutes (soc. sci. & humanities)	
Legal & accounting serv.	
Agricultural services	

Figure 1-b. Number of Employees of 33.4% or More Foreign-Owned Affiliates in Japan
--- Service Sector ---

Source: Panel B of Table 4.

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Table 8. Correlation Coefficients between Japan's FDI and Trade: 1996 Cross-Industry Data

Panel A. Manufacturing Sector

	infdi	import	outfdi	export
infdi	1			
import	0.0852	1		
	(0.5563)			
outfdi	0.0925	-0.0442	1	
	(0.5231)	(0.7605)		
export	0.1865	0.0532	0.2282	1
	(0.1948)	(0.7137)	(0.1110)	

Panel B. Service Sector

	infdi	import	outfdi	export
infdi	1			
import	0.7697*	1		
	(0.000)			
outfdi	0.3554*	0.3911*	1	
	(0.0132)	(0.006)		
export	0.5024*	0.8138*	0.4413*	1
	(0.0003)	(0.000)	(0.0017)	

Note: 1) The numbers in parentheses represent significance levels.
2) *P=.05 (two-tailed test)
3) infdi=Ratio of No. of Workers Employed by JAFF to Total No. of Domestic Workers
  import=Ratio of Imports to Total Domestic Output
  outfdi=Ratio of No. of Workers Employed by FAJF to Total No. of Domestic Workers
  export=Ratio of Exports to Total Domestic Output
4) The correlation coefficients are calculated from the data in Table 7.

Table 9. FDI Flows into Japan   (Billion Yen)

Fiscal Year	1950-90	91	92	93	94	95	96	97	98	99	2000	Total
Manufacturing Total	1,666.5	257.7	208.1	183.6	205.4	141.2	311.1	267.4	312.6	979.7	790.7	5,324.0
Food and related products	44.2	17.1	1.2	10.4	3.2	4.1	0.3	2.2	25.8	1.5	0.0	110.0
Textile products	9.8	1.3	0.7	0.7	0.1	2.3	0.9	1.9	3.6	0.2	2.4	23.8
Rubber and leather products	11.0	7.6	9.6	5.4	4.0	2.1	10.7	18.8	4.8	7.0	1.1	82.1
Chemicals and allied products	447.3	122.6	93.1	54.2	23.4	109.5	69.5	74.0	39.7	60.3	178.8	1,272.5
Petroleum	102.1	23.4	5.9	5.9	14.7	2.0	8.2	5.8	8.4	13.5	253.4	443.3
Glass and stone products	20.7	0.6	-	0.5	1.8	0.0	0.0	0.7	-	5.7	0.0	30.0
Primary and fabricated metals	91.6	10.7	5.2	17.7	19.6	0.1	52.8	0.3	2.0	17.9	1.9	219.6
Machinery	874.5	59.5	82.9	78.1	133.9	18.2	155.8	145.2	212.9	865.2	351.9	2,978.1
Other manufacturing	65.3	14.9	9.4	10.8	4.8	2.9	12.9	18.5	15.3	8.5	1.2	164.5
Non-manufacturing Total	942.7	331.9	322.5	175.0	227.3	228.4	459.5	410.8	1,027.8	1,419.6	2,334.4	7,880.0
Construction	12.9	3.1	0.0	0.1	0.4	0.1	0.0	0.3	1.4	2.2	0.0	20.5
Real Estate	115.8	9.4	30.7	10.7	3.2	1.6	26.5	48.2	41.6	16.8	34.6	339.0
Commerce	416.6	107.3	155.4	100.5	113.5	67.9	166.4	99.6	175.9	348.5	276.1	2,027.8
Business and Personal Services	150.3	73.7	106.7	24.0	37.4	49.1	236.0	88.8	318.1	205.8	236.5	1,526.4
Transportation Services	19.8	3.5	2.5	5.1	0.8	1.2	1.0	0.4	6.1	2.2	5.7	48.3
Communication Services	20.8	13.6	6.3	3.2	3.0	5.3	2.1	3.3	16.8	330.0	750.8	1,155.1
Finance and Insurance	96.4	120.3	19.0	4.0	68.7	100.1	27.3	161.6	456.9	511.5	1,029.3	2,595.2
Others	110.4	1.1	1.8	27.4	0.3	3.2	0.2	8.7	11.1	2.5	1.3	168.0
Total Amount	2,608.5	589.6	530.6	358.6	432.7	369.7	770.7	678.2	1,340.4	2,399.3	3,125.1	13,203.3

Note: FDI flows approved or notified from 1950 onwards.
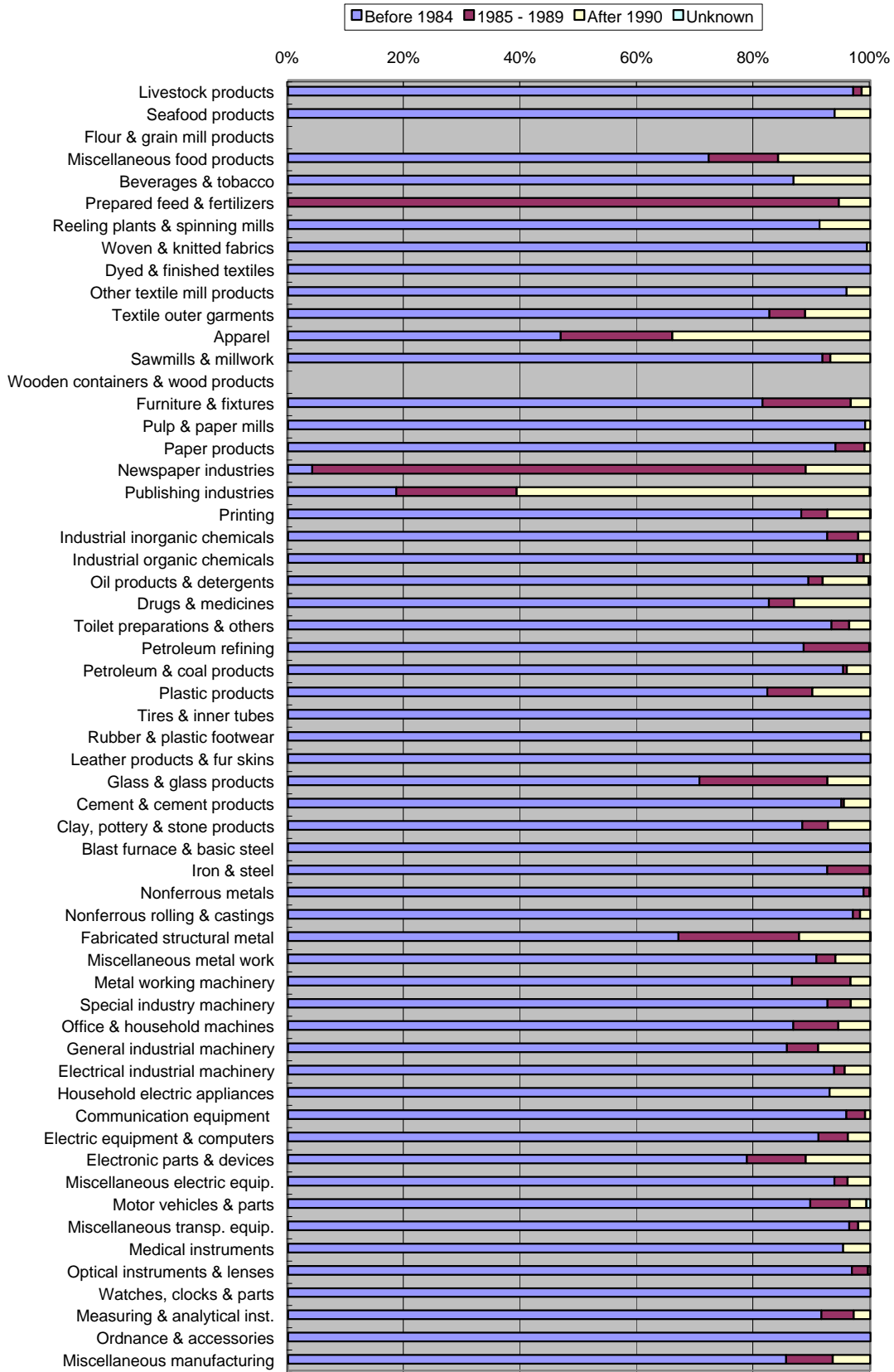Data Sources: MOF (1999) and <www.mof.go.jp>

Figure 2-a. Distribution of 10% or More Foreign-Owned Establishments by Year of Establishment   --- Manufacturing Sector ---
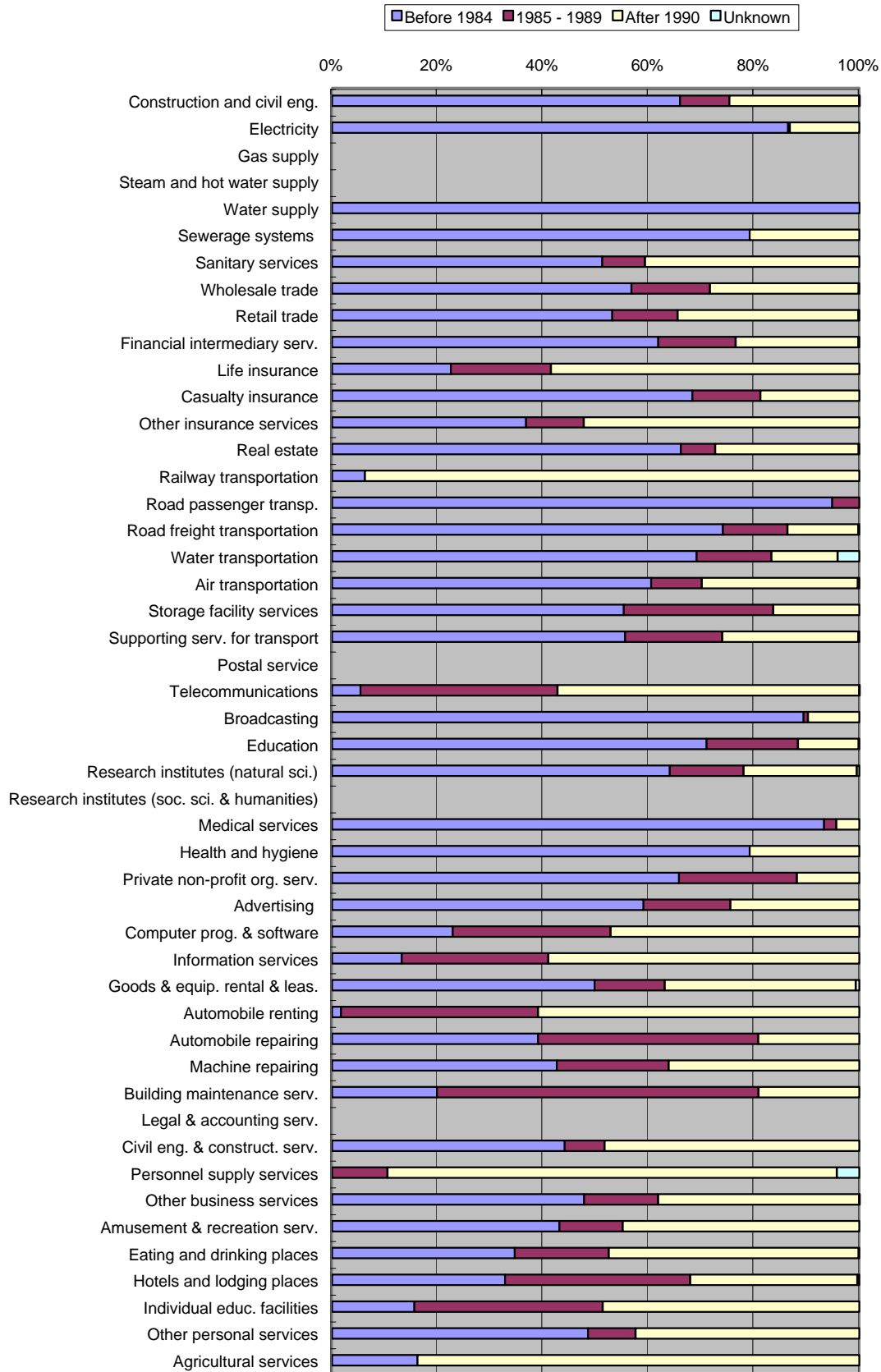
Legend: Before 1984 ■ 1985 - 1989 □ After 1990 □ Unknown

Categories (top to bottom):
- Livestock products
- Seafood products
- Flour & grain mill products
- Miscellaneous food products
- Beverages & tobacco
- Prepared feed & fertilizers
- Reeling plants & spinning mills
- Woven & knitted fabrics
- Dyed & finished textiles
- Other textile mill products
- Textile outer garments
- Apparel
- Sawmills & millwork
- Wooden containers & wood products
- Furniture & fixtures
- Pulp & paper mills
- Paper products
- Newspaper industries
- Publishing industries
- Printing
- Industrial inorganic chemicals
- Industrial organic chemicals
- Oil products & detergents
- Drugs & medicines
- Toilet preparations & others
- Petroleum refining
- Petroleum & coal products
- Plastic products
- Tires & inner tubes
- Rubber & plastic footwear
- Leather products & fur skins
- Glass & glass products
- Cement & cement products
- Clay, pottery & stone products
- Blast furnace & basic steel
- Iron & steel
- Nonferrous metals
- Nonferrous rolling & castings
- Fabricated structural metal
- Miscellaneous metal work
- Metal working machinery
- Special industry machinery
- Office & household machines
- General industrial machinery
- Electrical industrial machinery
- Household electric appliances
- Communication equipment
- Electric equipment & computers
- Electronic parts & devices
- Miscellaneous electric equip.
- Motor vehicles & parts
- Miscellaneous transp. equip.
- Medical instruments
- Optical instruments & lenses
- Watches, clocks & parts
- Measuring & analytical inst.
- Ordnance & accessories
- Miscellaneous manufacturing

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Figure 2-b. Distribution of 10% or More Foreign-Owned Establishments by Year of Establishment   --- Service Sector ---
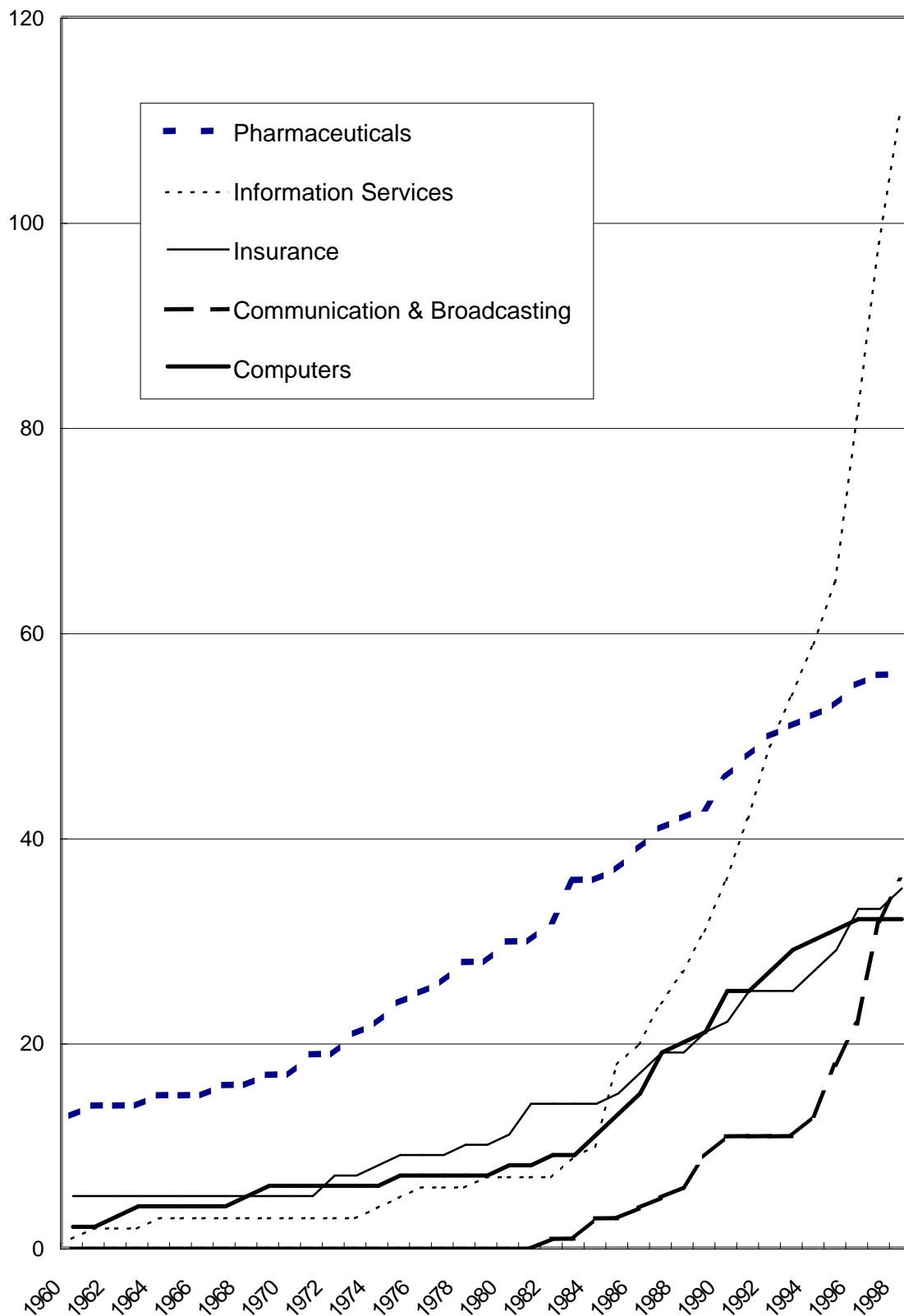
Figure 3. Number of Japanese Affiliates of Foreign Firms in Major Industries

Source: Toyo Keizai Shinposha (1999)

Table 10. The Process of Inward FDI Liberalization in Japan

	For Newly Established Firms			For Existing Firms	
	Number of Industries			Foreign Ownership	
	Up to 50% Foreign Ownership Permitted	Up to 100% Foreign Ownership Permitted	Total	By one Foreign "Person" (*1)	By All Foreign "Persons" (*1)
Phase I (July 1967)	33	17	50	up to 7%	up to 20% (*2)
Phase II (Mar. 1969)	160	17	204	up to 7%	up to 20% (*2)
Phase III (Sep. 1970)	447	77	524	up to 7%	less than 25% (*2)
Automobile Industry Liberalization (June 1971)					
Phase IV (Aug. 1971)	(*3)	228	-	less than 10%	less than 25% (*2)
Phase V (May 1973)	In principle, 100% liberalized with the exception of 22 industries (excepted 5 industries and 17 industries with a time limit) (*4)			(*5)	
Liberalization of the 17 industries with a time limit (From Dec. 1974 to May 1976) (*6)					
Retail Trade Liberalization (June 1975)					
Amendments to the Foreign Exchange Law (Dec. 1980)					
	Inward FDI is not subject to prior permission, but in general, to **prior notification** to the Minister of Finance and the related Ministers in order to determine if an inquiry is necessary. The amendments abolished the condition that takeovers by foreigners require the agreement with the owners of acquired firms.				
Discontinuance of Foreign Participation Restriction for the Designated Companies (July 1984) (*7)					
Amendments to the Foreign Exchange Law (Jan. 1992)					
	Inward FDI is now subject, in general, to **ex post facto reporting** or, in certain cases, prior notification to the Minister of Finance and the related Ministers in order to determine if an inquiry is necessary. An ex post facto report is required to be submitted within 15 days after the investment is made.				
Amendments to the Foreign Exchange Law (April 1998)					
	Telecommunications and media industries changed from prior to ex post notification.				

Notes: (*1) "Person" means any person, any government or its representative, and any foreign juridical person or association.

(*2) other than the excepted industries.

(*3) All industries other than "100% liberalized industries" and 7 industries to which individual screenings are applied.
"100% liberalized industries" are the industries in which 100% foreign participation in the share capital is automatically approved.

(*4) The excepted 5 industries are: 1. Agriculture, forestry and fishery; 2. Oil; 3. Mining; 4. Leather and leather products manufacturing; and 5. Retail trade.

(*5) For all industries other than the excepted 5 industries and 17 industries with a time limit, 100% foreign ownership is allowed if the firm agrees. In other cases, the foreign ownership restrictions are same as before.

(*6) The liberalization dates for the 17 industries with a time limit are as follows:

Year	Industries
Dec. 1974	Integrated circuits
May 1975	Meat products, Tomato processed products, Prepared feed for animals, Pharmaceuticals and agricultural chemicals, Ferroalloy, Music records, Real estate, Electronic precision machinery, Packing machinery, Oil pressure instruments, Apparel (including wholesale trade), Prepared food products for food service industry
Dec. 1975	Manufacture of computers, Sales and leasing of computers
April 1976	Information service industry
May 1976	Fruit juice, Sensitive materials for photography

(*7) The specified 11 companies, such as Hitachi and Arabian Oil.

Sources: Nakamura, Fukao, and Shibuya (1997) Table 9; APEC(1999)

Table 11. Major Restrictions on Inward FDI in Japan

Apart from the regulations written in the Foreign Exchange Law, certain other laws, such as the following, restrict FDI in Japan:

Sector	Prohibition, Limitation, or Special Conditions
Air transport	A license to operate a domestic air transport business shall only be granted to: a juridical person or association with less than a third of voting rights controlled by foreigners.
Maritime transport	Transport of goods and passengers between Japanese ports is reserved to Japanese ships. Foreign ownership of Japanese ships can only occur through an enterprise incorporated in Japan in accordance with the Ship Law.
Telecommunication	Foreign participation in the share capital of Nippon Telegraph and Telephone corporation (NTT) is restricted to less than one-fifth. The limitations on foreign capital paticipation (formerly limited to less than a third) in all Type I telecommunications carriers (except for NTT and KDD) were abolished in February 1998. The limitation on foreign capital participation in KDD was eliminated in July 1998.
Broadcasting	Foreigners or foreign-controlled enterprises (where any of the officers executing the business is a foreigner, or 20% or more of whose voting rights in aggregate are owned by foreigners) are not granted: 1) licenses for broadcasting stations including AM, FM or television broadcasting stations; and 2) approvals as program-supplying broadcasters. (The bills which prohibited the granting of permissions to foreigners for the installation of cable television facilities were removed in June, 1999.)
Mining	No one other than Japanese citizens or a Japanese juridical person shall become a mining right owner. Japan has no performance requirement or regulation tied in any way to the export orientation of an investment proposal under the Foreign Exchange Law.
Insurance	Foreign insurers are required in all cases to lodge an initial deposit for the establishment of branches which is essentially equivalent to the share capital required of domestic companies. Initial deposits may be required of national insurers in some cases.

Sources: APEC (1999); Japan Investment Council (various years);
Nakamura, Fukao, and Shibuya (1997) Table 11.

Table 12. Reservations to the OECD Code of Liberalization of Capital Movements:
U.S. - Japan Comparison

Year	Japan	United States
1973	Agriculture, forestry and fisheries Mining Petroleum Leather and leather products Retail Trade Integrated circuits, Meat products, Tomato processed products, Prepared feed for animals, Pharmaceuticals and agricultural chemicals, Ferroalloy, Music records Real estate, Electronic precision machinery, Packing machinery, Oil pressure instruments, Apparel (including wholesale trade), Prepared food products for food service industry Manufacture of computers, Sales and leasing of computers, Information service industry, Fruit juice, Sensitive materials for photography Sectors related to national security or public health*	Fresh water shipping, Domestic radio communications, Domestic air transport Coastal shipping, Hydro-electric power production, Other forms of communications, Utilization and production of atomic energy Sectors related to national security or public health*
1982	Agriculture, forestry and fisheries Mining Petroleum Leather and leather products Sectors related to national security or public health*	Fresh water shipping, Domestic radio communications, Domestic air transport Coastal shipping, Hydro-electric power production, Other forms of communications, Utilization and production of atomic energy Sectors related to national security or public health*
1993	Agriculture, forestry and fisheries Mining Petroleum Leather and leather products Air transport, Maritime transport Investment trust management business Sectors related to national security or public health*	Atomic energy Broadcasting (radio and television) Air transport Coastal and domestic shipping Ocean thermal energy, Hydroelectric power, Geothermal steam or related resources on federal lands, Mining on federal lands or on the outer continental shelf or on the deep seabed Fishing in the "Exclusive Economic Zone" Deepwater ports Sectors related to national security or public health*
1997	Agriculture, forestry and fisheries Mining Petroleum Leather and leather products Air transport, Maritime transport Investment trust management business Sectors related to national security or public health*	Atomic energy Broadcasting (radio and television) Air transport Coastal and domestic shipping Ocean thermal energy, Hydroelectric power, Geothermal steam or related resources on federal lands, Mining on federal lands or on the outer continental shelf or on the deep seabed Fishing in the "Exclusive Economic Zone" Deepwater ports Sectors related to national security or public health*

*   Under the OECD Code, members are not prevented from taking action in certain sectors, for reasons such as the protection of their essential security interests. That is, a reservation to the Code is not necessary for those sectors. In accordance with the April 1984 decision, however, such measures as controls imposed for reasons of national security or public health are now examined by the Committee. As a result, some items of reservations related to those reasons are added to the Code in 1990s.

Sources: Nakamura, Fukao, and Shibuya (1997), Table 12.
        OECD, *Code of Liberalisation of Capital Movements*, various years.

Table 13. Definition of Variables for Analysis on Inward FDI Penetration

Dependent Variable:		

Japan's Inward FDI Penetration:

    FDIJA   Share of workers employed by 10% or more foreign-owned JAFF in Japan's total workers: 1996

Independent Variables:		[Expected Sign of Coefficients]

Advantages in the Managerial Resources:

RDINT	R&D intensity: Ratio of R&D expenses to the gross value-added: 1995	[+]
ADINT	Advertisement intensity: Advertising expenses per employee: 1995	[+]

Factor Intensity:

CLRATIO	Capital-Labor Ratio: Tangible Fixed Assets per employee: 1992	[+]
LAND	Land intensity: Land input (book value) per employee: Industry average: 1995	[-]
UNIV	Skilled-labor intensity: Share of university graduates in total workers: 1992	[+]

Market Structure

HERF	Herfindahl Index calculated from share of number of employees: 1996	[-]
CR4	The top 4-firm concentration ratio calculated from share of number of employees: 1996	[-]

U.S. Inward FDI Penetration

FDIUS	Share of workers employed by foreign firms' U.S. affiliates in U.S. total workers: 1992	[+]

FDI Restrictiveness:

REGCUR	A dummy that takes 1 for currently regulated industries	[-]
REGPAST	A dummy that takes 1 for industries regulated in the past	[-/+]
RINVJAUS	Japan's FDI restrictiveness minus U.S. FDI restrictiveness: 1994	[-]

Public Services:

PUBEMP	Share of workers employed by local or central governments in Japan's total workers: 1996	[-]

Productivity:

DPROD	Japan's productivity level (United States = 1): 1990	[-/+]

Labor Market Structure:

JOBSEP	Job separation rate:1995	[+]

Keiretsu:

VERT	Share of workers employed by vertical Keiretsu firms in total workers: 1998	[-]
HORIZ	Share of workers employed by horizontal Keiretsu firms in total workers: 1998	[-]

Note: For more detailed definitions and sources of the variables, see Appendix.

Table 14. Determinants of Japan's Inward FDI Penetration in the Manufacturing Sector: OLS Estimation with Robust Standard Errors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
				Japan's Inward FDI Penetration					
				(Dependent Variable: FDIJA)					
RDINT	89.67 (3.58) ***	86.03 (3.21) ***	84.18 (2.90) ***	89.37 (3.53) ***	76.02 (2.80) ***	91.29 (3.60) ***	88.90 (3.41) ***	94.16 (3.66) ***	89.51 (3.35) ***
ADINT	-4.62 (-1.41)	-4.68 (-1.45)	-4.90 (-1.29)	-4.30 (-1.24)	-4.67 (-1.43)	-4.25 (-1.39)	-4.65 (-1.36)	-4.21 (-1.35)	-4.67 (-1.33)
CLRATIO	0.28 (2.29) **	0.27 (2.27) **	0.29 (2.46) **	0.28 (2.23) **	0.27 (2.19) **	0.27 (2.35) **	0.29 (2.18) **	0.28 (2.29) **	0.29 (2.05) *
LAND	-0.23 (-1.61)	-0.25 (-1.68)	-0.24 (-1.66)	-0.23 (-1.59)	-0.24 (-1.70) *	-0.18 (-1.50)	-0.22 (-1.59)	-0.18 (-1.44)	-0.22 (-1.56)
UNIV	47.99 (2.88) ***	47.85 (2.90) ***	43.74 (2.42) **	44.85 (2.51) **	57.39 (3.28) ***	49.17 (2.81) ***	47.84 (2.76) **	51.04 (2.62) **	48.42 (2.61) **
HERF	0.48 (0.01)		4.78 (0.13)	-1.24 (-0.04)	0.15 (0.00)	-14.63 (-0.52)	1.08 (0.03)	-3.58 (-0.08)	5.58 (0.11)
CR4		0.04 (0.34)							
DPROD			2.81 (0.82)						
JOBSEP				-1.04 (-0.74)					
PUBEMP					-12.74 (-2.56) **				
VERT						-2.44 (-1.50)		-2.40 (-1.45)	
HORIZ						1.54 (0.67)		1.82 (0.74)	
REGCUR							-0.79 (-0.24)		-0.95 (-0.27)
REGPAST							0.16 (0.08)		0.18 (0.09)
FDIUS								-0.06 (-0.40)	-0.02 (-0.12)
_cons	-4.66 (-2.35) **	-4.91 (-2.56) **	-6.72 (-2.56) **	-2.76 (-0.75)	-4.83 (-2.54) **	-5.11 (-2.57) **	-4.66 (-2.21) **	-5.27 (-2.46) **	-4.65 (-2.15) **
No. of obs	38	38	38	38	38	38	38	38	38
F	19.16 ***	18.75 ***	14.16 ***	17.49 ***	19.03 ***	25.29 ***	13.85 ***	20.45 ***	11.92 ***
Adj R2	0.635	0.636	0.643	0.636	0.659	0.646	0.635	0.647	0.635

Note: 1) The numbers in parentheses are t-statistics based on the Huber-White-Sandwich robust standard errors.

2) *P=.10, **P=.05, ***P=.01 (two-tailed test)

Table 15. Determinants of Japan's Inward FDI Penetration in the Service Sector: Tobit Estimation with Robust Standard Errors

	Japan's Inward FDI Penetration					
	(Dependent Variable: FDIJA10)					
	(1)	(2)	(3)	(4)	(5)	(6)
RDINT	-277.11	-153.40	-247.10	-287.04	-511.82	-325.76
	(-1.26)	(-1.06)	(-1.16)	(-1.30)	(-1.79) *	(-1.40)
ADINT	1.53	0.19	1.38	1.54	2.21	2.04
	(1.40)	(0.30)	(1.30)	(1.42)	(1.33)	(1.67) *
UNIV	1.96	1.45	1.94	1.93	-0.22	1.79
	(0.39)	(0.29)	(0.40)	(0.38)	(-0.05)	(0.35)
LAND	-17.71	-12.37	-26.50	-17.04	-18.36	-20.24
	(-0.82)	(-0.44)	(-1.08)	(-0.82)	(-1.39)	(-1.04)
HERF	30.88		27.08	31.68	26.91	36.66
	(2.00) **		(1.70) *	(2.05) **	(1.40)	(2.24) **
CR4		0.13				
		(2.01) **				
DPROD			1.75			
			(1.01)			
JOBSEP				-22.04		
				(-0.27)		
PUBEMP	-0.12	-0.04	-0.12	-0.12	-0.05	-0.12
	(-2.71) ***	(-1.92) *	(-2.83) ***	(-2.71) ***	(-1.56)	(-2.87) ***
VERT					8.49	
					(0.53)	
HORIZ					44.42	
					(1.60)	
RINVJAUS						-4.15
						(-1.90) *
FDIUS	0.81	0.67	0.80	0.81	0.31	0.72
	(1.80) *	(1.74) *	(1.76) *	(1.80) *	(1.28)	(1.60)
_cons	-1.80	-3.37	-2.95	-1.35	-1.95	-1.23
	(-0.87)	(-1.25)	(-1.35)	(-0.45)	(-1.36)	(-0.59)
No. of obs	41	41	41	41	41	41
Wald	14.75 **	13.17 *	20.95 ***	14.68 *	31.60 ***	16.77 **
Log likelihood	-119.97	-118.952	-119.614	-119.956	-111.334	-119.265

Note: 1) The numbers in parentheses are z-statistics based on the Huber-White-Sandwich robust standard errors.

   2) The following nine industries are excluded from the estimations due to the unavailability of some variables: other insurance services, postal services, education, research institutes (natural sciences), research institutes (social sciences and humanities), health and hygiene, private non-profit organizations' services, social insurance and welfare, and unclassified services.

   3) *P=.10, **P=.05, ***P=.01   (two-tailed test)