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Outward FDI and Domestic Job Creation in the Service Sector

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Abstract

Japan's outward foreign direct investment (FDI) stock-to-GDP ratio, which has been relatively low by international comparison, has been rising steadily since the mid-2000s. A notable feature in this context is the rapid increase in FDI in the service sector. The impact of service sector firms' foreign activities on domestic employment is an important issue when considering the growth of the Japanese economy; yet, there are relatively few studies on the domestic employment impact of service sector FDI.

In this paper, using a firm-level dataset of Japanese listed companies covering the period 2000-2011, we show that FDI by service sector firms has had positive effects on their domestic employment growth. These results are obtained controlling for spurious correlation arising from reverse causality such as the fact that firms that are successful in the domestic market are more likely to invest abroad. The positive effects are clearest in the retail, construction, and personal and business services industries. This is probably because FDI by firms in these industries does not substitute for their domestic business activities but requires that they strengthen administrative and other support functions in their domestic headquarters. A positive employment effect of outward FDI is also observed in the wholesale and transportation industries. This result may reflect the effect that firms' strengthening of their international networks helps to attract stronger demand. In contrast, in the information and communications technology industry, FDI appears to be associated with a reduction in domestic employment, possibly because IT workers at overseas affiliates substitute for domestic ones. Overall, our results suggest that for the service sector as a whole, outward FDI has been beneficial for Japan's economy from the viewpoint of domestic job creation.

Keywords: FDI; Employment; Service sector.
JEL Classification: F14, F21, F23.

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1. Introduction

In relation to the size of its economy, Japan's outward foreign direct investment (FDI) has traditionally been relatively small in international comparison. For example, as shown in Chart 1, both Japan's outward FDI flows and stock relative to gross domestic product (GDP) were considerably lower than those other developed economies until the early to mid-2000s.[1] However, since the financial crisis of 2008, Japan's outward stock-to-GDP ratio has continued to climb, while the ratios for other developed countries seem to have plateaued, and in 2011, Japan ranked second in the world in terms of outward FDI flows, partly due to the appreciation of the yen.

A noteworthy development in recent years is that service sector firms, which in the past have been less active in terms of outward FDI than manufacturing firms, have been putting greater emphasis on expanding overseas – a trend highlighted by various media reports on the overseas expansion of Japanese convenience stores, welfare service companies, and education-related companies, as well as the "White Paper on International Economy and Trade 2012" (Chapter 3) by the Ministry of Economy, Trade and Industry (METI). This development is due to changes in business opportunities: Asian countries, where Japan's manufacturing firms have set up many production subsidiaries, are now attracting service sector firms as well, reflecting increases in consumption demand as incomes rise.

On the other hand, little is known about the effects of FDI by service sector firms on the home economy. Yet, given that the importance of the service sector both in terms of overseas activities and in terms of its share in the domestic economy is growing, the effects of service sector firms' overseas activities on the domestic economy are worth studying. Especially when considering the growth of Japan's economy, changes in the employment structure play a crucial role, so that the employment effects of FDI by service sector firms are issues of great interest. For instance, if highly productive multinational firms create a lot of domestic jobs, their overseas activities can be viewed as beneficial to the Japanese economy.

In this paper, we first provide an overview of the overseas activities of Japanese service sector firms and then examine the effects of these activities on domestic employment. The results of our empirical analysis, for which we use a firm-level dataset of listed companies

[1] It should be noted that the way that FDI stock is measured varies across countries. While for some countries (such as the United States) figures are on a market value basis, for others (such as Japan) they are on a book value basis, so that figures are not directly comparable, especially when asset prices are volatile, such as during the global financial crisis. Moreover, it should be noted that the outward FDI of European countries includes FDI in other European countries.

covering the period 2000-2011, indicate that service sector firms with more intensive overseas activities tend to exhibit higher growth rates of domestic employment. These results are obtained after controlling for any spurious correlation that might arise from reverse causality, namely that firms that are successful in the domestic market are more likely to aggressively expand overseas. We also conduct analyses at a more disaggregated level and show that positive employment effects are found in the retail, construction,[2] and personal and business services industries (where firms capture local demand through FDI), and in the wholesale and transportation industries (where firms can strengthen their international networks through FDI). To the best of our knowledge, this is the first study to document these patterns. We thus believe that this paper provides an important perspective on changes in the domestic employment structure in Japan in the context of globalization.

The remainder of this paper is organized as follows. Section 2 provides an overview of the overseas activities of Japanese service sector firms. The effects of their overseas activities on domestic employment are discussed in Sections 3, 4 and 5, so readers who are mainly interested in the empirical analysis can skip Section 2 and jump to Section 3. Section 3 provides a survey of preceding studies, while Section 4 presents some theoretical considerations on the domestic employment effects of FDI. Section 5 then presents the empirical analysis and Section 6 concludes.

2. Overview of Overseas Activities of Japanese Service Sector Firms

In this section, we provide an overview of outward FDI by Japanese service sector firms using various statistics.[3,4] The discussion highlights the following. First, Japanese service sector firms have been behind those of other developed countries in terms of their overseas activities. And second, various Japanese service sector firms today are actively expanding their business abroad to capture foreign demand, especially in Asian countries.

2.1. Expansion of Service Firms and Service Functions

Although rarely discussed, industry-level analyses of FDI can be conducted in two ways: by industry of the parent firm and by industry of the foreign affiliate (see Chart 2(a)). For

[2] The construction industry is usually excluded from the service sector; however, we include it in our empirical analysis on service sector FDI.

[3] It should be noted that FDI statistics may underestimate the overseas activities of service sector firms since certain types of overseas activities (such as franchising) are excluded.

[4] A list of the major statistics on Japanese FDI and overseas activities of Japanese firms as well as a description of these statistics is provided in Table 1.

example, in order to examine FDI by service sector firms such as convenience stores or health care service companies, it is natural to look at data by industry of the parent firm. However, service sector firms may set up manufacturing facilities overseas and manufacturing firms may set up service affiliates, so that the distinction between manufacturing and service FDI is not always clear. When a manufacturing firm sets up a foreign affiliate that belongs to the service sector, this should be referred to as the expansion of service functions rather than the expansion of a service sector firm. Many statistics, including *Balance of Payments* statistics, publish data by industry of the foreign affiliate.

In this section, provided they are available, we will rely on data by industry of the parent firm, since our focus is on the effects of the overseas expansion of service sector firms. However, to complement the analysis, we will also use data by industry of the foreign affiliate. That being said, which of the two criteria we use does not seem to significantly alter the insights we can obtain from our data, since in many cases parent firms and their foreign affiliates belong to the same industry (Chart 2(b)). As we can see from the chart, for instance, manufacturing parent firms tend to have manufacturing affiliates, while service parents excluding wholesalers tend to have service affiliates which are not wholesalers.[5] It should be noted that Japanese wholesalers have different characteristics from other service sector firms in the sense that they tend to have foreign affiliates in various industries. One possible explanation for this is that *sogo shosha* (literally "general trading companies"), which are involved in various global businesses,[6] are included in the wholesale industry.

2.2. Japan's Service FDI in International Comparison

FDI data and other statistics indicate that Japan is lagging behind other developed countries in terms of the overseas expansion of service sector firms, and that this lagging behind is more pronounced than in the manufacturing sector.

Let us start by examining internationally comparable data on foreign affiliates by industry to demonstrate the overseas expansion of service functions. Specifically, we look at the overseas employment ratio, using the *Survey of Overseas Business Activities* (SOBA) by METI for Japan and comparable statistics for other countries. As can be seen in Chart 3(a), Japan's overseas employment ratio for the service sector is much lower than the corresponding ratio for the United States or European countries; on the other hand, in the

[5] Since FY2006, the *Survey of Overseas Business Activities* (SOBA) contains cross tabulations on the industry of domestic parents and the industry of foreign affiliates. Here, we use the data on foreign capital formation by industry of the parent.

[6] As pointed out by Kondo (2012), *sogo shosha* actively invest abroad in order to engage in the development of natural resources and energy as well as infrastructure.

manufacturing sector, Japan's ratio is more or less on par with these countries. A similar comparison can be done using FDI stock data, although in this case how holding companies are treated is important, since in the United States, Germany, and France holding companies account for a large portion of total FDI, and we do not know in which industries these holding companies invest.[7] Taking the available data, which are shown in Chart 3(b), at face value suggests that the FDI stock-to-GDP ratio in Japan's manufacturing sector is ahead of that of the United States when focusing on foreign affiliates' industry classification. However, the picture may be reversed if U.S. holding companies mainly invest in the manufacturing sector.

Next, focusing on the industry of the parent firm, it appears that Japanese overseas activity of service sector firms has been comparatively lackluster in international comparison. Official statistics on FDI stock by industry of the parent firm unfortunately are unavailable for Japan. We therefore estimate these figures using a simple approach and compare the results with data for the United States and Germany, where official statistics are available. The estimates for Japan are obtained by allocating total FDI stock (from the *Balance of Payments* statistics) based on industry shares in overseas capital formation (from the SOBA statistics),[8] where industry shares are based on the industry of the parent firm. These rough estimates suggest that Japanese service FDI is smaller than that of the other countries (Chart 4(a)).[9] Again, however, the potential role of holding companies (especially for Germany) should be pointed out. If many German manufacturing firms invest abroad through holding companies, Japan's overseas investment by manufacturing sector firms may be considerably smaller than Germany's relative to GDP. On the other hand, in the United States, the share of holding companies is relatively small and therefore this may not be a serious problem.

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[7] In Japan's balance of payments statistics, FDI in a holding company is counted in the industry of the firm in which the holding company invests, provided the necessary information is available. Although the share of holding companies in FDI varies from one country to another, it is not clear whether this difference comes from differences in statistical methodologies or from differences in firms' investment strategies.

[8] For this estimation, we use data on overseas capital formation by industry of the parent (average of FY2007-2011) from the SOBA (Chart 2(b)). This estimation approach may result in a considerable margin of error, since we combine two different sets of statistics based on different definitions. However, we think that this problem is not very serious, since the figures on foreign capital formation by industry of the foreign affiliate are more or less proportional to those for the FDI stock. In other words, by allocating total FDI stock based on the overseas capital formation by industry of the foreign affiliate, we obtain figures that are close to the official FDI stock statistics by industry of the affiliate (Chart 4(b)).

[9] In the wholesale and retail industry, the figure for Japan is relatively large. This is partly because *sogo shosha*, business entities that are unique to Japan trading in a wide range of products and materials, are classified in the wholesale industry, and because the data for the United States do not include retailers.

2.3. Recent Overseas Activity in the Service Sector

Data from the late 2000s reveal that service sector firms have been actively expanding their business overseas. Here we use data on overseas employment from FY2006 onward, which is when data by industry of the parent became available.[10] Since FY2006, the number of overseas employees of Japanese service sector firms has been growing faster than that of manufacturing firms, although it still remains lower in the former than the latter (Chart 5). This upward trend is observed even when wholesalers, which make up a large share of overseas activity in the service sector, are excluded. The trend is especially clear in the information and communications technology (ICT) and transportation industries.[11]

Service sector firms have been rapidly expanding their overseas activities, especially in Asia. Chart 6 shows the number of foreign affiliates by industry of the parent and by location of the affiliate, using the *Basic Survey of Japanese Business Structure and Activities* (BSJBSA).[12] We can observe, for example, an upward trend in the number of foreign affiliates of retail firms in Asia (especially in China), although no similar trend can be observed for the global total for this industry. Additionally, the number of affiliates of firms in the ICT and wholesale industries has been increasing significantly in Asia. Meanwhile, figures on overseas employment by industry of the affiliate indicate that Japanese firms are actively expanding their service functions in Asia (Chart 7).

2.4. Background of the Overseas Expansion of Service Sector Firms

The most important factor underlying the overseas expansion of Japanese firms most likely is the growth in demand overseas, which contrasts with sluggish demand growth at home. Capturing overseas demand has been the most important motive for firms to expand their overseas activities, and the importance of overseas demand for Japanese firms continues to increase (Chart 8). This change is partly driven by rising income and wages in Asian emerging countries, which is where the expansion of Japanese firms' overseas activities has been concentrated. As a result of their growing incomes, Asian countries now are playing a role not only as production bases but also as consumer markets, thereby attracting service sector firms as well.

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[10] As the SOBA does not cover the finance, insurance, and real estate industries, we exclude them from our analysis here.

[11] Note that the figures in the SOBA fluctuate considerably from year to year, since some firms do not respond to the survey and the data are the simple aggregation of responses.

[12] While the SOBA contains cross-tabulated data by industry of the foreign affiliate and by region, data by industry of the parent and by region are not published. To show data by industry of the parent, we therefore look at the number of overseas subsidiaries in the BSJBSA.

In addition, Asian countries have been promoting inward FDI through policies including deregulation, which probably also encouraged Japanese firms to invest there. Looking at the OECD's FDI Regulatory Restrictiveness Index, this shows that restrictions in Asian countries are gradually declining as a result of their policies aiming to promote inward FDI (Chart 9).[13] And when, for example, restrictions on the foreign capital ratio in the wholesale and retail industries in Vietnam were eased in 2009 so that purely foreign-owned companies were allowed to enter, the share of these industries in the number of licensed FDI projects increased significantly.

Furthermore, the appreciation of the yen since the financial crisis of 2008 probably also contributed to the increase in FDI by Japanese firms, both in manufacturing and services. Therefore, the depreciation of the yen since the end of 2012 may have the effect of slowing foreign investment by some firms. However, the expansion of overseas businesses is a long-term trend that has been going on since before the global financial crisis, including periods when the yen was relatively weak. Therefore, it is likely that this trend will continue, supported by growing foreign demand.

3. Overseas Activities and Domestic Employment: Literature Survey

This section reviews the literature on the effects of overseas business activities on domestic employment to clarify the contribution of our paper.[14]

3.1. Survey of Empirical Studies

There are a considerable number of studies examining empirically the effects of FDI on domestic employment to determine whether FDI leads to a so-called "hollowing-out" of the domestic economy. Most of these empirical studies focus on the manufacturing sector and there are very few papers on the service sector, which we concentrate on in this paper.[15] In

[13] The OECD's FDI Regulatory Restrictiveness Index is calculated based on four types of measures such as limits on foreign equity and restrictions on foreign key personnel. Higher values of this index indicate stronger restrictions on FDI.

[14] While this paper focuses on employment effects, another issue of key interest is the effects of foreign investment on home productivity. A considerable number of studies on the manufacturing sector find that FDI has positive effects on the productivity of the parent firm (Table 2). As for the service sector, Ito (2007) and Inui (2011) similarly found positive effects. Reasons highlighted for these positive effects include the efficient international division of labor (especially in the manufacturing sector), competition with foreign firms, and learning effects through exposure to advanced foreign technologies (including management skills).

[15] An example of studies examining the effects of overseas production by manufacturing firms on the domestic economy is that by Sakura and Iwasaki (2012).

this section, we review firm-level rather than industry-level studies.[16]

Preceding studies on the Japanese manufacturing sector indicate that overseas production by firms does not necessarily lead to a decrease in domestic employment. The firm-level analysis by Yamashita and Fukao (2010), for example, suggests that an increase in overseas production in fact has a positive effect on domestic employment. Similarly, Higuchi and Matsuura (2003) find that while FDI has a negative effect on the employment growth rate of the parent firm in the short run, the effect turns positive about 5 or 6 years after the investment is made. Recently, to capture the diversity of FDI, some studies divide FDI into several types (e.g., horizontal vs. vertical FDI), although to date the results of these studies have been rather mixed and no consensus has been reached.[17]

There are relatively few studies focusing on the service sector, with Inui (2011) and Tanaka (2012) being notable exceptions for the case of Japan.[18] Tanaka (2012) reports that FDI by service sector firms (wholesale and service companies) has positive effects on the employment of the parent firms a few years after the investment is made, although to some extent the results depend on the estimation method. Inui (2011) does not find any significant employment effects of FDI by service sector firms, which runs counter to his theoretical expectation of a positive effect. Inui (2011) analyzes the effects one year after the investment and comments that the effects after two or three years may need to be tested.

In terms of the estimation approach, many preceding studies, including Inui (2011), employ difference in differences (DID) estimation. This approach divides sample firms that were not engaged in overseas activities at the beginning of the observation period into two groups: firms that internationalized by starting overseas operations during the observation period (treatment group) and domestic firms that did not internationalize (control group).[19] To accurately estimate the effects of internationalization, the control group is designed to consist of firms that have similar characteristics to those of the treatment group. More precisely, a probability (propensity score) that a firm will start overseas activities is calculated

[16] For details of these empirical studies, see Table 2. The relationship between firm-level and industry-level analyses is discussed in the Appendix.

[17] See the Appendix. Vertical FDI refers to FDI where each country specializes in processes in which it has comparative advantage (international division of labor). On the other hand, in horizontal FDI, firms set up foreign subsidiaries in order to locate production close to final demand.

[18] Studies on the service sector are also scarce for other countries. Exceptions are the studies by Masso et al. (2007), who, focusing on Estonian firms, find positive effects, and Imbriani et al. (2010), who, focusing on Italian firms, do not find any significant effects (Table 3).

[19] This approach compares the employment growth rates (i.e., differences between two points in time) between two groups. In other words, it takes the difference in differences.

for each firm, and for each internationalized firm in the treatment group, domestic firms with the closest probability are matched to form the control group. This method is called propensity score matching (PSM) and has frequently been employed in recent papers since Navaretti and Castellani (2004) first employed it in the analysis of FDI.

3.2. Contribution of this Paper

The contribution of the present study to the literature is as follows.

First, we conduct quantitative analyses considering the degree of overseas involvement (Chart 10). In preceding studies using DID estimators, firms are grouped by whether they started overseas operations or not; therefore, to what extent they expanded their overseas business cannot be taken into consideration. Moreover, focusing on firms that started their overseas business during the observation period means that firms that had already been engaged in overseas activities before the starting point are excluded. In contrast, we focus on the relationship between the degree of firms' overseas activities and their home employment, using a sample of firms that are already engaged in overseas activities. In particular, we calculate the degree of overseas involvement for each firm and estimate its effect on the growth rate of the domestic employment.[20]

Second, we classify service sector firms into smaller sub-groups and conduct further studies on them. Analyses by type of FDI have been done for the manufacturing sector, — e.g. vertical or horizontal FDI (see the Appendix for details) —, but to the best of our knowledge, such analyses have not been applied to the service sector. We regard such classification as fruitful in considering various activities of service sector firms. Further details of the classification are provided in the following section.

4. Theoretical Considerations on the Effects of Overseas Activities

Given the diversity of activities of service sector firms, the motives for and consequences of foreign investment may vary across industries. In this section, we consider three types of overseas activities and examine them in turn.

4.1. Three Types of Service Sector FDI

In our analysis, we distinguish three types of FDI by service sector firms — namely,

[20] Yamashita and Fukao (2010) and Hijzen et al. (2010) conduct empirical studies using measures of the degree of overseas involvement. However, Hijzen et al. (2010) focus on the effects on productivity rather than employment.

local demand-oriented, networking-oriented, and human resource-oriented FDI — as we believe that each type has different effects on domestic employment (Chart 11(a)). We start by explaining the basis for our classification and then discuss the effects on domestic employment in Subsection 4.2.

The first aspect we focus on is the inseparability (or simultaneity) of production and consumption as an important characteristic of service industries.[21] Unlike manufactured goods, services are typically consumed at the same time as they are produced and therefore are rarely stored or transported.[22] As a result, proximity between the producer and the customer tends to be important. This inseparability therefore is likely to be an important determinant of the FDI strategies of service sector firms.

In addition, service industries characterized by inseparability can be divided further into two groups based on the tradability of the goods or services they deal in. In this paper, FDI will be called local demand-oriented if the firms deal in goods or services that are not traded across borders, and will be referred to as networking-oriented otherwise. The idea underlying this classification is as follows.

I. When a firm dealing in non-tradables establishes a subsidiary abroad, such expansion is often motivated by the domestic demand of that country (i.e., the expansion is local demand-oriented). For instance, in personal and business services industries — such as hairdressing, nursing care, office cleaning, or security — and the construction industry, trading their services or products internationally is almost impossible. The retail industry, which sells tradable products, will also be included in this group, because in practice foreign affiliates in this industry in many cases purchase and sell locally (i.e., international trade plays only a small role) (Chart11 (b)).[23] In order for firms engaged in such activities to become local suppliers in foreign markets, they need to set up local subsidiaries through FDI.

II. For firms whose business consists of transporting goods across borders, setting up foreign subsidiaries typically aims at strengthening their logistics network (i.e., the

[21] In addition to inseparability, intangibility and quality heterogeneity are also important characteristics of service industries (Parasuraman et al. (1985)).

[22] Recent technological progress in ICT has contributed to an increase in the supply of services to remote customers. Such innovation may possibly discourage FDI and increase international trade in services. The relationship between ICT and FDI in the service sector is also an issue of great interest, which unfortunately is beyond the scope of this paper.

[23] Chart 11(b) is inspired by Baldwin and Okubo (2012). The business and personal service industry is omitted from the chart, as this industry in the SOBA includes various types of firms such as holding companies and it is therefore difficult to find any consistent characteristics.

investment is network-oriented). [24] For example, firms in the wholesale industry act as intermediaries in international trade,[25] while those in the transportation industry help people and goods move internationally. Thus, strengthening their international networks via FDI can improve the services they provide.

On the other hand, the inseparability of production and consumption does not apply to some industries in the service sector. For example, in the ICT industry, products (namely information) can easily be stored and transported, as in the case of software, for example. Thus, FDI in these industries is similar to a lot of FDI in the manufacturing in the sense that it is motivated by the international division of labor relying on the use of foreign production factors (more specifically, the skills of IT professionals).

III. One of the purposes of FDI by ICT companies is to tap the skills of overseas IT professionals. In this industry, it is easy to split up the production process internationally by employing foreign IT professionals and importing their products from foreign affiliates. This type of FDI may also be observed in the broadcasting and cinema industries — or so-called contents industries.

The SOBA indicates that the motive for FDI does vary greatly by industry (Chart 12). For example, the most important FDI determinant for retailers is strong local demand, which implies that their FDI tends to be local demand-oriented. In the transportation and wholesale industries, many firms conduct FDI in areas where other firms have already established subsidiaries, implying that they try to meet the needs of multinational enterprises through improved logistics networks. On the other hand, ICT companies invest abroad in order to tap the local labor force or skills.

4.2. The Effects on Domestic Employment by Type of FDI

This subsection considers the expected effects of each type of FDI on domestic employment. To start with, it should be pointed out that, regardless of the type of FDI, establishing foreign affiliates will lead to an increase in the employment in the domestic headquarters for the provision of support functions such as administration and international

[24] Dealing in tradable products that can be transported and stored is not in conflict with the inseparability of production and consumption. Wholesale and transportation companies' value added is created as they transport or store the tradables. In other words, they are not transporting or storing the services themselves.

[25] Akerman (2010) and Ahn et al. (2011) include wholesale firms that act as intermediaries in international trade in a model of international trade with heterogeneous firms à la Melitz (2003). Their models suggest that the existence of wholesale firms allows manufacturing firms with relatively lower productivity to be involved in overseas business by exporting indirectly through the wholesale firms.

negotiations. Further, the profits from foreign operations may support domestic employment in the headquarters as well.[26]

I. Local demand-oriented FDI (by retail, construction, and personal and business services sector firms) is conducted to capture foreign demand. This is similar to horizontal FDI by manufacturing firms, where firms set up production subsidiaries near the market (Chart 13). However, while in the manufacturing sector horizontal FDI may result in a reduction in domestic production and exports (export substitution effect), local demand-oriented FDI in the service sector will have only limited substitution effects as such firms deal mainly in non-tradables. Let us take convenience stores as an example: opening a new store abroad does not require the closure of a domestic one. Therefore, on the whole, this type of FDI probably has a positive effect on domestic employment as a result of the reinforcement of headquarters functions such as planning, administration, and market research.

II. Networking-oriented FDI (by wholesale and transportation firms), by which firms seek to strengthen their international networks, will lead to an increase in domestic demand for their services (Chart 14). For example, if the international network of a wholesaler (firm A in the chart) is reinforced through FDI, a domestic firm intending to export its product (firm B) may make more use of firm A's network. Additionally, the reinforced network makes firm A's services more appealing to a foreign firm which plans to export to Japan (firm D), resulting in an increase in the firm A's sales to a domestic buyer (firm C). In this context, both domestic and international transactions will increase as a result of FDI, and domestic employment is expected to increase. On the other hand, FDI may have a negative effect on employment of the parent company if the transportation tasks are assigned to foreign workers instead of domestic ones. Such two-sided effects are expected in the transportation industry as well.

III. Human resource-oriented FDI may be undertaken by ICT firms (e.g., software development). In this industry transportation costs for the product are extremely low and work processes (such as development) do not necessarily need to be located in the home country (Chart 14). For example, firms may employ foreign systems engineers instead of domestic ones. Therefore, when there are such substitution effects and these exceed the positive headquarters employment effects, FDI may lead to a reduction in home employment.

[26] The FY2011 SOBA, for example, indicates that 7.5% of total respondents spent the dividends from their foreign affiliates on labor-related expenses (salaries, bonuses, or training expenses).

As this discussion indicates, the effects on domestic employment depend on the type of FDI. It should be noted that the overall effects of networking-oriented and human resource-oriented expansion are ambiguous. We will examine this issue in the next section through our empirical analysis.

Before moving on to the empirical analysis, however, we should mention that the three types of FDI are not necessarily mutually exclusive. For example, once a retail firm has established a good international reputation for itself, it may potentially enjoy positive effects that are similar to those of networking-oriented expansion as customers from abroad may visit its stores when they come to Japan. Moreover, even for wholesale, transportation, and ICT firms, strong foreign demand will be an important incentive to expand their business overseas; therefore, their investment may also to some extent be local demand-oriented. Similarly, FDI by telecommunications companies may be networking-oriented in the sense that a strong international communications network will attract both domestic and foreign customers. Thus, our distinction of three types of FDI in the service sector is not watertight. The reason that we use it nevertheless is that we are interested in capturing the diversity within the sector, while remaining aware of the limitations of the classification.

5. Empirical Analysis

The discussion in the previous section suggested that we expect local demand-oriented FDI to have a positive effect on domestic employment, while the overall effect of networking-oriented and human resource-oriented FDI is ambiguous from a theoretical perspective and therefore is an empirical issue. In this section, we conduct empirical analyses of the effects of FDI using a firm-level dataset of listed companies for the period 2000-2011.

5.1. Estimation Model and Approach

It is rational to assume that as long as they are successful in tapping foreign demand, firms that are more actively engaged in overseas business can benefit from higher demand growth.[27] Such firms probably also strengthen their domestic headquarters' administrative functions to support their foreign affiliates. Moreover, the dividends from their foreign affiliates may boost their domestic employment. In this section, we examine whether employment growth at parent firms is affected by the degree of overseas involvement.

[27] In fact, throughout the 2000s (our observation period), emerging economies were growing faster than Japan. However, our hypothesis might not hold if we analyzed periods in which their growth rates were lower than that of Japan. In this sense, our estimation results are for a short-term reduced-form model.

We employ a regression model with the employment growth rate of the parent company as the dependent variable and its foreign employment ratio as the explanatory variable of key interest. The model takes the following form:

$$\Delta L_{it}^{D} = \alpha + \beta_1 R_{it} + \beta_2 X_{it} + \sum \gamma_t d_t + \sum \delta_j I_j + \varepsilon_{it}$$

where ΔL_{it}^{D} represents the domestic employment growth rate of firm i from time t on and R_{it} stands for its overseas employment ratio at time t, which is calculated as $R_{it} = L_{it}^{O}/\left(L_{it}^{D} + L_{it}^{O}\right)$, with L_{it}^{O} standing for employment overseas. X_{it} denotes other control variables, while d_t represents time dummies and I_j is a set of industry dummies.

For our estimation, we employ the instrumental variable approach (specifically, two-step least squares, 2SLS), since we expect reverse causality (or endogeneity) in the form that firms that are successful in the domestic market (and have higher domestic employment growth) are likely to more actively invest abroad.[28] Under these circumstances, ordinary least squares (OLS) estimation fails to provide unbiased estimators and it is more appropriate to use instrumental variable estimation. We choose the lagged explanatory variable (i.e., the lagged foreign employment ratio) as our instrument.[29]

5.2. Data Construction

We constructed our firm-level dataset by matching the Corporate Financial Databank (*Kigyo Zaimu Databank*) by the Development Bank of Japan (hereafter, DBJ database) and the Overseas Japanese Companies Database (*Kaigai Shinshutsu Kigyo Data*) by Toyo Keizai Shinpo-sha (hereafter, OJC database) (Chart 15(a)). The DBJ database collects the financial statements of Japanese listed companies chronologically, excluding companies from the finance and insurance industries.[30] The OJC database contains data for about 24,000 foreign affiliates and about 4,300 Japanese parent companies (as of FY2011) based on private research by Toyo Keizai Shinpo-sha.[31] Although the OJC database does not form part of

[28] Theoretical models by Helpman et al. (2004) and Antràs and Helpman (2004) suggest that more productive firms are more likely to conduct FDI. Generally, empirical studies also support this self-selection hypothesis. Examples of studies arriving at such empirical results for Japanese firms include Wakasugi (2011) for the manufacturing sector and Ito (2007) and Tanaka (2011) for the service sector.

[29] We employ the three-year lagged foreign employment ratio as instrument, because, as detailed later, our data are available in three-year intervals only.

[30] Unconsolidated data are used. When the database provides multiple figures within one fiscal year for a firm, we normalize such values by picking the newest value and annualizing it.

[31] Hardcopy versions (*Kaigai Shinshutsu Kigyo Soran*) are also available.

official government statistics, it has a broad coverage and the number of foreign affiliates included is in fact greater than that in the SOBA by METI.[32]

Data on firms' domestic employment (L_{it}^{D}) are available from the DBJ database, while data on firms' overseas employment (L_{it}^{O}) are available from the OJC database. In addition, the DBJ database also provides data on firms' age and size (sales).[33] The purpose of adding these variables to our model is to control for the fact that younger and/or smaller companies tend to have higher rates of employment growth, as suggested by Evans (1987a, 1987b).

The following remarks regarding our dataset are in order. First, the OJC database is available to us only for FY2000, 2003, 2006 and 2009 (i.e., in three-year intervals). Second, because the DBJ database covers only listed companies, so does our empirical analysis.[34] Third, as our analysis focuses on firms that we can match in the two databases, firms without any foreign affiliates (i.e., firms that do not appear in the OJC database) are excluded. In other words, we focus on firms that have already established foreign affiliates in measuring the employment effects of FDI.[35]

Our dependent variable (the growth rate of domestic employment, ΔL_{it}^{D}) is defined as the three-year average growth rate from t to $t+3$:

$$\Delta L_{it}^{D} = \left(\log L_{i,t+3}^{D} - \log L_{it}^{D}\right)/3$$

This definition is based on the idea that it takes time for overseas activities to affect domestic employment. In fact, preceding empirical studies by Edamura et al. (2011) and Tanaka (2012) suggest that it takes a few years before employment effects appear. We decided to employ three-year average growth rates partly because some of the data are available only every three

[32] There are two possible reasons why the OJC database contains a greater number of affiliates. First, the OJC database covers the financial, insurance, and real estate industries, which are not covered by the SOBA. Second, in the OJC database, missing values are imputed using firms' responses in the previous year or information from press releases, etc., while the SOBA only compiles valid responses.

[33] Firm age is calculated as the years since the firm first appeared in the DBJ database (in most cases, it is equal to the years since the firm was listed). The results remain qualitatively unchanged when we measure firm age using the years since establishment instead, and because the date of establishment is not available for some firms, so that the sample size declines, we do not report the results here.

[34] If we wanted to include non-listed firms, we could use the firm-level data collected for the BSJBSA. However, doing so would narrow the scope of our analysis, since the BSJBSA, for example, does not cover the transportation industry.

[35] It would be possible to include firms that do not have foreign subsidiaries by setting their overseas employment ratio to zero ($R_{it} = 0$). However, the characteristics of firms without foreign subsidiaries may differ significantly from those of firms with slightly positive overseas ratios. In other words, the intensive and the extensive margin may be different. We therefore restrict our attention to firms with foreign subsidiaries.

years. However, for t =2009, corresponding data for domestic employment in FY2012 ($L^D_{i,2012}$) are not available at this point and we therefore calculated the employment growth rate using the data for FY2011 (i.e., $\Delta L^D_{i,2009} = \left(\log L^D_{i,2011} - \log L^D_{i,2009}\right)/2$).

For each year, our dataset contains about 800 manufacturing firms and about 300 service sector firms with complete information. To exclude cases in which the number of employees changes drastically due to mergers or split-ups, we exclude firms with exceptionally large changes in employment (specifically, $\left|\Delta L^D_{it}\right| > 1$) as outliers. As a result, we lose approximately 1% of our total observations.

Based on the discussion in the previous section, we prepared three subsamples for the service sector by the type of FDI, that is, local demand-oriented, networking-oriented, and human resource-oriented. We define local demand-oriented FDI as consisting of FDI in the retail, construction, and personal and business services industries,[36] networking-oriented FDI as consisting of FDI in the wholesale and transportation industries, and human resource-oriented FDI as FDI in the ICT industry.

Descriptive statistics of our dataset are provided in Chart 15(b). They are calculated from the data for FY2003, 2006 and 2009, which are used in the 2SLS estimations, and show that the overseas employment ratio in the manufacturing sector is higher than that in the service sector, even when the data are limited to firms with overseas activities. Among the service industries, the ratios are highest in the transportation and wholesale industries, i.e., network-oriented industries that deal in tradables. On the other hand, the domestic employment growth rates are highest in the personal and business services industry, which includes health care and welfare, and in the ICT industry. The fact that firms in the latter two industries are younger than those in other industries indicates that these industries attract plenty of new entrants, probably because they face strong demand.

5.3. Estimation Results

We now turn to our estimation results. Those of our baseline model are shown in Chart 16. This model employs firm age (Age_{it}) as a control variable (X_{it}):

$$\Delta L^D_{it} = \alpha + \beta_1 R_{it} + \beta_2 \log(Age_{it}) + \sum \gamma_t d_t + \sum \delta_j I_j + \varepsilon_{it}$$

[36] Personal and business services include activities such as education, medical, welfare, and security services. In our analysis, we construct this category by excluding information services (e.g., software development) and contents industries (e.g., cinema) from the "service industry" in the DBJ database, which consists of various personal and business services including information services. The information services industry is then included in the ICT industry.

The results of the 2SLS estimation indicate that overseas activities have a significant positive effect on domestic employment in the case of all industries and the service sector.[37] Specifically, the result suggests that a 10 percentage point rise in the overseas employment ratio in the service sector is associated with an increase in the domestic employment growth rate over the following three years of 0.269 percentage points per annum. This result implies that the overseas activities of service firms as a whole contribute to domestic job creation.

Next, looking at the results for the different types of service sector FDI, the coefficients on the overseas employment ratio are significantly positive for local demand-oriented FDI (retail, construction, and personal and business services) and for networking-oriented FDI (wholesale and transportation). On the other hand, the coefficient is negative but insignificant for human resource-oriented FDI (ICT industry).

Based on the discussion in the previous section, our empirical results can be interpreted as follows. First, local demand-oriented FDI appears to create domestic jobs through the strengthening of headquarters functions such as planning, administration, and market research. In the case of networking-oriented FDI, the positive employment effects of strengthening headquarters functions and international networks possibly exceed the negative effects of transportation jobs being shifted to foreign affiliates. On the other hand, in the case of human resource-oriented FDI, the possible positive effects from the strengthening of headquarters functions seem to be more than canceled out by the negative substitution effects resulting from the hiring of IT workers overseas.

Our results suggest that the expansion of overseas business contributed to domestic job creation through the 2000s in the service sector as a whole. These results are somewhat different from those for the manufacturing sector, for which we also find a positive coefficient, which, however, is insignificant. In the manufacturing sector, there are probably two opposing forces at work — the strengthening of headquarters functions on the one hand and the reduction of other domestic operations on the other — that make the overall effect ambiguous (see the Appendix). On the other hand, for the service sector, we found clear evidence of positive employment effects of FDI, possibly because there are relatively few cases in which domestic operations were reduced as a result of the expansion of overseas activities.

[37] Our 2SLS estimators are larger than the OLS estimators and significant. This result is similar to that of Hijzen et al. (2010), who point out that the downward biases of the parameters are corrected by using the instrumental variable approach.

5.4. Robustness Checks

Next, we examine the robustness of our empirical results. The checks suggest that the results we obtained above are generally robust. In the wholesale and transportation industries, the estimated coefficient is not significant in some specifications, but it is always positive and quantitatively stable.

Excluding Retail from Local Demand-Oriented FDI

In the case of local demand-oriented FDI, firms' domestic employment increases through the strengthening of headquarters functions. In the retail industry, however, firms may establish production subsidiaries overseas from which they import products for domestic sale.[38] Therefore, the baseline result we obtained above for local demand-oriented FDI may include the effect of business expansion through the selling of cheap imported goods as well as the strengthening of headquarters functions.

To address this issue, we exclude the retail industry from local demand-oriented FDI and confine our sample to the construction and personal and business services industries, which deal mostly in non-tradables. This change, however, does not have any substantial effect on our result (Chart 17(a)). When the estimation is conducted for the personal and business services industry alone, the coefficient becomes insignificant, possibly due to the small sample size.

Controlling for the Industry of Foreign Affiliates

Considering the case of local demand-oriented FDI, another way of excluding the effect of business expansion through the selling of cheap imported goods is to control for the industry of foreign affiliates. If strengthening the headquarters functions is important, as we expect, positive effects of overseas expansion should be found even when we focus on the case in which the affiliates belong to the same local demand-oriented industries. On the other hand, if it is important to have production subsidiaries overseas, positive effects should be found when firms' affiliates belong to a different type of industry. We therefore decompose the overseas employment ratio (R_{it}) into two components — the ratio for overseas employment in the same type of industry (that is, e.g., local demand-oriented industry), R_{it}^{same}, and the ratio for overseas employment in a different type of industry, R_{it}^{diff} (where $R_{it} = R_{it}^{same} + R_{it}^{diff}$)[39] — using the industry code for affiliates from the OJC database and

[38] In practice, as shown in Chart 2(b), domestic parents and their foreign affiliates often belong to the same industry, so that for the service sector the effects of such import strategies on the estimation should be negligible.

[39] If a retailer (with 300 domestic employees) has two retail affiliates (one with 120 and one with 30

estimate the following equation:[40]

$$\Delta L_{it}^{D} = \alpha + \beta_1^{same} R_{it}^{same} + \beta_1^{diff} R_{it}^{diff} + \beta_2 \log(Age_{it}) + \sum \gamma_t d_t + \sum \delta_j I_j + \varepsilon_{it}$$

We find that in local demand-oriented industries, the estimated parameter β_1^{same} is significantly positive, showing that home employment tends to increase when FDI of the same type is conducted (Chart 17(b)). This result is consistent with our hypothesis that FDI leads to domestic job creation through the strengthening of headquarters functions.

We also estimate the above equation for network-oriented and human resource-oriented industries but we do not find any significant results.[41] We should note that in practice the situation is more complex than our rather simple classification allows; for example, some wholesalers in Japan are involved in a large variety of foreign activities, and their foreign affiliates belong to a variety of industries, including mining and agriculture.

Additional Control Variable

Using firm size (logarithm of sales) as a control variable in addition to firm age does not result in substantial changes in the signs or the magnitude of the estimated coefficients (Chart 18(a)).[42] Specifically, the coefficient for networking-oriented FDI is insignificant, while that for human resource-oriented FDI is significantly negative. However, all the coefficients for firm size are insignificant; we therefore conclude that we do not have to replace our baseline model with this specification.

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employees) and one manufacturing affiliate (with 50 employees), the calculation for this firm would be as follows:

$$R_{it} = (120 + 30 + 50)/(300 + (120 + 30 + 50)) = 0.4,$$
$$R_{it}^{same} = (120 + 30)/(300 + (120 + 30 + 50)) = 0.3,$$
$$R_{it}^{diff} = 50/(300 + (120 + 30 + 50)) = 0.1.$$

Here we include firms without foreign affiliates of a different type as long as they have affiliates of the same type, by setting $R_{it}^{diff} = 0$ in order to avoid losing many observations. Similarly, if firms only have affiliates of a different type, we set $R_{it}^{same} = 0$. As a result, we no longer have a clear distinction between intensive and extensive margins here (see footnote 35).

[40] We use three-year lagged R_{it}^{same} and R_{it}^{diff} as instruments.

[41] It should be noted that if, for example, a domestic wholesaler establishes a transportation subsidiary abroad, we regard the parent and the subsidiary as belonging to the same type of industry.

[42] Sales of a firm may be an endogenous variable; however, using the lagged sales as instrument did not alter the result significantly.

Exclusion of Data for FY2009

Finally, we exclude the last period (FY2009) from our dataset in order to focus on the data for FY2000, 2003 and 2006; however, this change does not substantially affect our results (Chart 18(b)). As already mentioned, to gauge the impact of the overseas employment ratio for FY2009, we use the average growth rate of domestic employment for the two years from FY2009 to FY2011 instead of the three-year average, since data for FY2012 are currently unavailable. However, the largely unchanged results when dropping the period FY2009 entirely suggest that using the two-year average employment growth rate for FY2009-2011 does not materially affect our results.

6. Concluding Remarks

Japan's outward foreign direct investment (FDI) stock-to-GDP ratio, which has been relatively low by international comparison, has been rising steadily since the mid-2000s. A notable feature in this context is the rapid increase in FDI in the service sector. The impact of service sector firms' foreign activities on domestic employment is an important issue when considering the growth of the Japanese economy; yet, there are relatively few studies on the domestic employment impact of service sector FDI.

In this paper, using a firm-level dataset of Japanese listed companies covering the period 2000-2011, we showed that FDI by service sector firms has had positive effects on their domestic employment growth. These results were obtained controlling for spurious correlation arising from reverse causality such as the fact that firms that are successful in the domestic market are more likely to invest abroad. The positive effects are clearest in the retail, construction, and personal and business services industries. This is probably because FDI by firms in these industries does not substitute for their domestic business activities but requires that they strengthen administrative and other support functions in their domestic headquarters. A positive employment effect of outward FDI was also observed in the wholesale and transportation industries. This result may reflect the effect that firms' strengthening of their international networks helps to attract stronger demand. In contrast, in the information and communications technology industry, FDI appears to be associated with a reduction in domestic employment, possibly because IT workers at overseas affiliates substitute for domestic ones. Overall, our results suggest that for the service sector as a whole, outward FDI has been beneficial for Japan's economy from the viewpoint of domestic job creation.

Finally, the effects of firms' overseas activities need to be considered from a broader perspective, and there are some remaining issues on that front. First, since small and

medium-sized enterprises are also actively engaged in overseas business these days, including non-listed companies in the analysis is of great interest. Second, as discussed in the Appendix, in order to consider the effects on the macro economy, empirical studies based on industry-level data and/or analyses of the effects of FDI on domestic firms (that are not engaged in overseas business) are also important. Further analyses are needed to better understand the effects of globalization on Japan's economy.

Appendix. The Effects of Foreign Activities on the Domestic Economy

In this appendix, we discuss the impact of FDI from a broader perspective. Specifically, we take manufacturing firms into consideration, and discuss the industry-level as well as the firm-level effects.

A1. Vertical and Horizontal FDI: Issues Regarding Empirical Studies

Many of the preceding studies on the manufacturing sector classify FDI into two types, vertical and horizontal, and consider the economic effects of each (Chart A1). Based on individual firms' behavior, the expected effects are generally as follows.

A. Vertical FDI (VFDI): A parent firm invests in a foreign country (which typically has different factor endowments) and specializes in production processes where it has a comparative advantage. Column I in Chart A1 considers the case in which an upstream firm A establishes an affiliate (or buys a local firm) in a low-wage country which handles labor-intensive downstream processes.[43] In this case, firm A's domestic output and employment will increase since the output of the supply chain as a whole increases through the international division of labor (export promotion effect).

B. Horizontal FDI (HFDI): A parent firm invests in a foreign country (which typically has similar factor endowments) in order to locate production close to customers. Column II in Chart A1 depicts the case in which a parent firm A replaces its exports by local production in order to save transportation costs and to capture local demand more efficiently. In this case, if domestic demand remains unchanged, firm A's domestic output and employment may decrease (export substitution effect).

Based on this line of reasoning, preceding empirical studies have attempted to split their observations into two groups, HFDI and VFDI, and to estimate the effects of each type separately, as the two different effects may offset each other if all the data are pooled.

However, the following problems arise when conducting such analyses.

A. In practice, it is not easy to distinguish VFDI and HFDI. The criterion used in many empirical studies is the location where the investment is made: focusing on factor endowment differences, they regard investments in developing countries as vertical and

[43] Establishing an upstream foreign affiliate (e.g., resource development) is also classified as VFDI, and domestic production and employment are expected to increase as the firm can obtain resources more efficiently.

those in developed countries as horizontal (e.g., Obashi et al. (2009), Edamura et al. (2011)). However, in reality, most FDI has the characteristics of both HFDI and VFDI at the same time (Baldwin and Okubo (2012), Sakura and Iwasaki (2012)). For example, many firms which invest in Asia aim to both capture local demand and save labor costs, so that their investment is not purely vertical.

B. When analyzing the effects on domestic employment, it is also important to distinguish whether the firm establishes a new production process overseas or transfers an existing one from the home to the host country. For example, when a new downstream process is established, domestic employment is expected to increase in the parent firm which handles the upstream process (Column I in Chart A2). However, when a firm transfers its existing process overseas, employment at the parent firm may decrease (Column I' in Chart A2). Both cases will be classified as VFDI and the only difference lies in where the "boundary" of the firm lies (i.e., whether the downstream process was handled within the parent firm or not before the investment is made), but the results of firm-level analyses will be affected by which case is dominant in the dataset.[44]

When looking at the service sector, some cases (namely local demand-oriented FDI) can be classified relatively easily as HFDI (problem A above is less serious). Moreover, unlike in the manufacturing sector, it may be difficult to segment the value chain across multiple firms because of the inseparability of production and consumption (problem B above is also less serious). In this sense, studies on the effects of FDI should be more straightforward for service sector firms. In some cases, however, the international division of labor is easy even in the service sector (e.g., the ICT industry), and it is necessary to pay attention to the problems discussed above.

A2. Firm-level Empirical Studies and Macroeconomic Implications

Using firm-level data allows us to investigate whether firms that are active overseas are increasing their domestic employment, which is an important issue from the viewpoint of domestic job creation (or destruction). For example, our empirical results indicate that FDI by service sector firms is beneficial to Japan's economy in the sense that it contributes to

[44] Preceding studies have not yet reached a consensus regarding the effects of VFDI on employment at the parent firm. For example, Obashi et al. (2009) find that the effects are positive (although insignificant in some specifications), while Edamura et al. (2011) find that they are negative. These two studies are similar to each other in their empirical approach and their observation period as well as the way they classify FDI: both classify FDI in Asia or developing countries as vertical. The discussion above may provide one possible explanation why these studies arrive at conflicting empirical results.

domestic job creation.

However, job creation (or destruction) at the firm level does not necessarily imply an increase (or decrease) in employment at the industry level. Even when multinational firms are creating jobs, it is not clear whether industry-level employment is increasing, because domestic firms (i.e., firms with no overseas activities) may suffer job losses. That is, firms' overseas activities may have both direct and indirect effects on domestic firms.

Specifically, firms' FDI has direct effects on other firms doing business with them.[45] As a result, the industry-level effects may differ from the firm-level effects. Let us revisit the case of VFDI depicted in Column I in Chart A2. In that case, employment at upstream firm A increases through FDI, but employment at domestic firm B (which used to be engaged in the labor-intensive downstream process) will decrease; therefore, the industry-level effects may be negative. Moreover, in the case of HFDI described in Column II in Chart A2, employment at downstream firm A may decrease, but employment at upstream domestic firm B may increase through the export promotion effect if firm A's global sales increase; therefore, the effect on domestic employment may be positive at the industry level.

At the same time, firms' FDI may also have indirect effects on domestic firms that have no direct business links with multinational firms. For example, as the theoretical model developed by Helpman et al. (2004) suggests, FDI by multinational firms may lead other firms to exit the market (in their model, as the real wages paid by internationalized firms rise, less productive domestic firms that cannot afford to pay higher wages will be forced to exit).

Given the above considerations, it is not straightforward to derive macro-economic implications from the firm-level analysis. To discuss the macroeconomic effects of FDI, the following approaches may be useful.

First, using an industry-level dataset allows us to examine more directly the macroeconomic impact of FDI. For example, the empirical analysis using Japanese industry-level data by Agnese (2011) suggests that service sector FDI has had a positive effect on domestic employment, while manufacturing FDI has had a negative effect.[46] Of course, using industry-level data makes it difficult to control for the characteristics of individual FDI

[45] This problem may be less serious when examining the service sector, since value chains in this sector, as mentioned, tend to consist of fewer firms.

[46] Amiti and Wei (2005), using U.S. industry-level data, report the interesting result that the degree of aggregation affects the result (Table 4). More specifically, they find that FDI has a small negative effect on domestic employment when industries are finely disaggregated, but this effect disappears at a more aggregate industry level. Amiti and Wei (2005) interpret this result as implying that the negative effects of FDI can be offset by overall demand growth.

cases and it needs to be borne in mind that patterns may be obscured by the fact that the effects of different types of FDI may offset each other.

Second, examining the effects of FDI on domestic firms (i.e., firms with no overseas activities) is also important. Specifically, inter-industry effects — such as the effects of FDI of wholesalers on the exports, production, and employment of manufacturing firms — are an issue of considerable interest. There are few empirical studies on this front so far, and further analyses are needed in order to connect firm-level and industry-level analyses.[47]

[47] An example of a study focusing on a specific industry is that by Blonigen (2001), which analyzes the automobile industry and reports that investment in car assembly overseas promotes the export of auto parts, while the establishment of an auto parts factory substitutes for the export of the auto parts. Regarding the spillover effects of inward FDI on domestic firms which are not direct recipients of the investment, Todo (2006) and Iwasaki (2013) conduct interesting analyses.

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Todo, Yasuyuki (2006) "Knowledge spillovers from foreign direct investment in R&D: Evidence from Japanese firm-level data," *Journal of Asian Economics* 17, pp. 996–1013

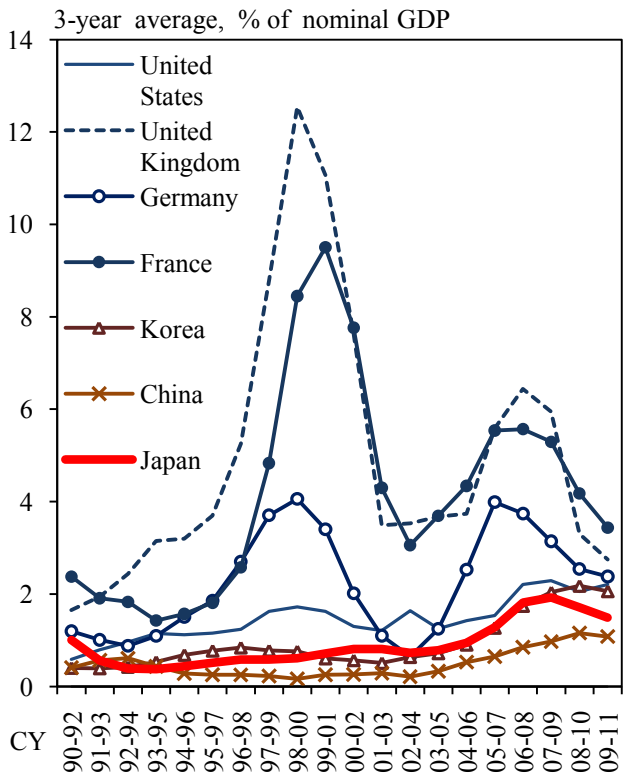
Tsou, Meng-Wen, Jin-Tan Liu, James K. Hammitt and Ching-Fu Chang (2013) "The impact of foreign direct investment in China on employment adjustments in Taiwan: Evidence from matched employer-employee data," *Japan and the World Economy* 25-26 pp.68-79

Wakasugi, Ryuhei (Eds.) (2011) *Gendai nihon kigyo no kokusai-ka: Panel data bunseki* (*Internationalization of contemporary Japanese firms: Analysis on panel data*), Iwanami Shoten (in Japanese)

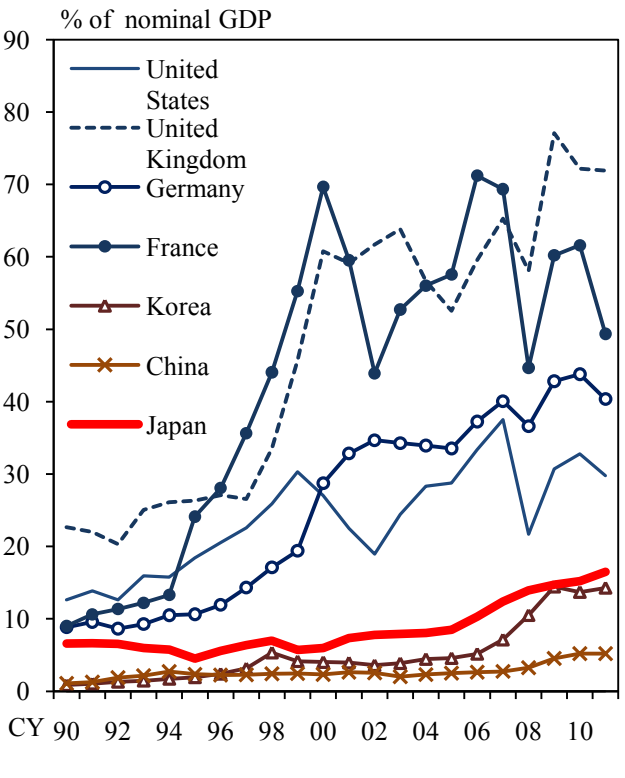
Yamashita, Nobuaki and Kyoji Fukao (2010) "Expansion abroad and jobs at home: Evidence from Japanese multinational enterprises," *Japan and the World Economy* 22, pp.88-97

International Comparison of Outward FDI

(a) FDI Flows



(b) FDI Stock



(c) Ranking in Terms of FDI Flows

	Rank						Amount, bil. US dollars
	CY1986-90	1991-1995	1996-2000	2001-2005	2006-2010	2011	2011
United States	3	1	1	1	1	1	397
Japan	1	5	11	7	6	2	114
United Kingdom	2	2	2	3	3	3	107
France	4	4	3	2	2	4	90
China	20	15	30	20	13	9	65
Germany	-	3	4	8	4	11	54
Korea	18	20	22	24	23	20	20

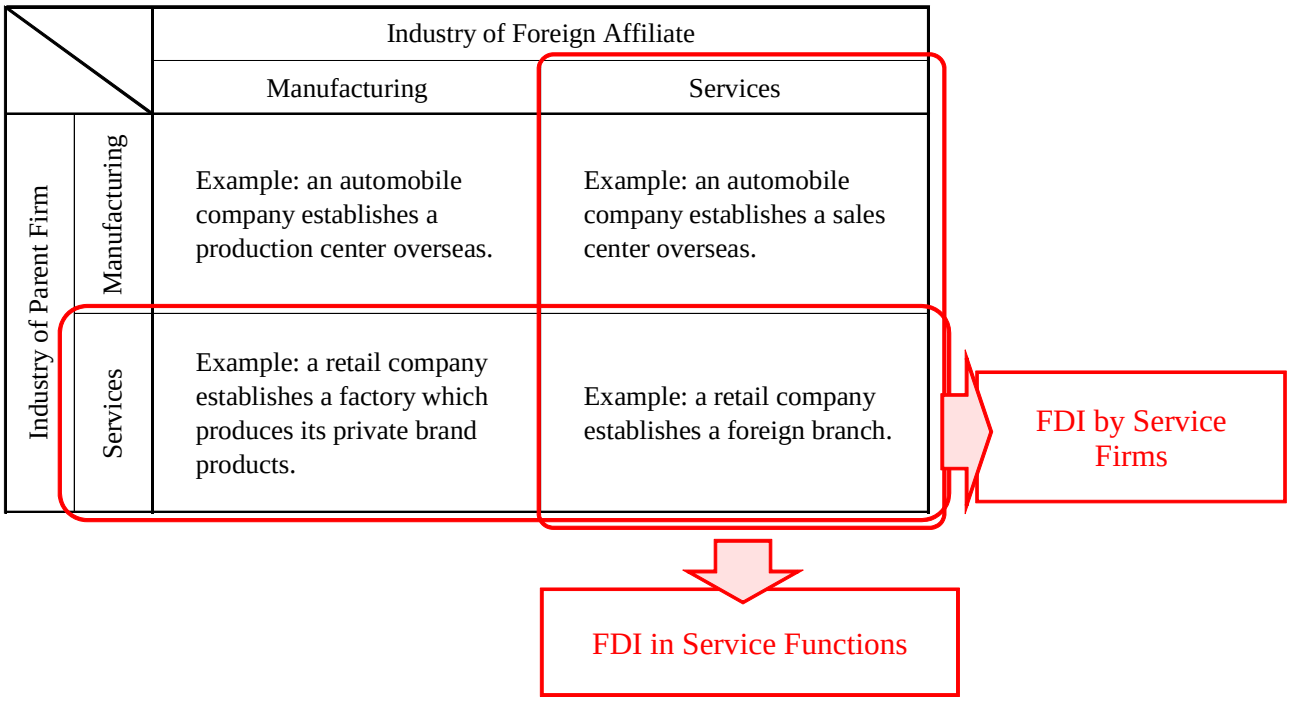
(d) Ranking in Terms of FDI Stock

	Rank						Amount, bil. US dollars
	CY1986-90	1991-1995	1996-2000	2001-2005	2006-2010	2011	2011
United States	1	1	1	1	1	1	4,500
United Kingdom	2	2	3	2	2	2	1,731
Germany	-	4	4	4	4	3	1,442
France	5	5	2	3	3	4	1,373
Japan	3	3	5	8	9	7	963
China	26	22	23	26	20	15	366
Korea	31	27	25	30	27	25	159

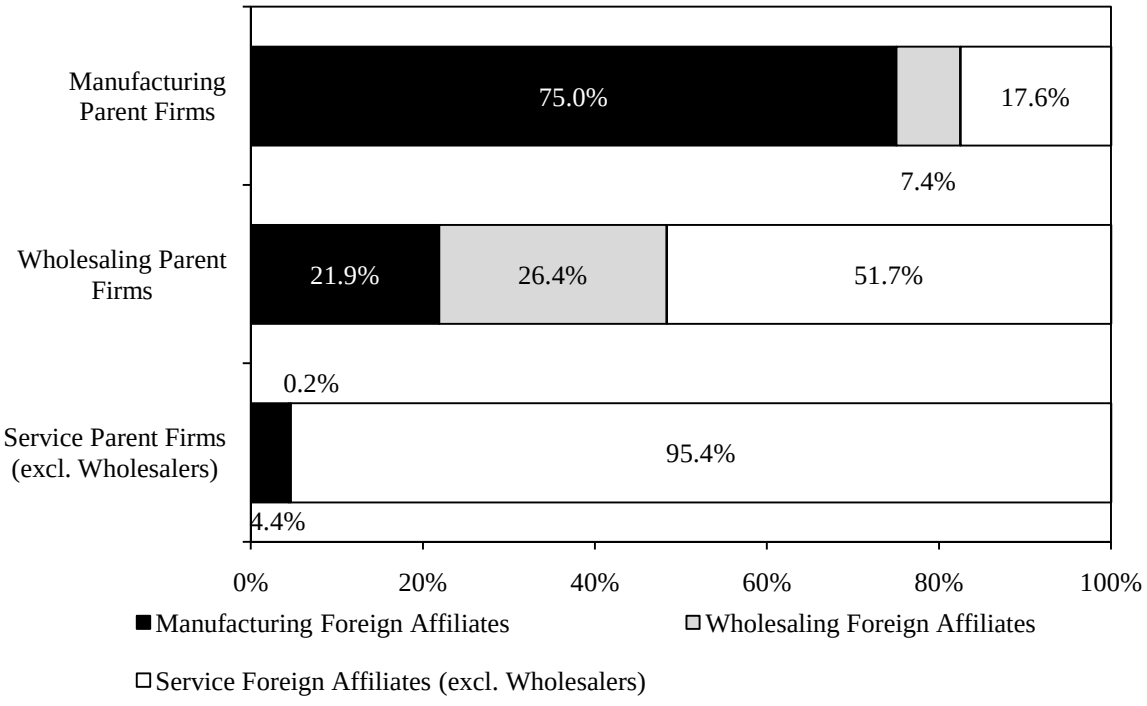
Source: UNCTAD.

FDI by Industry

(a) FDI by Industry: Some Examples



(b) Share of Overseas Capital Formation by Industry (Average for FY2007-2011)

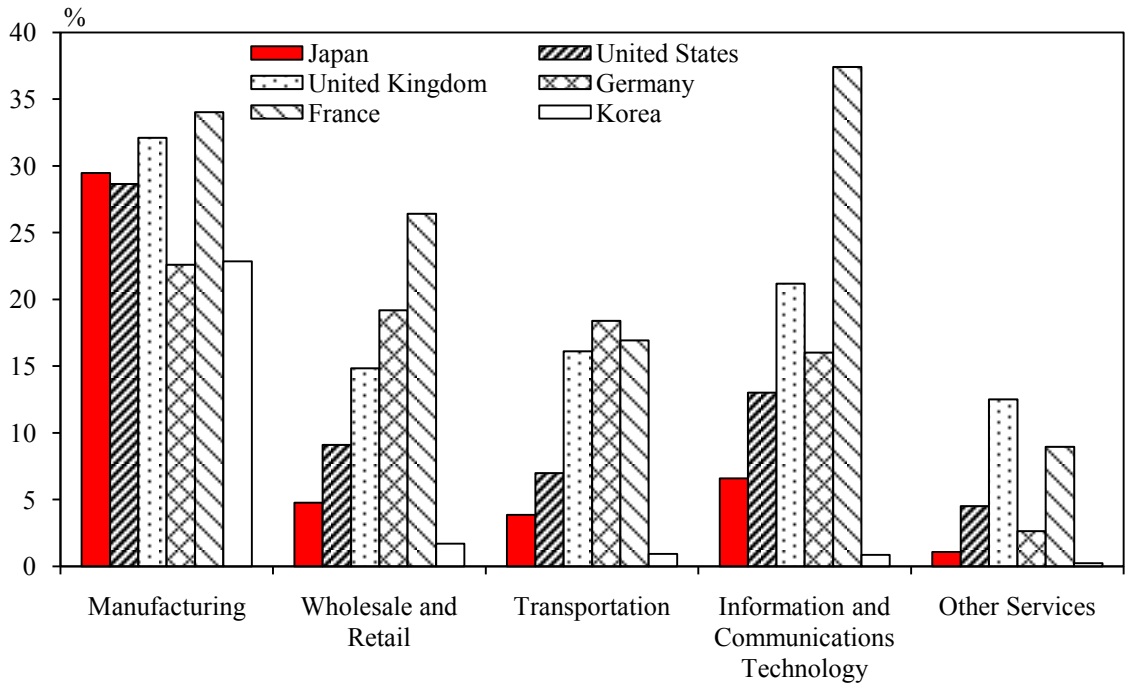


Note: Panel (b) shows that, for example, service sector affiliates account for 17.6% of the overseas capital formation of manufacturing parent firms.

Source: Ministry of Economy, Trade and Industry, *Survey of Overseas Business Activities.*

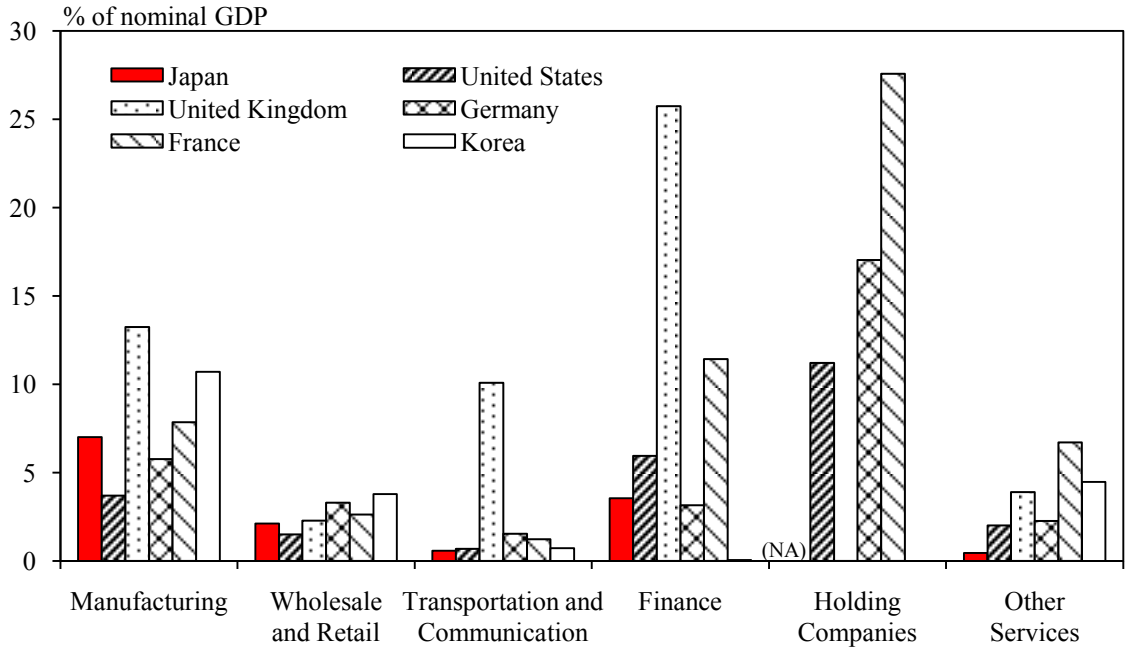
International Comparison: by Industry of the Foreign Affiliate

(a) Overseas Employment Ratio by Industry of the Foreign Affiliate, CY2010



Notes: 1. Overseas employment ratio = Number of employees overseas / Number of domestic employees and employees overseas.
2. "Other Services" excludes the finance, insurance, and real estate industries as well as those shown in the chart. Definitions of industries vary with countries.
3. For Japan and Korea, foreign affiliates are counted when domestic investors have 10% or more of the voting power (for other countries, more than 50%).
4. The data for South Korea are for CY2009.

(b) FDI Stock by Industry of the Foreign Affiliate, CY2010

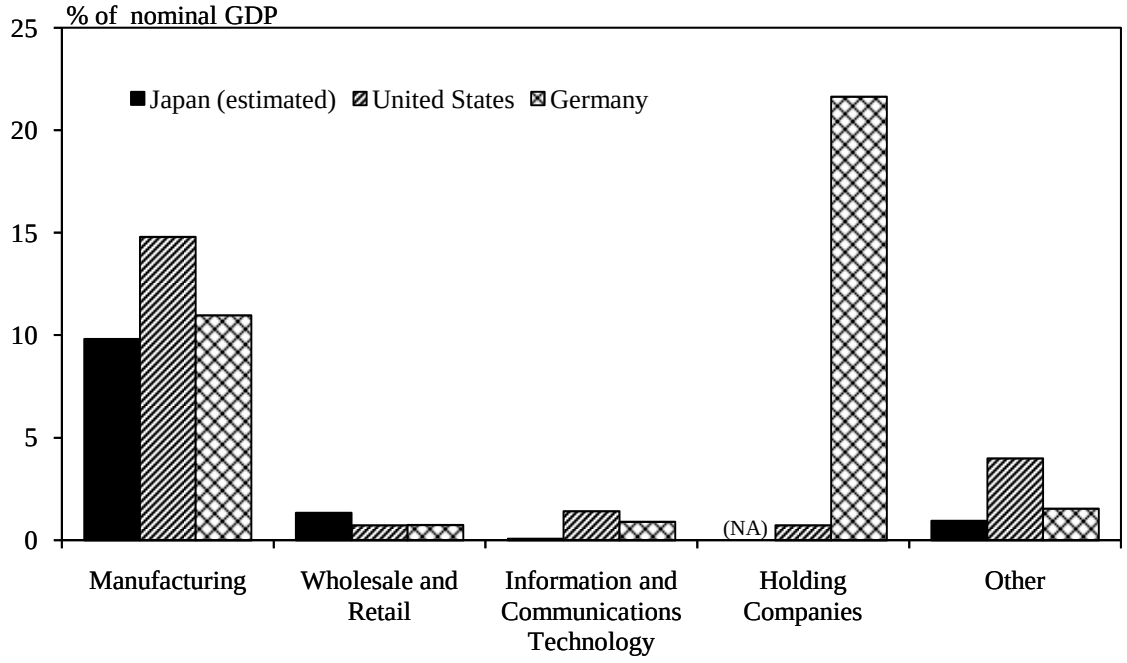


Notes: 1. Japanese holding companies are counted under "Other Services."
2. Total nominal GDP is employed as the denominator.

Sources: OECD; Ministry of Economy, Trade and Industry; Cabinet Office; Bureau of Economic Analysis; Eurostat; Bank of Korea.

International Comparison: by Industry of the Parent Firm

(a) FDI Stock by Industry of the Parent Firm
(CY2011 for Japan and the United States, CY2010 for Germany)

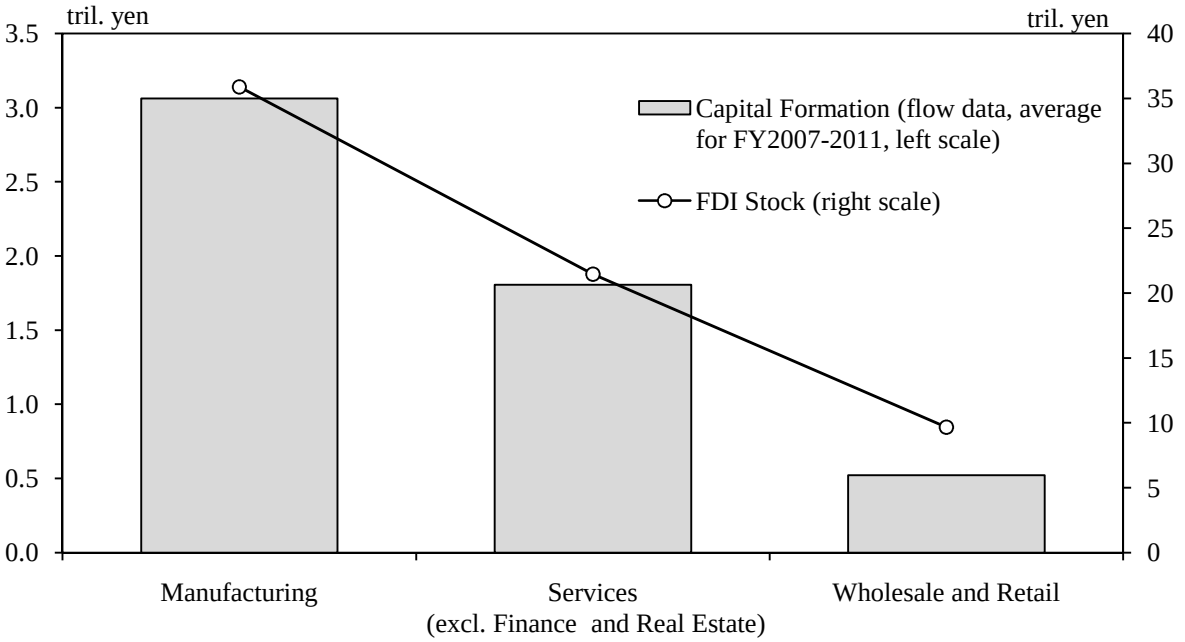


Estimation method: FDI stock of parent-firm industry j is calculated as follows:

$$FDI_j = \frac{(Overseas\ Capital\ Formation\ in\ Parent\text{-}Firm\ Industry\ j)}{(Total\ Overseas\ Capital\ Formation)} \times (Total\ FDI\ Stock)$$

where the figures for overseas capital formation are the averages for FY2007-2011.

(b) Comparison of Overseas Capital Formation and FDI Stock by Industry of the Foreign Affiliate



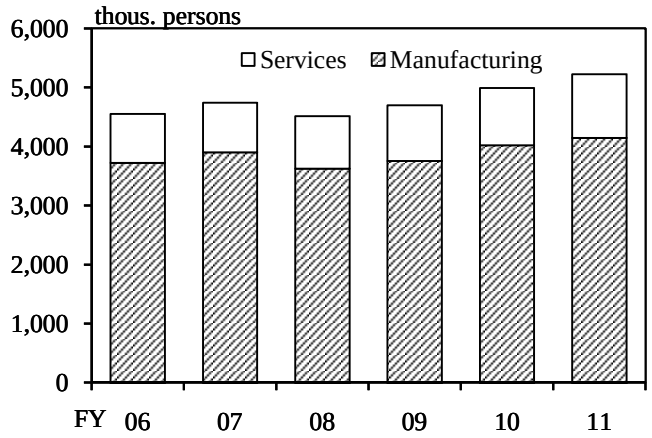
Notes: 1. "Other" in panel (a) is calculated by subtracting the industries listed above from the total (excluding finance and real estate). For the United States, however, retailers are not included in "Wholesale and Retail," and the real estate industry is included in "Other."
2. "Services" in panel (b) is calculated by subtracting "Manufacturing" from the total.

Sources: Bureau of Economic Analysis; Bundesbank; Ministry of Economy, Trade and Industry, *Survey of Overseas Business Activities* ; Bank of Japan, *Balance of Payments.*

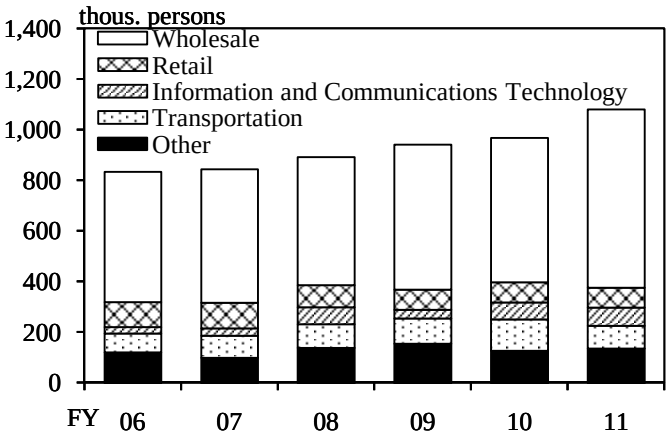
Overseas Employment by Industry of the Parent Firm

(a) Number of Overseas Employees

Manufacturing and Service Sectors

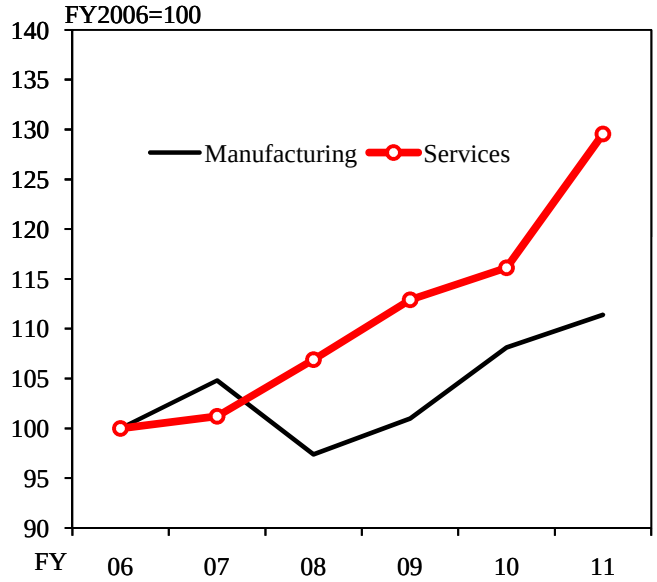


Breakdown of Service Sector

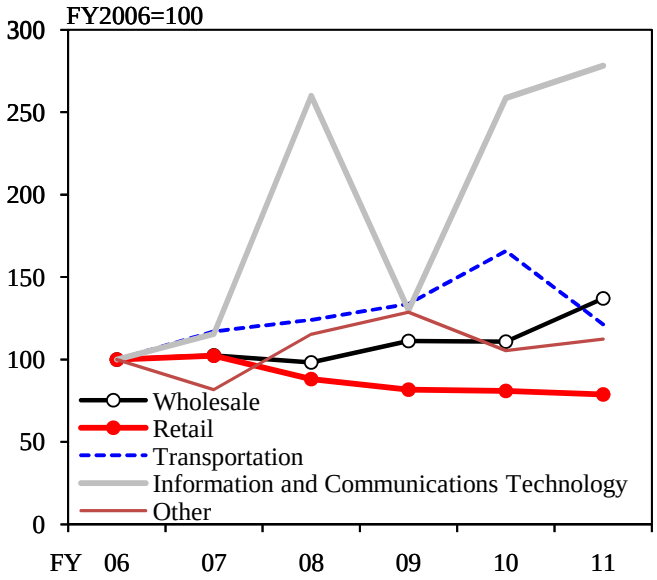


(b) Growth in the Number of Overseas Employees

Manufacturing and Service Sectors

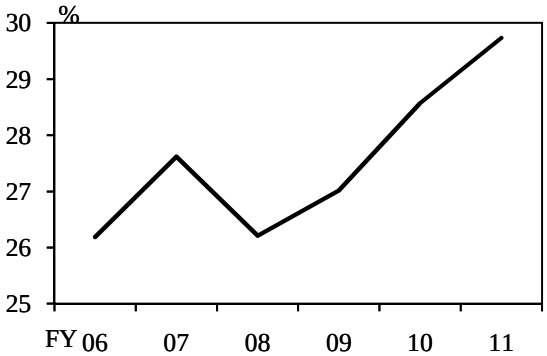


Breakdown of Service Sector

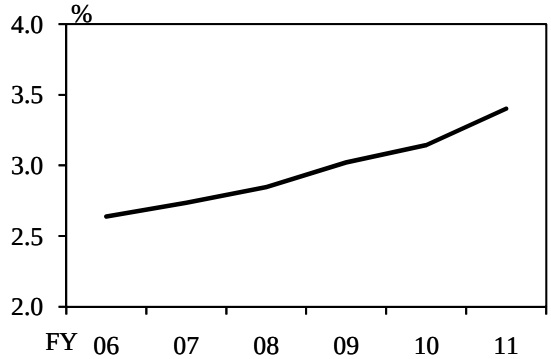


(c) Overseas Employment Ratio

Manufacturing



Services



Notes: 1. Overseas employment ratio= Number of employees overseas / (Number of domestic employees and employees overseas) *100

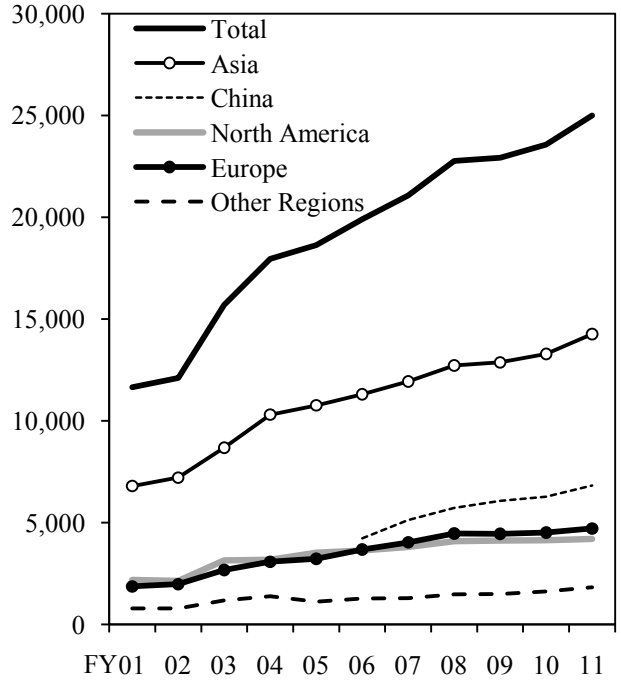
2. The finance, insurance, and real estate industries are not included.

3. Figures for the service sector are calculated by subtracting those for the manufacturing from the industry total.

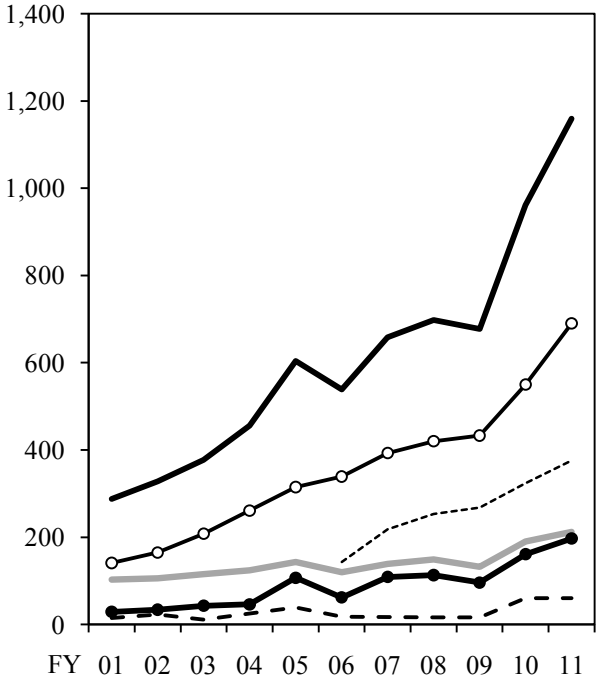
Sources: Ministry of Economy, Trade and Industry, *Survey of Overseas Business Activities* ; Ministry of Finance, *Financial Statements Statistics of Corporations.*

Number of Foreign Affiliates by Industry of the Parent Firm and Region

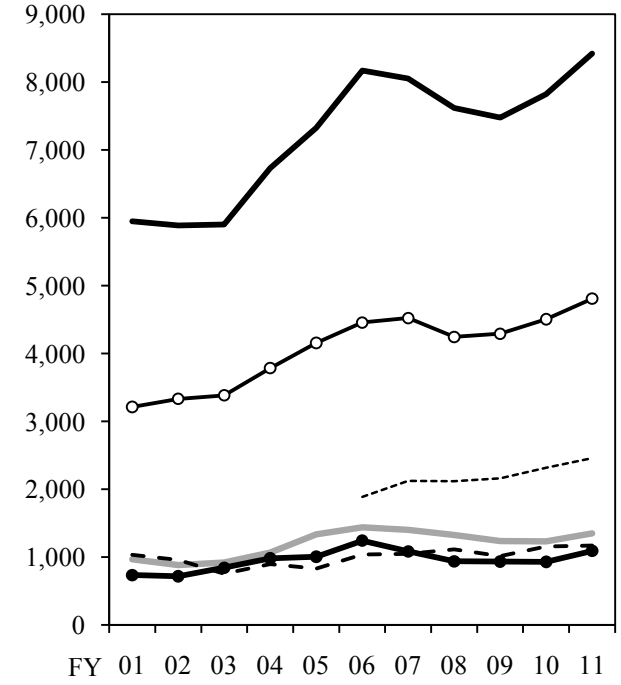
(a) Manufacturing



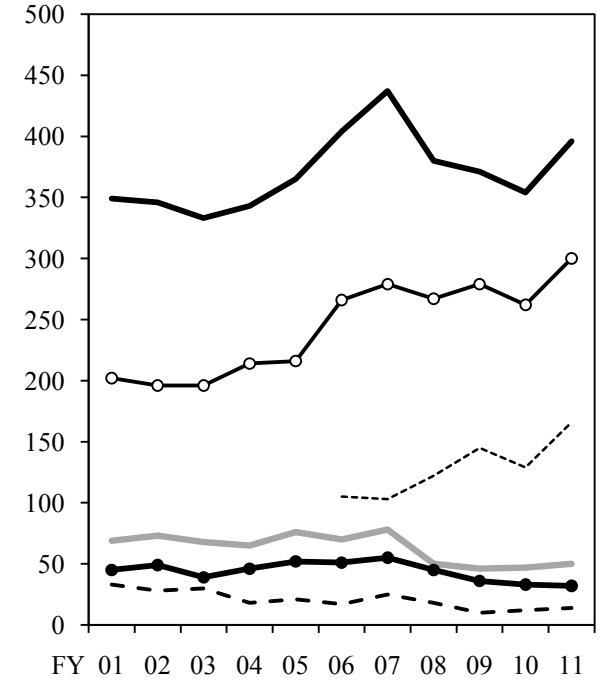
(b) Information and Communications Technology



(c) Wholesale



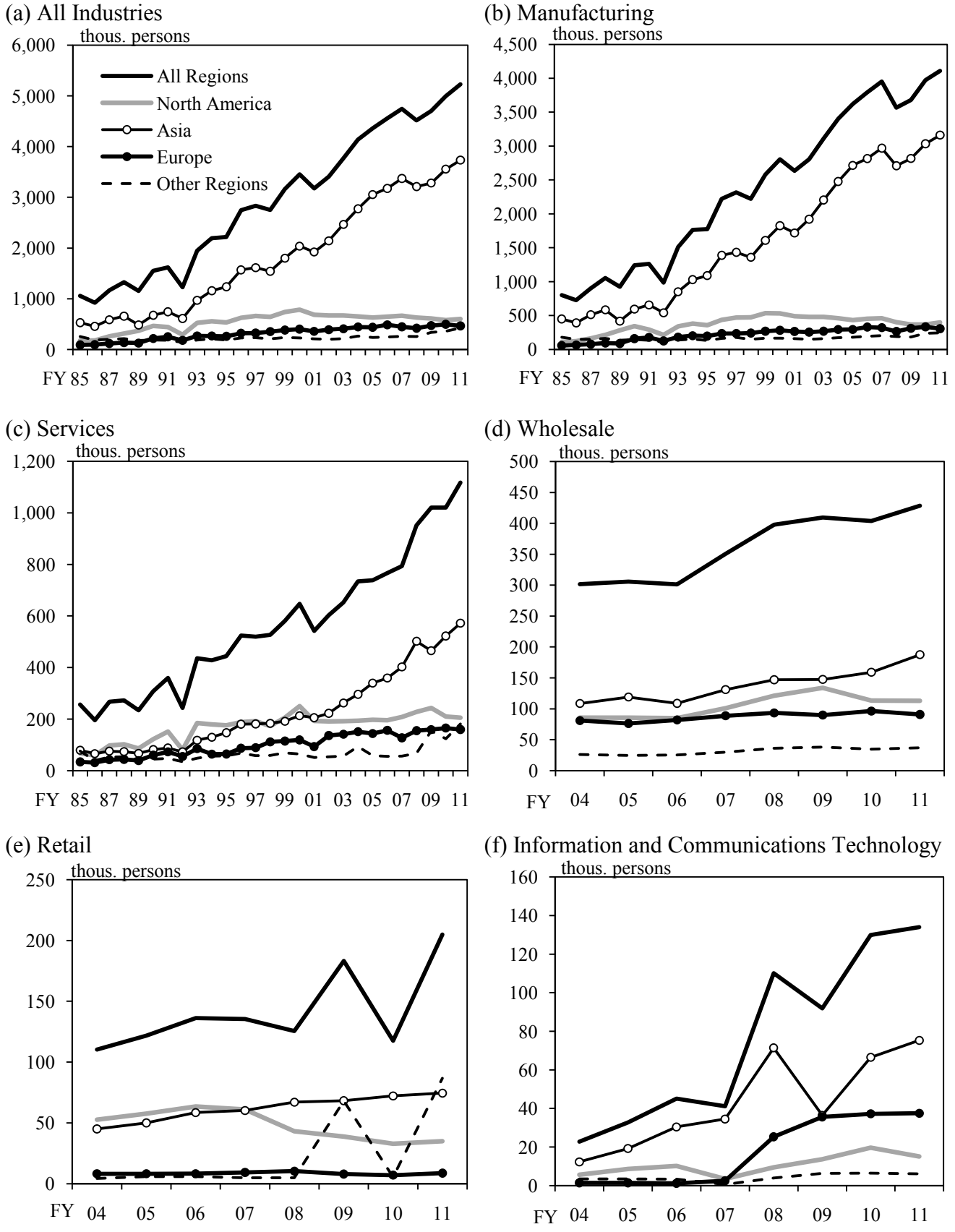
(d) Retail



Notes: 1. The figures show the number of foreign subsidiaries and affiliated companies (in which domestic parents hold no less than 20% of the voting power). Affiliates with multiple parents are counted multiple times.
2. Up to fiscal 2006, "Information and Communications Technology" refers to the "Information Services / Production" industry.
3. Figures for Asia include those for China.

Source: Ministry of Economy, Trade and Industry, *Basic Survey of Japanese Business Structure and Activities.*

Number of Overseas Employees by Industry of the Foreign Affiliate and Region



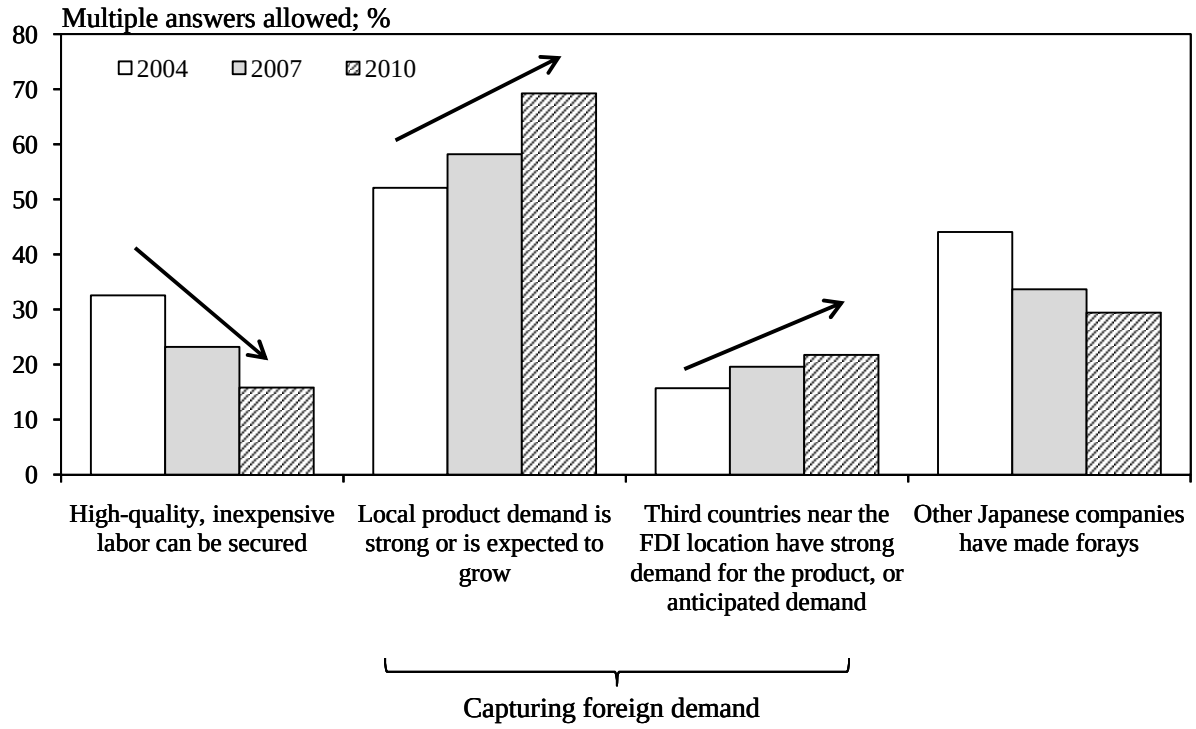
Notes: 1. The finance, insurance, and real estate industries are not included. Figures for "Services" are calculated by subtracting "Manufacturing" from "All Industries."

2. "Other Regions" consist of Africa, Oceania, the Middle East, and Latin America.

Source: Ministry of Economy, Trade and Industry, *Survey of Overseas Business Activities.*

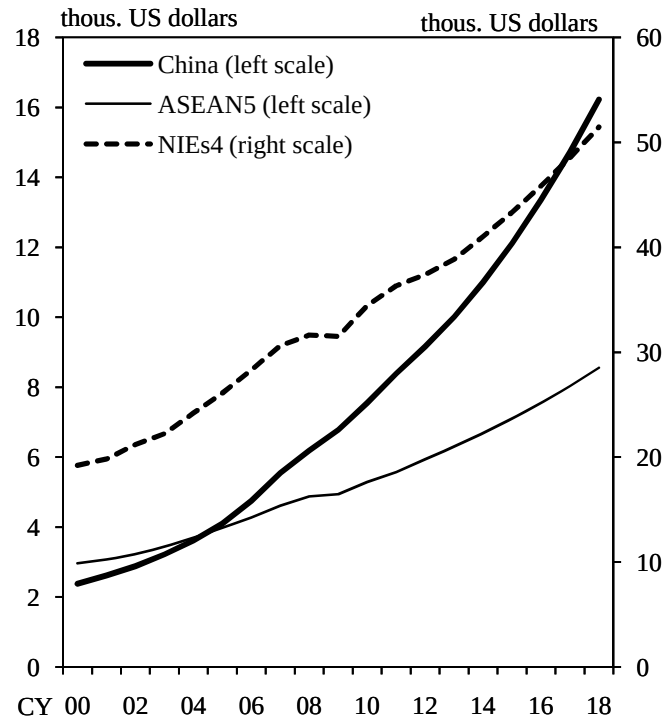
Background to Increasing FDI: Growing Foreign Demand

(a) Determinants of FDI by Service Sector Firms

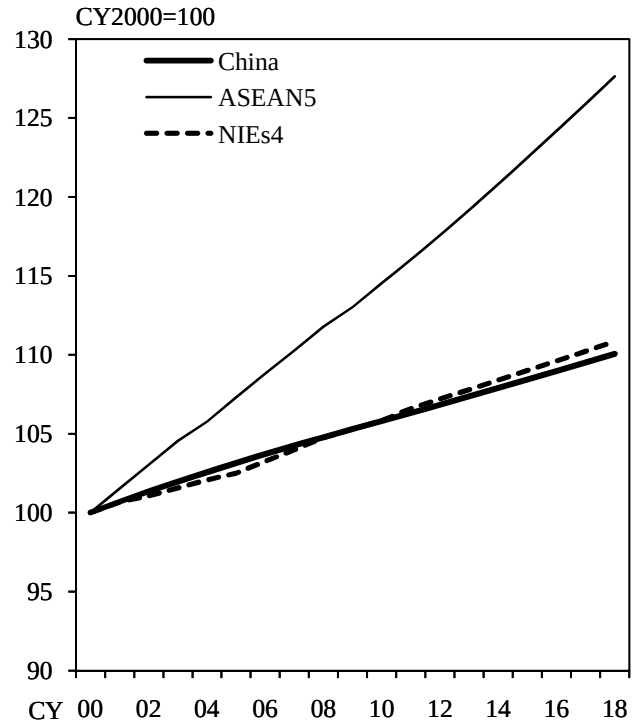


(b) Growing Attractiveness of Overseas Markets

Regional GDP per capita (PPP basis)



Estimated Future Population

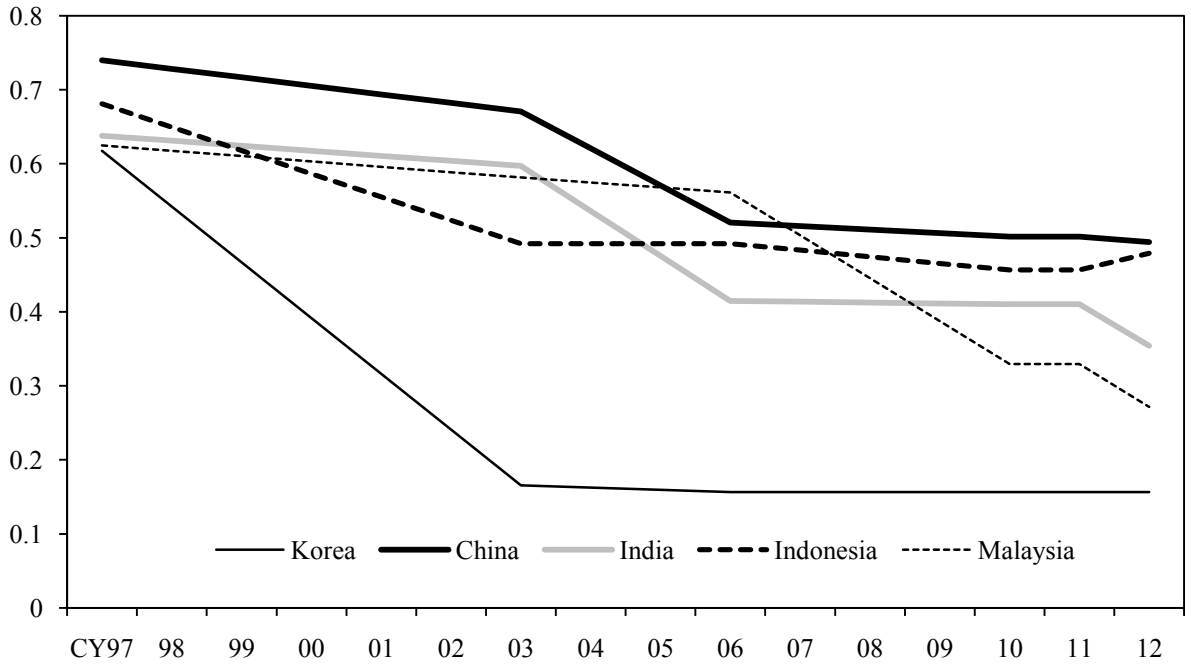


Notes: 1. Figures in panel (a) above exclude the finance, insurance, and real estate industries.
2. In panel (b), the NIEs4 consist of Singapore, Hong Kong, Taiwan, and Korea, while the ASEAN5 consist of Indonesia, Malaysia, Thailand, the Philippines, and Vietnam.

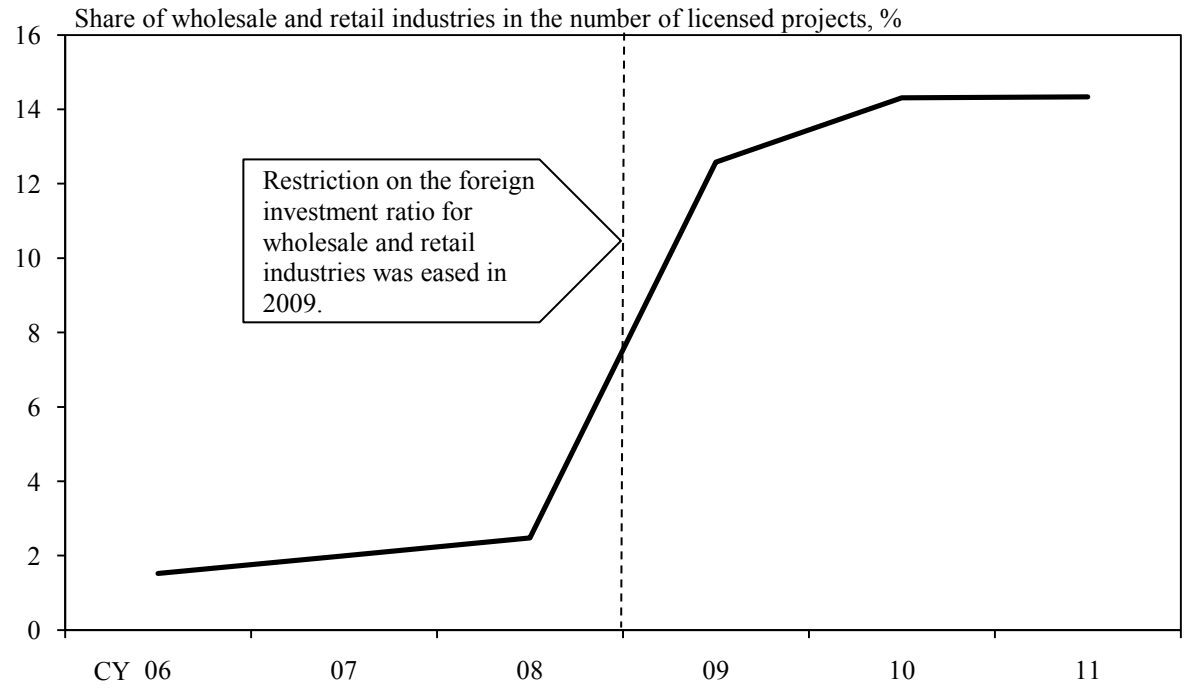
Sources: Ministry of Economy, Trade and Industry, *Survey of Overseas Business Activities*; IMF, *World Economic Outlook*.

Background to Increasing FDI: Deregulation

(a) Declining FDI Regulatory Restrictiveness Indices for Tertiary Industries



(b) Licensing of FDI in Wholesale and Retail Industries in Vietnam



Note: Unavailable data are linearly interpolated.

Sources: OECD; General Statistics Office of Vietnam.

Chart 10

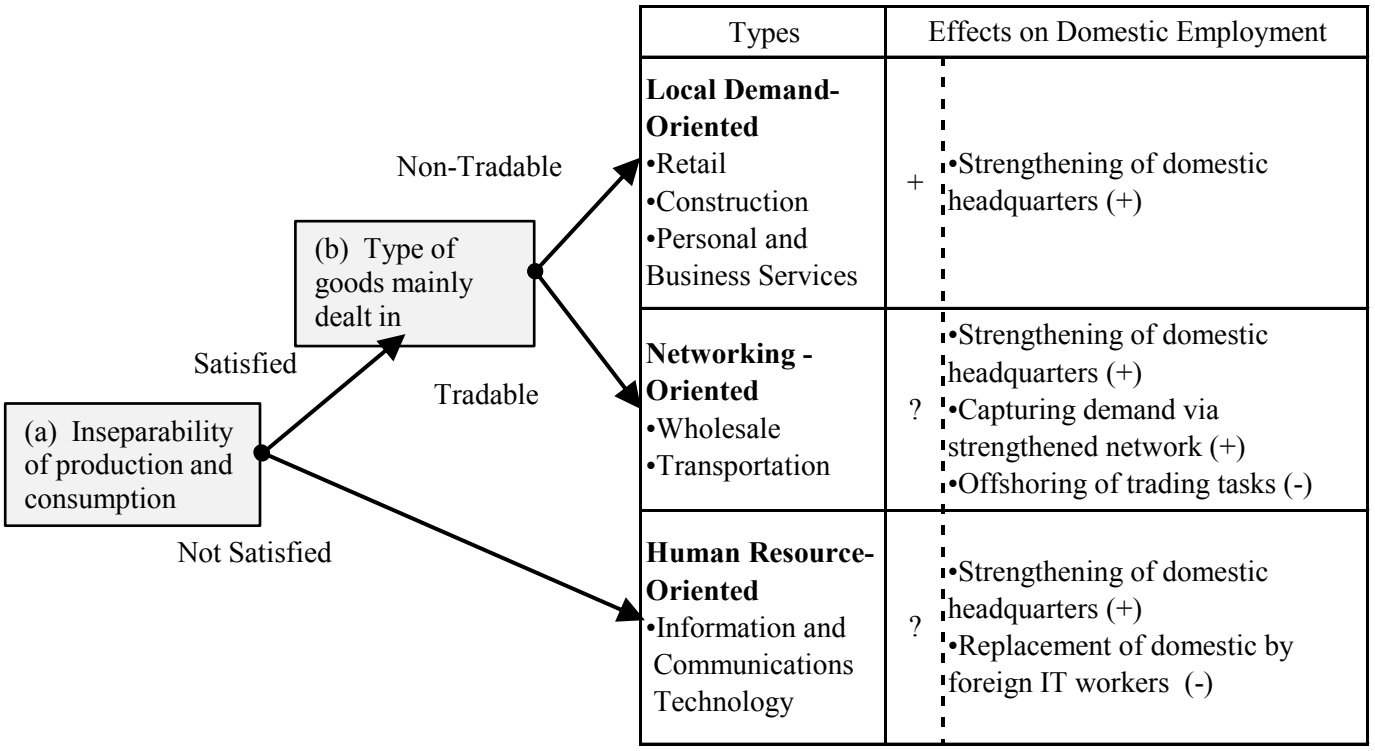
Selected Preceding Studies and Contribution of This Paper

	Effects of FDI on the Domestic Parent Firm (Extensive Margin)	Effects of an Increase in the "Degree of Overseas Involvement" on the Domestic Parent Firm (Intensive Margin)
Manufacturing Only	Higuchi and Matsuura (2003) Hijzen et al. (2007) Obashi et al. (2009) Edamura et al. (2011)	Hijzen et al. (2010) Yamashita and Fukao (2010)
Service Sector Included	Ito (2007) Inui (2011) Tanaka (2012)	This Paper

Note: Details on the preceding studies are provided in Table 2.

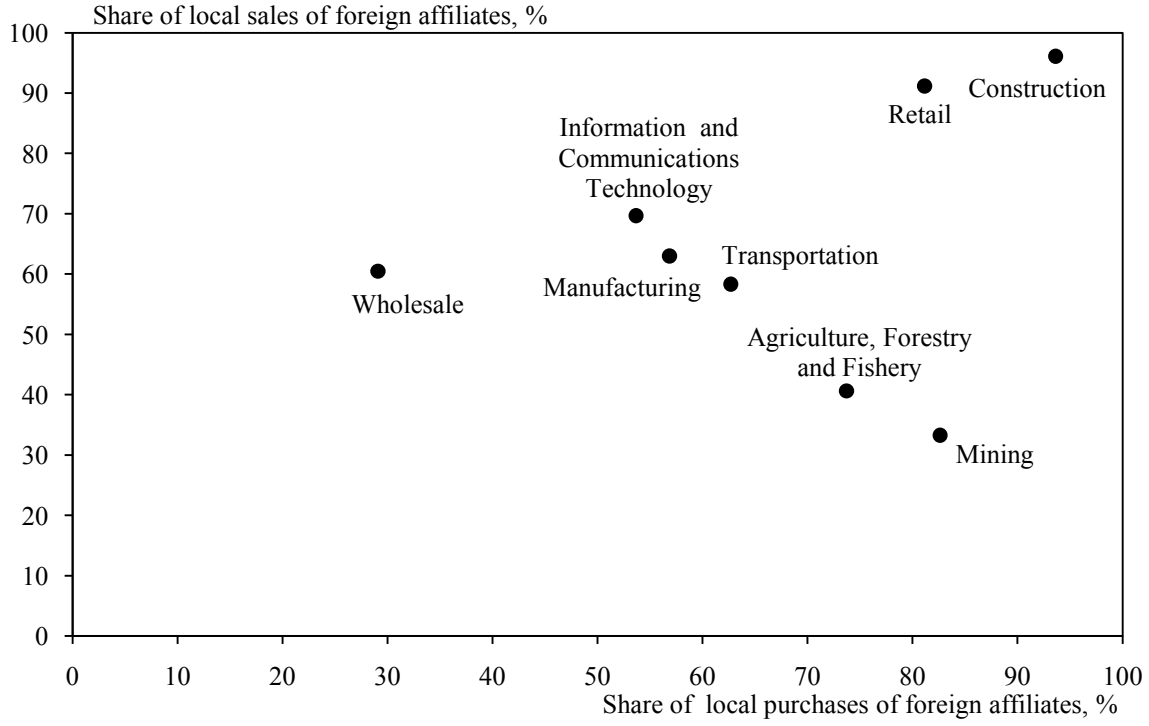
Types of FDI of Service Sector Firms

(a) Classification by Industry Characteristics and Effects of FDI on Domestic Employment



Types	Effects on Domestic Employment	
Local Demand-Oriented •Retail •Construction •Personal and Business Services	+	•Strengthening of domestic headquarters (+)
Networking - Oriented •Wholesale •Transportation	?	•Strengthening of domestic headquarters (+) •Capturing demand via strengthened network (+) •Offshoring of trading tasks (-)
Human Resource-Oriented •Information and Communications Technology	?	•Strengthening of domestic headquarters (+) •Replacement of domestic by foreign IT workers (-)

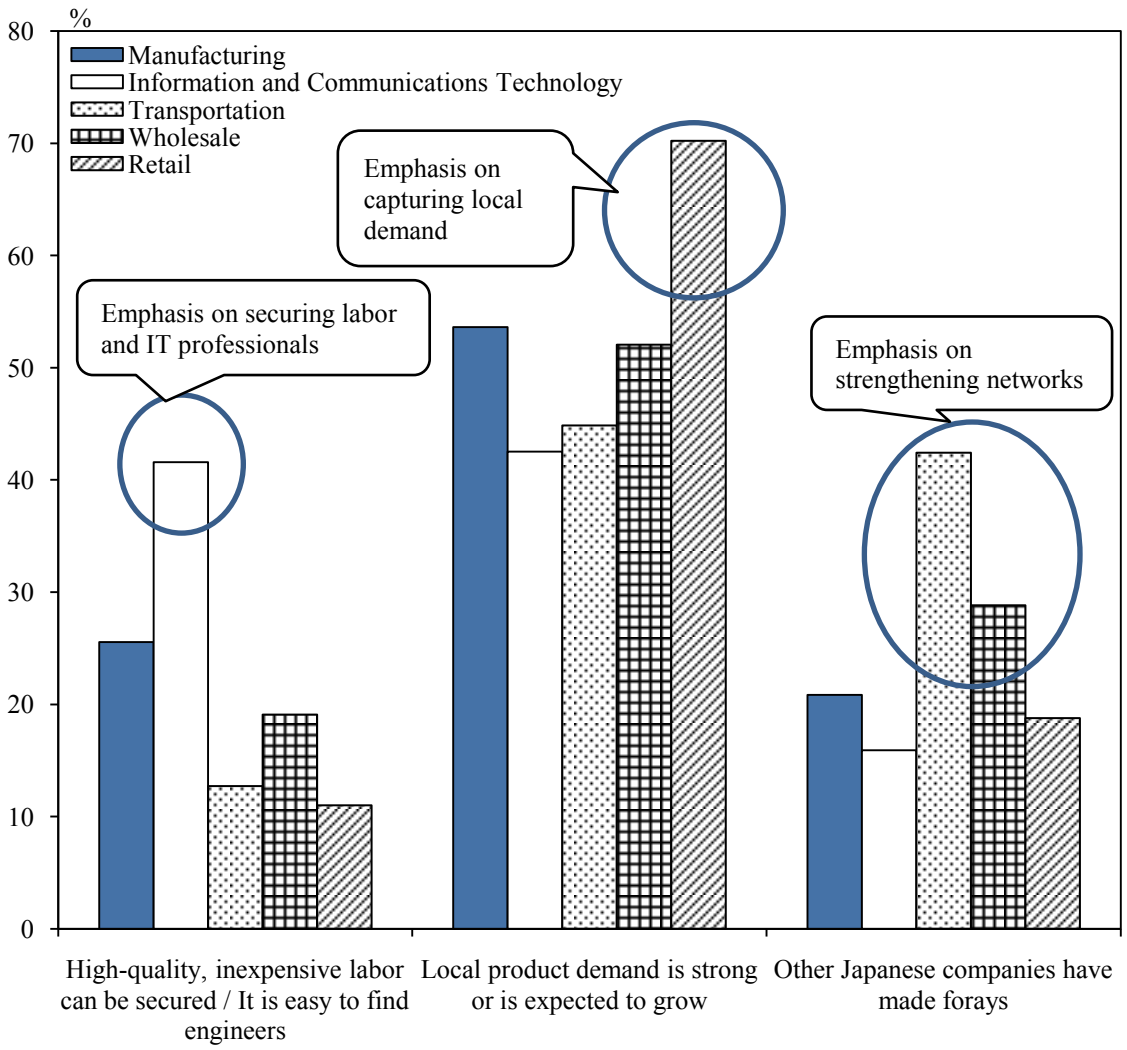
(b) Shares of Local Transactions in Sales and Purchases of Foreign Affiliates



Notes: 1. Due to data availability, figures are classified by industry of the foreign affiliate.
2. Figures are averages for FY2007-2011.

Source: Ministry of Economy, Trade and Industry, *Survey of Overseas Business Activities.*

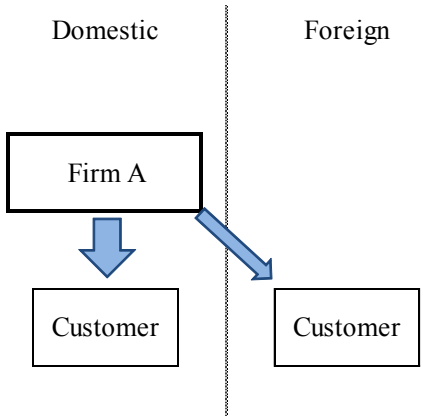
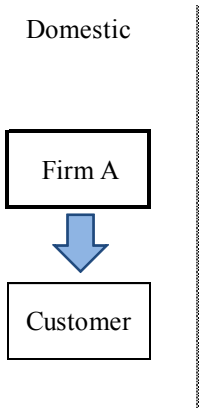
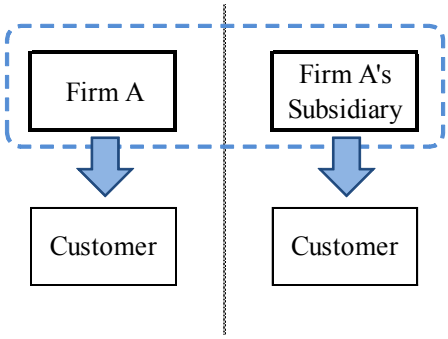
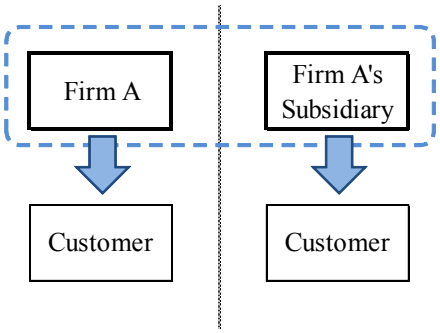
Determinants of FDI by Industry



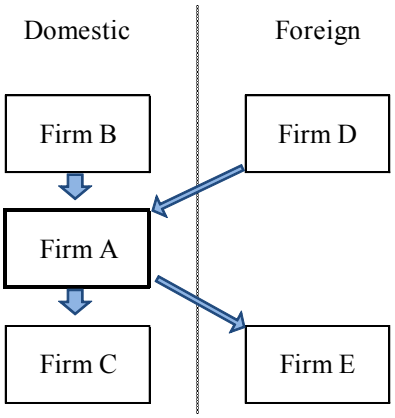
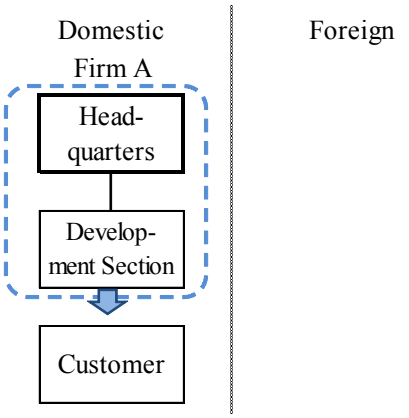
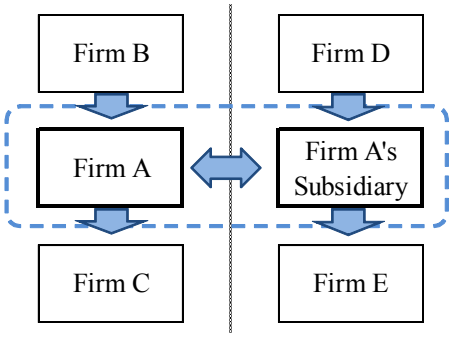
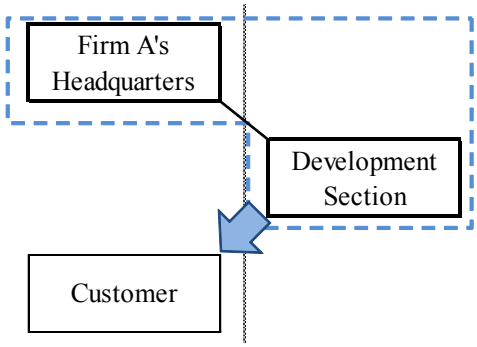
Notes: 1. The industry classification is based on the industry of the domestic parent firm.
2. Figures are recalculated so that the sums of the answers listed above add up to 100%.
3. Figures are averages for FY2007-2011.

Source: Ministry of Economy, Trade and Industry, *Survey of Overseas Business Activities*.

Examples: Local Demand-Oriented FDI

		Horizontal FDI in the Manufacturing Sector		Local Demand-Oriented FDI (e.g., Retail)	
Examples		Firm A establishes a foreign affiliate to more efficiently capture local demand and replaces exports with local production.		Firm A establishes a foreign affiliate to capture local demand.	
Diagrams	Before Investment				
	After Investment				
Domestic Employment at Firm A		Decrease in domestic output through export substitution effect.	-		
		Strengthening of domestic headquarters	+	Strengthening of domestic headquarters	+
		Total	?	Total	+

Examples: Networking-Oriented and Human Resource-Oriented FDI

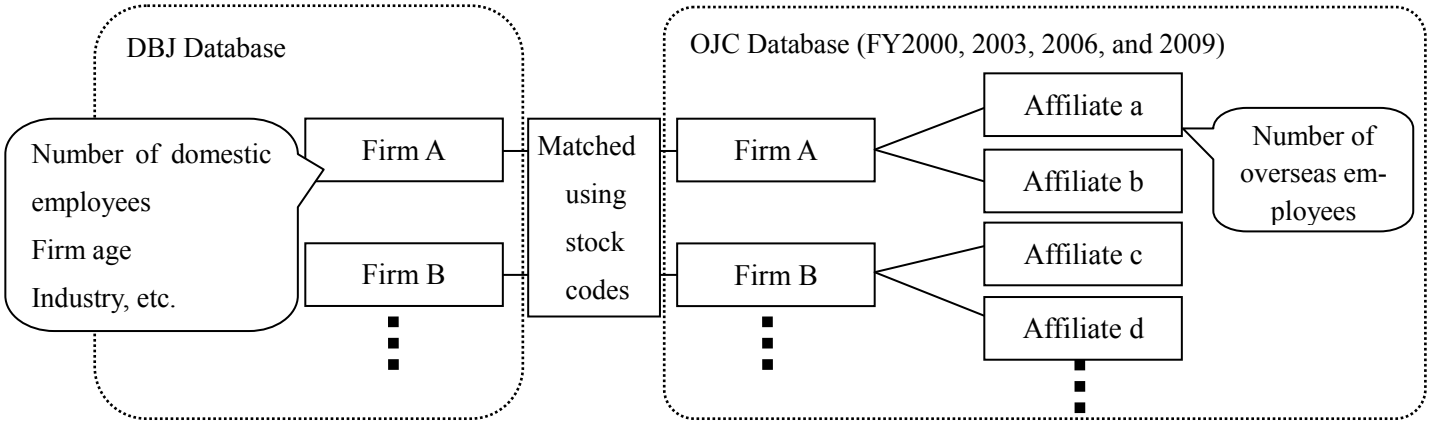
	Networking-Oriented FDI (Wholesale and transportation)		Human Resource-Oriented FDI (Information and communications technology)	
Examples	Firm A strengthens its logistics network by establishing a foreign subsidiary to capture the demand of firms aiming to export their products.		Firm A establishes a foreign affiliate which handles software development and transfers its domestic development function to the subsidiary.	
Diagrams (Before Investment)				
Diagrams (After Investment)				
Domestic Employment at Firm A	Offshoring of trading tasks	-	Replacing domestic IT professionals by overseas professionals	-
	Capturing demand	+		
	Strengthening of domestic headquarters	+	Strengthening of domestic headquarters	+
	Total	?	Total	?

Note: The effect of FDI on employment at the domestic parent firm in the information and communications technology industry may be different when the firm establishes a new downstream process rather than transferring an existing process (as described in Column I' in Chart A2).

Dataset for Estimation

(a) Construction of the Dataset

The firm-level dataset is constructed by matching data from the *Corporate Financial Databank* by the Development Bank of Japan (DBJ Database) and the *Overseas Japanese Companies Database* by Toyo Keizai Shinpo-sha (OJC database).



(b) Descriptive Statistics

	All Industries	Manufacturing	Services	Local Demand-Oriented			Networking-Oriented		Human Resource-Oriented
				Retail	Personal and Business Services	Construction	Transportation	Wholesale	ICT
Overseas Employment Ratio, %									
Median	29.7	37.4	13.1	11.5	10.1	5.8	28.3	22.3	9.7
Standard Deviation	28.7	27.6	28.5	24.1	18.4	15.2	28.2	33.7	20.8
Domestic Employment Growth, %									
Median	0.13	0.12	0.15	0.12	2.03	-0.67	0.37	0.02	2.07
Standard Deviation	9.51	8.98	10.65	16.50	7.42	5.02	4.37	10.90	12.48
Firm Age, years									
Median	36.0	42.0	22.0	19.0	13.0	42.0	44.0	19.0	11.0
Standard Deviation	16.3	16.1	16.0	11.3	10.3	12.2	15.6	15.3	6.8
Sales, 100 mil. yen									
Median	464	401	745	860	173	1,600	632	759	294
Standard Deviation	6,900	5,240	9,640	2,790	750	3,520	2,940	15,100	6,250
Number of Observations	3,449	2,413	1,036	103	77	161	146	355	109

Notes: 1. The descriptive statistics are based on pooled data for FY2003, 2006, and 2009, the years for which we construct our dependent and independent variables for the 2SLS estimation.

2. Industries are classified as in the DBJ database. However, personal and business services here are constructed by excluding information services (e.g., software developing) and contents industries (i.e., cinema and broadcasting) from the "service industry" in the DBJ database, which includes various personal and business services industries. This category therefore includes activities such as education, medical, welfare, and security services. The information services industry is then included in the ICT industry.

3. The dataset for the service sector is constructed by excluding manufacturing firms from the entire dataset.

Estimation Results

(a) Results of Baseline Model Estimation (2SLS)

Industry	Overseas Employment Ratio	Firm Age	Number of Observations
All Industries	0.0173** (2.16)	-0.00898*** (-3.14)	3449
Manufacturing	0.0137 (1.34)	-0.00806*** (-2.72)	2413
Services	0.0269** (2.10)	-0.0117* (-1.66)	1036
Local Demand-Oriented (Retail, Construction, and Personal and Business Services)	0.0791*** (2.78)	-0.0162 (-1.22)	341
Networking-Oriented (Wholesale and Transportation)	0.0225* (1.68)	-0.0103 (-1.23)	501
Human Resource-Oriented (ICT)	-0.129 (-1.34)	0.0165 (0.81)	109

(b) Reference: Results of OLS Estimation

Industry	Overseas Employment Ratio	Firm Age	Number of Observations
All Industries	0.0129** (2.17)	-0.0127*** (-6.49)	5471
Manufacturing	0.0143** (2.14)	-0.0111*** (-5.49)	3710
Services	0.00983 (0.81)	-0.0167*** (-3.70)	1761
Local Demand-Oriented (Retail, Construction, and Personal and Business Services)	0.0239 (0.63)	-0.0260*** (-2.68)	609
Networking-Oriented (Wholesale and Transportation)	0.0173 (1.56)	-0.0139** (-2.56)	768
Human Resource-Oriented (ICT)	-0.0793 (-1.28)	0.00383 (0.29)	238

Notes: 1. Values in parentheses are t-values (calculated using White (1980) heteroskedasticity-robust standard errors).
2. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.
3. Time and industry dummies are omitted from the tables.

Robustness Checks

(a) Excluding Retail from Local Demand-Oriented FDI (2SLS)

Industry	Overseas Employment Ratio	Firm Age	Number of Observations
Retail, Construction, and Personal and Business Services (redisplayed)	0.0791***	-0.0162	341
	(2.78)	(-1.22)	
Retail	0.114*	0.0183	103
	(1.77)	(0.50)	
Construction and Personal and Business Services	0.0442**	-0.0311***	238
	(2.13)	(-3.60)	
Construction	0.0374*	-0.0283**	161
	(1.68)	(-2.40)	
Personal and Business Services	0.0584	-0.0370***	77
	(1.56)	(-2.80)	

(b) Controlling for the Industry of Foreign Affiliates (2SLS)

Industry	Overseas Employment Ratio		Firm Age	Number of Observations
	Same Type	Different Type		
Local Demand-Oriented (Retail, Construction, and Personal and Business Services)	0.0853***	0.0676	-0.0164	341
	(3.12)	(0.88)	(-1.22)	
Networking-Oriented (Wholesale and Transportation)	0.0215	0.0230	-0.0104	501
	(0.82)	(1.45)	(-1.22)	
Human Resource-Oriented (ICT)	-0.160	0.346	0.00784	109
	(-1.63)	(0.50)	(0.33)	

Notes: 1. Values in parentheses are t-values (calculated using White (1980) heteroskedasticity-robust standard errors).
2. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.
3. Time and industry dummies are omitted from the tables.

Robustness Checks (Continued)

(a) Controlling for Firm Size (2SLS)

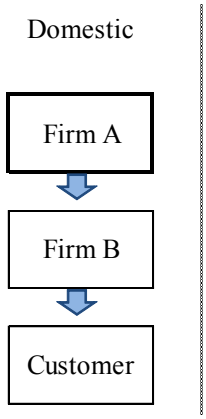
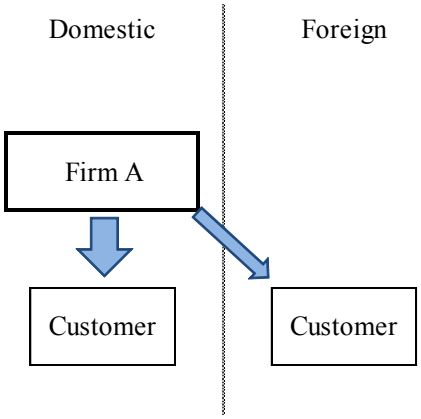
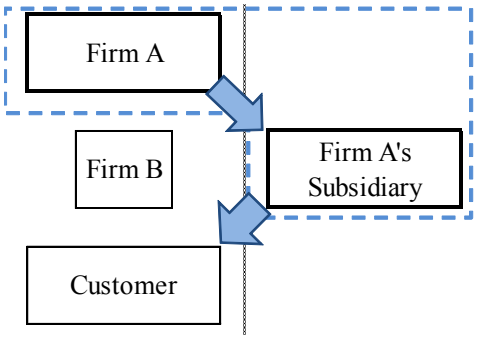
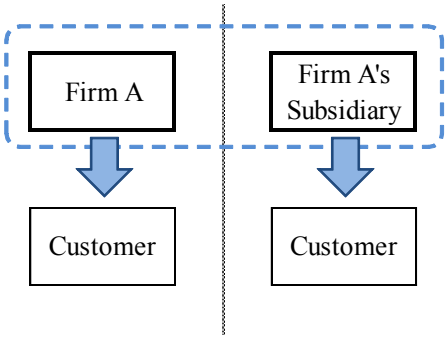
Industry	Overseas Employment Ratio	Firm Age	Firm Size (Sales)	Number of Observations
All Industries	0.0156* (1.91)	-0.0106*** (-3.45)	0.00152 (1.05)	3447
Manufacturing	0.0130 (1.26)	-0.00976*** (-3.08)	0.00161 (1.04)	2413
Services	0.0228* (1.69)	-0.0130* (-1.78)	0.00136 (0.47)	1034
Local Demand-Oriented (Retail, Construction, and Personal and Business Services)	0.0790*** (2.91)	-0.0160 (-0.97)	-0.000120 (-0.02)	341
Networking-Oriented (Wholesale and Transportation)	0.0241 (1.57)	-0.00945 (-1.19)	-0.000961 (-0.25)	501
Human Resource-Oriented (ICT)	-0.252** (-2.55)	0.00162 (0.07)	0.00431 (0.39)	107

(b) Excluding Data for FY2009 (2SLS)

Industry	Overseas Employment Ratio	Firm Age	Number of Observations
All Industries	0.0214** (2.07)	-0.0112*** (-3.14)	2307
Manufacturing	0.0170 (1.29)	-0.00949*** (-2.66)	1634
Services	0.0339** (2.05)	-0.0166* (-1.77)	673
Local Demand-Oriented (Retail, Construction, and Personal and Business Services)	0.0606** (2.13)	-0.0125 (-0.66)	227
Networking-Oriented (Wholesale and Transportation)	0.0311* (1.74)	-0.0257** (-2.14)	326
Human Resource-Oriented (ICT)	-0.0529 (-0.43)	0.0307 (1.01)	65

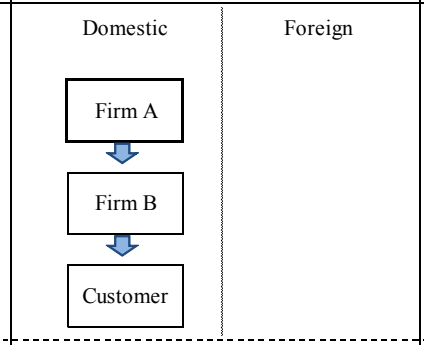
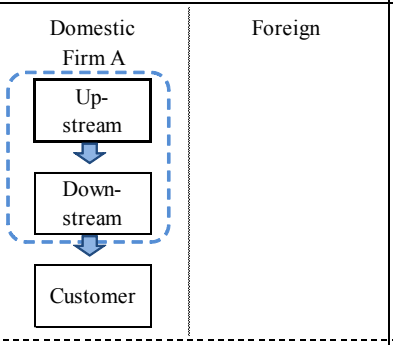
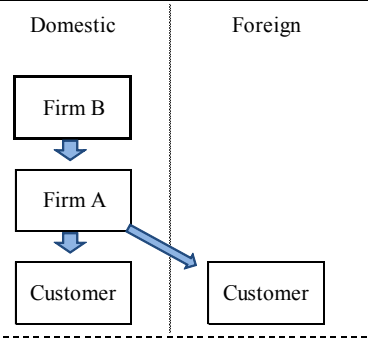
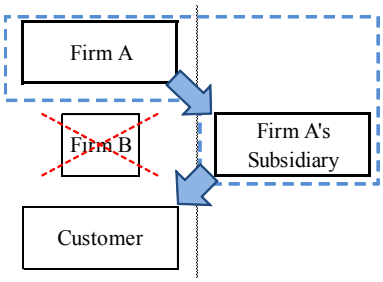
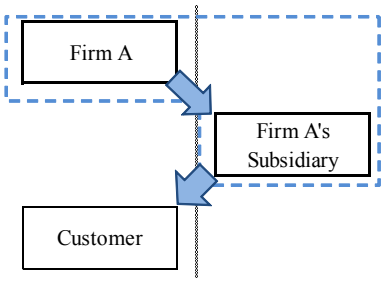
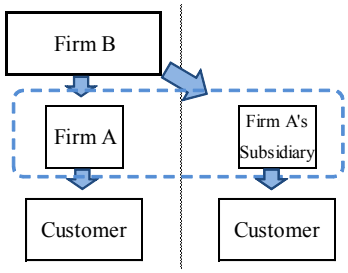
Notes: 1. Values in parentheses are t-values (calculated using White (1980) heteroskedasticity-robust standard errors).
2. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.
3. Time and industry dummies are omitted from the tables.

Examples: Horizontal and Vertical FDI

		I. Vertical FDI		II. Horizontal FDI	
Examples		Firm A establishes a foreign affiliate in a low-wage country, which handles a labor-intensive process. Then firm A becomes a supplier for the subsidiary instead of for domestic firm B.		Firm A establishes a foreign affiliate to more efficiently capture local demand and replaces its exports with local production.	
Diagrams	Before Investment				
	After Investment				
Effects on the Parent Firm	Employment			Decrease in domestic output through export substitution effect	-
		Increase in domestic output and exports through international division of labor	+		
		Strengthening of domestic headquarters	+	Strengthening of domestic headquarters	+
	Productivity	Economies of scale at plant level	+	Losing economies of scale at plant level	-
		Gaining access to new foreign technologies and knowledge	+	Gaining access to new foreign technologies and knowledge	+
Effects on (Consolidated) Profits		Decrease in input costs	+		
		Increase in transportation costs	-	Decrease in transportation costs	+
		Economies of scale at firm level	+	Economies of scale at firm level	+

Note: "Economies of scale at plant level" refers to the effect of an increase in production at a plant that belongs to the firm. "Economies of scale at firm level" refers to the effect of firm expansion through integrating administrative and/or R&D centers.

Examples: Horizontal and Vertical FDI (Continued)

		I. Vertical FDI		I'. Vertical FDI		II. Horizontal FDI	
Examples		Firm A establishes a foreign affiliate in a low-wage country which handles a labor-intensive process. Then firm A becomes a supplier for its subsidiary instead of for domestic firm B.		Firm A establishes a foreign affiliate in a low-wage country which handles a labor-intensive process. Then it replaces its downstream section by the subsidiary.		Firm A establishes a foreign affiliate to more efficiently capture local demand and replaces its exports with local production.	
Diagrams	Before Investment						
	After Investment						
Effects on Domestic Employment	Firm A	Increase in output through international division of labor	+	Increase in output through international division of labor	+	Export substitution effect	-
				Loses a labor-intensive process	--		
		Strengthening of domestic headquarters	+	Strengthening of domestic headquarters	+	Strengthening of domestic headquarters	+
		Total	+	Total	-?	Total	-?
	Firm B	Loses a labor-intensive process	--			Export promotion effect	+
	To-tal		-?		-?		+?

Note: From a macroeconomic perspective, there is also the indirect effect that domestic firms' employment potentially decreases as a result of losing competitiveness against multinational firms.

Table 1

Statistics on Japanese Firms' Overseas Activities

Name	Basic Survey of Japanese Business Structure and Activities (BSJBSA) (METI)	Survey of Overseas Business Activities (SOBA) (METI)	Quarterly Survey of Overseas Subsidiaries (METI)	OJC Database (Toyo Keizai Shinpo-sha)	FDI Database (Research Institute of Economy, Trade and Industry : RIETI)
Data Frequency	Annual	Annual	Quarterly	Annual	Annual
Survey Criteria	Industries: Manufacturing and representative non-manufacturing industries. Size: 50 or more employees and 30 million yen or more paid-in capital	Industries: All industries except the finance, insurance, and real estate industries. Size: No criteria.	Industries: All industries except the finance, insurance, and real estate industries. Size: 100 million or more paid-in capital and 50 or more employees. Manufacturing foreign affiliates with 50 or more employees.	No criteria.	—
Definition of Foreign Affiliates	Companies in which the surveyed companies hold no less than 20% of the voting power (or those significantly affected by the surveyed companies).	Companies in which Japanese parents hold no less than 10% of the voting power (or sub-subsidiaries in which subsidiaries, which are more than 50% funded by a Japanese parent, hold over 50% of the voting power).	Companies in which the Japanese headquarters hold 50% or more of the voting power (including indirect investment).	Companies in which the Japanese headquarters hold 10% or more of the voting power (including indirect investment).	
Surveyed Companies	37,876 domestic headquarters (FY2011), including firms without foreign affiliates.	6,127 domestic headquarters (FY2011).	4,828 foreign affiliates (2012/7-9)	6,398 domestic headquarters (2012 edition), including firms without foreign affiliates.	—
Response Rate	85.8% (FY2011)	72.3% (FY2011)	76.7% (2012/7-9)	53% (2012 edition) For non-responding companies, blanks are filled with utmost effort using press releases and other materials.	—
Data on Foreign Affiliates	Number of affiliates	Number of affiliates and employees, amount of sales, ordinary profit, capital formation, etc.	Amount of capital formation and sales, number of employees.	Number of affiliates and employees, date of establishment, amount of capital, etc.	Amount of sales, number of employees, etc.
Estimation Method	Simple aggregate.	Simple aggregate.	Simple aggregate (unavailable data are estimated using the growth rate for other respondents, etc.).	—	Population estimation method, with a firm-level dataset from SOBA and OJC database.
Main Advantages	High response rate.	Diverse statistics about foreign affiliates.	High frequency (quarterly).	Firm-level data with relatively small time lags.	Availability of the population estimates.
Main Disadvantages	Limited information on foreign affiliates.	Data fluctuation because of relatively low response rates and the lack of population estimation.	Small sample size.	Low response rate.	Unavailability of the most recent data.

Sources: Ministry of Economy, Trade and Industry; Toyo Keizai Shinpo-sha; Research Institute of Economy, Trade and Industry.

Table 2

Effect of Overseas Activities on Domestic Employment and Productivity: Preceding Studies

Firm-Level Studies on Japan

Authors	Coverage of Analysis		Effects on Domestic Firms		Details	Data Sources	Period	Method
	Parent Firms	Types or Destinations of FDI	Employment	Productivity				
Higuchi and Matsuura (2003)	M		Short run:- Long run:+	NA	Although firms' employment declines just after the FDI, in the longer run (after 5-6 years) the rate of decline becomes smaller than for domestic firms with no FDI.	BSJBSA	91-98	Heckman
Hijzen et al. (2007)	M		+	0	FDI increases firm-level employment by 6.9% three years later.	BSJBSA	95-02	DID with PSM
Obashi et al. (2009)	M	Horizontal FDI	Overall: 0 Production: -	Overall: 0 Production: 0	The effects on the domestic employment of production and non-production workers are estimated separately. The results suggest that horizontal FDI (here defined as FDI in developed countries) increases the employment of non-production workers.	BSJBSA & CM & SOBA	92-04	DID with PSM
		Vertical FDI	Overall: 0,+ Production: 0,+	Overall: 0 Production: +				
Hijzen et al. (2010)	M		NA	+	A 1 percentage point increase in the intra-firm offshoring ratio (the ratio of purchases of intermediate goods from foreign affiliates to total value added) increases firms' TFP by 0.12 percentage points.	BSJBSA	94-00	System GMM
Ito et al. (2010)	M		NA	+	Offshoring to foreign affiliates increases firms' TFP with a lag.	BSJBSA & Survey by RIETI	00-05	DID with PSM
Yamashita and Fukao (2010)	M		+	NA	A 10% increase in employment at foreign affiliates increases firms' domestic employment by 0.2%.	BSJBSA & SOBA	91-02	GMM
Edamura et al. (2011)	M	Production sector	0	0	Measure the effects on domestic employment and TFP 3 years after the FDI.	BSJBSA	94-06	DID with PSM
		Non-production sector	0	+				
		Europe / US	0	+				
		Asia	-	0				
Ito (2007)	M		NA	+	The effect of FDI on the TFP growth rate is 1.4 times as large for service parent firms as for manufacturing parent firms.	OJC & DBJ	80-05	DID with PSM
	S		NA	+				
Inui (2011)	M		0	0	Measures the effects on domestic employment and TFP 1 year after the FDI.	BSJBSA & SOBA	94-06	DID with PSM
	N		0	+				
Tanaka (2012)	M		+	NA	FDI increases domestic employment by about 12% in the manufacturing sector, and by about 9% in the wholesale and services industries.	BSJBSA	01-08	DID with PSM
	N		+	NA				

Notes: 1. M, N, and S denote the manufacturing, non-manufacturing, and service sector, respectively.

2. +, -, and 0 denote positive, negative and insignificant domestic effects, respectively. NA indicates that the issue was not analyzed.

3. The acronyms for the data sources stand for the following. BSJBSA: Ministry of Economy Trade and Industry (METI), *Basic Survey of Japanese Business Structure and Activities*. CM: METI, *Census of Manufactures*. SOBA: METI, *Survey of Overseas Business Activities*. OJC*:* Toyo Keizai Shinpo-sha, *Overseas Japanese Companies Database*. DBJ: Development Bank of Japan, *Corporate Financial Databank.* JIP: Research Institute of Economy, Trade and Industry (RIETI), *Japan Industrial Productivity Database.*

4. The acronyms for the estimation methods stand for the following. OLS: Ordinary least squares estimation. DID: Difference in differences estimation. PSM: Propensity score matching. Heckman: Adjustment of sample selection biases using Heckman model. IV: Instrumental variables. Panel FE: Fixed effect panel estimation. SUR: Seemingly unrelated regression. GMM: Generalized method of moments.

Table 3

Effect of Overseas Activities on Domestic Employment and Productivity: Preceding Studies (Continued)

Firm-Level Studies on Other Countries

Authors	Coverage of Analysis			Effects on Domestic Firms		Details	Period	Method
	Home Country	Parent Firms	Types or Destinations of FDI	Employment	Productivity			
Brainard and Riker (1997)	United States	M		-	NA	Instead of the direct effects of FDI, they measure the elasticity of domestic employment to foreign wage changes. They find that the substitution effect of foreign employment for domestic employment is small.	83-92	SUR
Chen and Ku (2000)	Taiwan	M	Low wage countries	0	NA	Both FDI in low-wage countries (defensive FDI) and that in high-wage countries (expansionary FDI) have a positive effect on firms' survival.	86-94	Heckman
			High wage countries	0	NA			
Braconier and Ekholm (2000)	Sweden	M	Low income countries	0	NA	Instead of the direct effects of FDI, they measure the elasticity of domestic employment to foreign wage changes.	70-94 (every 4 years)	Panel FE
			High income countries	-	NA			
Konings and Murphy (2003)	Europe	M	Developing EU countries	0	NA	Instead of the direct effects of FDI, they measure the elasticity of domestic employment to foreign wage changes.	93-98	Panel FE
			Developed EU countries	-	NA			
		N		0	NA			
Navaretti and Castellani (2004)	Italy	-		0	+	The study pioneered the use of PSM in this field.	93-98	DID with PSM
Kleinert and Toubal (2007)	Germany	-		0	0	Insignificant but positive effects on employment (robust to specification changes).	97-03	DID with PSM
Debaere et al. (2010)	Korea	-	Emerging countries	-	NA	FDI in emerging countries (countries less developed than Korea) decreases the employment growth rate, especially in the short run.	81-95	DID with PSM
			Developed countries	0	NA			
Tsou et al. (2013)	Taiwan	M	China	-	NA	The short-run effect on parent firm employment is measured. FDI in China has a negative effect on employment, especially for low-wage workers.	98-04	IV
Masso et al. (2007)	Estonia	M		+	NA	FDI by service sector firms has larger positive effects on employment than that of manufacturers.	95-02	DID with PSM
		S		+	NA			
Imbriani et al (2010)	Italy	M		+	+	DID estimation for the service sector indicates a significantly negative effect on productivity 1 year after the investment (for employment, a negative but insignificant effect is observed).	03-06	DID with PSM
		S		0	-			

Note: See the notes for Table 2.

Table 4

Effect of Overseas Activities on Domestic Employment and Productivity: Preceding Studies (Continued)

Industry-level Studies on Japan

Authors	Coverage of Analysis		Domestic Effects		Details	Data Sources	Periods	Method
	Parent Firms	Types or Destinations of FDI	Employment	Productivity				
Fukao and Yuan (2001)	M	Export substitution or reverse import	-	NA	Export substitution or reverse import FDI in Asia decreases domestic employment in the textile and electronic component industries. However, in the manufacturing sector as a whole, such a negative effect is cancelled out by the job creation effect of resource- or market-oriented FDI in Asia.	SOBA& CM	87-98	OLS
		Resource or market oriented	+	NA				
Agnese (2011)	All	Manufacturing	-	+	The effect on total employment is negligible (the effects of FDI in the manufacturing and service sectors cancel each other out). FDI in the service sector has a larger positive effect on TFP than FDI in the manufacturing sector.	JIP	80-05	GMM
		Services	+	+				

Industry-level Studies on Other Countries

Authors	Coverage of Analysis			Domestic Effects		Details	Period	Method
	Home Countries	Parent Firms	Types or Destinations of FDI	Employment	Productivity			
Bruno and Falzoni (1999)	United States	M		Short run: - Long run: +	NA	Although employment at foreign affiliates in Latin American countries and at parent firms in the United States are substitutes in the short run, they complement each other in the long run.	82-94	GMM
Amiti and Wei (2005)	United States	M	Manufacturing	0,-	+	They find a small negative effect of FDI on domestic employment when industries are finely disaggregated (450 categories). However, this effect disappears at a more aggregated industry level (96 categories), as it is cancelled out by increases in overall demand. FDI in the service sector has a larger positive effect on TFP than FDI in the manufacturing sector.	92-00	IV
			Services	0,-	+			
Molner et al. (2008)	United States Germany Japan	M		+	NA	A 1% increase in foreign affiliates' employment increases domestic employment by 0.1-0.2% two years later, although no significant effect is observed in Japan. A larger positive effect is observed in the service sector than in the manufacturing sector.	United States: 93-03 Germany: 94-01 Japan: 98-03	IV
		S		+	NA			
Alejandro et al. (2011)	United States	S		+	NA	A 1% increase in foreign employment increases domestic employment by 0.1%.	99-08	Regression (No details)

Note: See the notes for Table 2.