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Determinants of the Profitability of Japanese Manufacturing Affiliates in China and Other Regions:

Does Localization of Procurement, Sales, and Management Matter?[†]

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ABSTRACT

Does localization of procurements, sales, and management contribute to the profitability of overseas affiliates? This study examines this question by analyzing the performance of Japanese multinationals' manufacturing affiliates in China using a comprehensive affiliate-level dataset for the period from 1989 to 2002 collected by the Ministry of Economy, Trade and Industry (METI).

We find that even though foreign multinationals often seem to enter China for the local market potential, affiliates with a higher local sales ratio tend to be less profitable – a pattern that is conspicuously different from that observed for Japanese affiliates in other regions such as the USA or the ASEAN-4, where local sales orientation has a positive impact on profitability. On the other hand, we find that Japanese affiliates' profitability was positively associated with their local procurement ratio.

Using the coefficients of the profit function estimated from data on all Japanese manufacturing affiliates around the world, we can calculate the effect of localization (local sales and local procurements) on profitability by country, controlling for the level of GDP and per-capita GDP. In the case of China, the localization effects are positive following the country's accession to the WTO, suggesting that both local procurement and sales expansion contribute to higher profitability in China.

Key words: Foreign direct investment, China, multinational enterprises, profitability, affiliates, WTO, localization.

JEL classification: F23; L25; L60

1. Introduction

Foreign direct investment by Japanese manufacturing firms has expanded greatly since the mid-1980s. Reflecting this increase, a large body of literature on Japan's outbound foreign direct investment (FDI) has sprung up, examining the behavior of Japanese multinational enterprises (MNEs) and related issues such as productivity and technology transfer effects.

Utilizing firm-level data, studies have, for example, focused on the determinants of the location decision of Japanese MNEs, productivity differences between foreign-owned and local firms, technology transfer and spillovers, etc.[1] In this study, we are particularly interested in the localization of procurement and management by Japanese MNEs. In this context, Urata et al. (2006) found that in the case of Japanese affiliates in Asian countries, the longer the length of operation of an affiliate, the more top management, sales, and labor management responsibilities tended to be performed by local rather than by expatriate Japanese staff. Kiyota et al. (2005), meanwhile, found that there was a positive correlation between the length of Japanese affiliates' operation and local procurement for affiliates in East and Southeast Asia, especially in China, but not for affiliates in developed countries.[2] These studies therefore indicate that Japanese affiliates in Asia have been promoting the localization of management and procurement as their business experience in the host country has increased, suggesting that this "vintage" factor is an important determinant of the degree of localization.

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[1] Studies on Japanese MNEs overseas and on foreign MNEs in Japan include Belderbos and Carree (2002) and Head et al. (1995) on the location decision of Japanese MNEs; Fukao et al. (2003), Kimura and Ando (2003), and Ando and Kimura (2005) on the international division of labor and fragmentation; Kimura and Kiyota (2006a, 2006b), Fukao, Ito, and Kwon (2005), and Fukao and Murakami (2005) on productivity difference between local and foreign firms in Japan. A comprehensive survey of these issues related to MNEs from and in other countries is provided by Lipsey (2004).

[2] Research by Belderbos et al. (2001) also found evidence of this "vintage" factor, i.e., the fact that long-established affiliates displayed more extensive vertical linkages (i.e., local procurement).

These findings raise the question whether such localization efforts have a positive impact on the performance of MNEs' affiliates. Despite the rapid growth of overseas activities by MNEs, there has been little rigorous research on this topic, although some management studies have examined the profitability of international joint ventures or the overseas affiliates of MNEs. One of the few related studies in the field of economics is that by Sakakibara and Yamawaki (2004), which indicates that experience, local supplier networks, local sales, and macroeconomic conditions all affect the performance of Japanese subsidiaries in a manner that differed by region. The results suggest that in the case of affiliates in the European Union (EU) and the ASEAN countries, local supplier networks contribute to the profitability of subsidiaries with a long local presence, while in the case of affiliates in the United States, it is parent firms' technological capabilities and favorable macroeconomic conditions in the country that contribute to profitability. An important message of this study is that the profitability of overseas subsidiaries reflects market and firm-specific conditions, and managers need to take these conditions into account in the decision to invest in a particular country rather than simply adopting a "me-too" approach.

Unfortunately, the Sakakibara and Yamawaki study, which covers the period from 1990 to 1996, does not analyze the profitability of Japanese MNEs' affiliates in China, where Japanese FDI has been rapidly increasing since the early 1990s.[3] According to the 21st Century China Research Institute (2005), as of 2005, 913 out of the 1,661 firms (58%) listed on the First Section of the Tokyo Stock Exchange[4] had affiliates or subsidiaries in China. Moreover, the annual survey by the Japan Bank of International Cooperation also shows that China has been the most popular destination for

[3] Japan's cumulative FDI stock in China reached 20.2 billion US dollars as of the end of 2004, accounting for 26 percent of Japan's total cumulative FDI stock in Asia. China ranks fourth in terms of Japan's outward FDI stock, behind only the United States, the Netherlands, and the United Kingdom (JETRO 2006).

[4] There are three separate sections on the Tokyo Stock Exchange: the First and the Second Section, and Mothers (the venture capital market). The First Section is basically for the largest companies.

outbound FDI by Japanese firms in the medium- and the long-term since 1995 (JBIC, 2000, 2005). The annual survey, however, also shows that in the 1990s, Japanese firms were much less satisfied with their business performance in China than in other regions, although the degree of satisfaction with the performance in China has improved since 2000 (Figure 1). Studies also suggest that many Japanese-owned firms have not been successful in increasing their market share in the Chinese market and have to contend with severe competition from other foreign-owned as well as local companies (Marukawa, 2005).[5]

INSERT Figure 1

Against this background, the purpose of this study is to examine whether the localization of procurement, sales, and management contributes to the profitability of Japanese overseas manufacturing affiliates. More specifically, we concentrate on the performance of Japanese affiliates in China and, using a comprehensive affiliate-level data set for the period from 1989 to 2002 collected by the Ministry of Economy, Trade and Industry (METI), try to identify the key determinants of affiliates' performance and whether these determinants differ from those in other regions. While the Sakakibara and Yamawaki (2004) paper provided some important evidence on differences in the profitability and localization of Japanese affiliates by region, the advantages of this study are that the data cover more recent years and contain a large number of observations on

[5] Pu and Que (2004) discuss unsuccessful cases of transnational corporations in China, including several cases involving Japanese firms. They mention the following factors responsible for the failure of foreign multinationals in China: a large influx of competing foreign firms, local protectionism and bureaucracy, anti-foreign sentiments, a lack of understanding of China's market conditions and business practices, insufficient cooperation with Chinese partners in joint ventures, inappropriate marketing strategies, and a number of other factors. Examining aggregate industrial total factor productivity in China for the period from 1980 to 1996, Jefferson et al. (2000) compare the productivity of state-owned, collective-owned, and other enterprises. Other enterprises are further divided into foreign-invested enterprises, shareholding firms, and other domestic enterprises. They find that productivity is unexpectedly low for foreign-invested firms.

Japanese affiliates in China, enabling us to focus on affiliates in China.

Sakakibara and Yamawaki (2004) found that local supplier networks and local sales, i.e., localization, affect the performance of subsidiaries in a manner that differed by region. One possible explanation of this finding is the following. The importance of localization may depend on whether the FDI is of the horizontal or the vertical type. Horizontal FDI tends to be market-seeking, i.e., the investment is undertaken to better supply local or regional markets, even though this may incur additional costs. Vertical FDI, on the other hand, consists of the transfer abroad of one or more stages of production, generally in order to access low-cost inputs and to use the output to supply other parts of the multinational's operations by means of intra-firm exports.[6] Generally, in the case of vertical FDI, which is widely seen in Asian countries, efficient local procurement will be a key determinant of profitability if imports of parts and components are relatively costly. On the other hand, in the case of horizontal FDI, local sales expansion may help to improve profitability. A large part of Japanese FDI in China is vertical FDI and Japanese MNEs utilize their Chinese affiliates as assembly and export bases. At the same time, however, many Japanese firms think of China as promising because of the country's large market and growth prospects (JBIC, 2000), suggesting that horizontal FDI and local sales expansion may become quite important in the near future. In other words, although many Japanese firms emphasize the importance of the local market in China, most Japanese affiliates in the country so far seem to serve only as a plant which takes on one or more stages of production as part of the parent firm's international division of labor. Japanese affiliates in China seem to purchase parts and materials from suppliers designated by the parent firm and to sell their products to destinations also designated by the parent firm, without any strategic view on local suppliers or the local market. Therefore, Japanese FDI in China requires a strategic vision where firms pursue an efficient utilization of low-cost local inputs in the case of vertical FDI or better and

[6] For a theoretical analysis of horizontal and vertical FDI, see Barba Navaretti and Venables (2004).

cheaper market access in the case of horizontal FDI. Particularly for firms intending to profit from China's growing market, local market orientation will be an important strategic element. The results of this paper also suggest that in recent years, there has been a positive relationship between profitability and the local sales ratio in China, particularly following China's accession to the World Trade Organization (WTO), although affiliates in China with a higher local sales ratio tended to be less profitable during the 1990s.

The remainder of this paper is organized as follows. The next section provides an overview of Japanese MNEs' manufacturing activities in China and other major regions and presents some descriptive statistics of our affiliate-level data set. Section 3 outlines our hypotheses on the determinants of affiliates' profitability and presents regression analyses to test the hypotheses for five major regions: China, the USA, the EU15, the NIEs4, and the ASEAN4. Section 4 then provides a more detailed discussion of the determinants of the profitability of Japanese affiliates in China, while Section 5 summarizes the main findings and concludes.

2. An Overview of Japanese MNEs' Overseas Manufacturing Activities

According to the *Basic Survey on Overseas Business Activities*, which is conducted annually by METI, total sales by Japanese overseas manufacturing affiliates worldwide reached 60 trillion yen in 2001, while employment stood at 2.5 million workers (Table 1).[7] As the total domestic output

[7] The figures in Table 1, which we compiled by aggregating the affiliate-level data underlying the METI annual survey should be treated with a degree of caution as the response ratio of the survey is only around 60 percent. For example, it was 60.4 percent in the 1996 survey, 63.4 percent in the 2000 survey, and 64.8 percent in the 2003 survey. The figures in Table 1 may therefore underestimate Japanese firms' overseas activities. RIETI (Research Institute of Economy, Trade and Industry) tried to address this shortcoming by estimating the size of non-respondents' activities through interpolation (RIETI, 2005). According to these estimates, Japanese overseas manufacturing affiliates' total sales in 2001 were 67 trillion yen, while employment stood at 3.2 million. For detailed information on the construction of the panel data set, see Matsuura (2005).

and the total number of employees in the Japanese manufacturing sector in 2001 were 284 trillion yen and 12.3 million people respectively, Japanese firms' overseas manufacturing activities are equivalent to approximately 11 percent of domestic output and 20 percent of domestic employment. The most conspicuous feature of outbound Japanese FDI since the early 1990s is that the number of Japanese affiliates in China as well as their sales and employment have been increasing rapidly. According to the METI survey, there were 1,105 Japanese affiliates in China with sales of 3.3 trillion yen and employing 0.49 million workers as of 2001. This means they accounted for 5 percent of sales and 19 percent of employment of all Japanese overseas affiliates. Thus, although the share of Japanese firms' Chinese affiliates is relatively small in terms of overall sales, their share in terms of employment is substantial.

Looking at inward FDI statistics published by the Chinese government (Ministry of Commerce, People's Republic of China, 2004 and 2005), direct investment inflows from Japan account for 8.3 percent of cumulative inward FDI flows, making Japan the third largest foreign investor in China (the second largest if Hong Kong is excluded) (Table 2).[8]

INSERT Tables 1 & 2

Given the large role China plays as a destination for Japanese FDI in the manufacturing sector, let us have a look at the profitability and other characteristics of Japanese affiliates in China using our affiliate-level data. METI's *Basic Survey on Overseas Business Activities* (hereafter simply the

[8] If inward FDI from Hong Kong, Taiwan, and Macao is excluded, Japan's share in cumulative inward FDI flows stands at approximately 17 percent (as of 2004). In terms of employment, the Chinese statistics report that the total number of staff and workers in foreign-funded firms was 2.4 million at the end of 1995 and 3.3 million at the end of 2001. This means that Japanese affiliates accounted for 9.8 percent of all employment by foreign-funded firms in 1995 and for 20.1 percent in 2001. (According to the METI statistics, the number of workers employed by Chinese affiliates of Japanese firms was 0.23 million in 1995 and 0.66 million in 2001.)

"survey"), from which the data for our analysis come, covers 2,000+ parent firms and their approximately 14,000 overseas affiliates (about half of which fall into the manufacturing sector). The analysis in this paper relies on the affiliate-level data underlying this survey for the period from fiscal 1989 to fiscal 2002. In the survey, a foreign affiliate of a Japanese firm is defined as follows: (1) a foreign firm in which a Japanese firm holds 10 percent or more of the equity, or (2) a firm in which more than 50 percent of the equity is held by a foreign affiliate that is itself more than 50 percent Japanese-owned. In the survey, each affiliate has its own unique name and identification code with which we are able to construct affiliate-level panel data. Unfortunately, many affiliates do not respond every year to the survey, so that the panel is unbalanced and has a lot of missing observations. The survey allows us to identify basic information for each affiliate and year such as the country and industry in which the affiliate operates, its number of employees, and the Japanese ownership ratio, as well as some financial data such as ordinary profits and the amount of sales and procurements (including a breakdown of the destination of sales, e.g., local sales and export sales, and the origin of procurements, e.g., local procurements and imports). In addition to the basic annual survey, a detailed survey is conducted every three years, which provides more detailed financial data, a more detailed breakdown of sales destinations and procurement sources, as well as information on qualitative aspects such as how a foreign affiliate was initially established (as a joint venture, a wholly-owned establishment, through M&A, or by taking an equity share), and the assignment of local staff to positions of responsibility. The name and identification code of each affiliate's parent firm are also provided, which enables us to control for parent-firm specific characteristics.

Using these data, we calculated the average profit rates of Japanese affiliates in the manufacturing sector and the machinery sector for each region (Figures 2 and 3).[9] Due to data

[9] Regions are classified as follows: USA, EU15 (the original 15 member countries of European Union), China, NIEs4 (Hong Kong, Korea, Singapore, and Taiwan), and ASEAN4 (Indonesia, Malaysia, the

constraints, we mainly use the ratio of ordinary profits (before tax) to total sales (ROS) as our measure of profitability, although we also use the ratio of profits (before tax) to total assets (ROA).[10] After excluding defective observations and outliers, we aggregated affiliate-level ordinary profits and sales at the industry level by region and calculated the profit rate by dividing the aggregated profits by the aggregated sales for each industry and region.[11] As shown in Figures 2 and 3, the profit rates of affiliates in Asia (China, the NIEs4, and the ASEAN4) tend to be higher than of those in the United States or the EU15 although the profit rates often fluctuate. The firm-level profit rates in Japan calculated in the same manner using the firm-level data underlying METI's *Basic Survey of Japanese Business Structure and Activities* are also shown in Figures 2 and 3 for reference. The level of profit rates in Japan is somewhere in between profit rates in Asia and those in the US and the EU. In Figure 2, the profit rates of affiliates in Asia (China, the NIEs4, and the ASEAN4) move between 2.65 percent and 6.95 percent with the exception of 1997, while those of affiliates in the USA and the EU15 vary between −2.52% and 2.65%. Although the gap in profitability between affiliates in Asia and in the USA and the EU15 has been shrinking in recent years, the observed pattern that affiliates in Asia tend to be more profitable is in line with the findings of Sakakibara and Yamawaki (2004) for the 1990−96 period. The regional breakdown for the machinery industries (Figures 3) also shows that affiliates in Asia have been more profitable than those in the USA and the EU15 in most

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Philippines, and Thailand).

[10] Although the ratio of operating profits to sales or of profits to total assets would be preferable as measures of profitability, information necessary to calculate operating profits such as the cost of goods sold and SGA (Sales, General and Administrative) costs, have been included in the survey only since 1994, while asset data are available only every three years.

[11] Our data cleaning strategy was as follows: First, we excluded all observations on firms which (1) had been established less than 3 years before, (2) reported zero or negative total sales or total purchases, or (3) reported a sales-purchase ratio (=(sales−purchases)/sales) of ≥ 1 or ≤ -1. After excluding these observations, we also excluded observations of firms whose profit-sales ratio fell into the top or bottom 5 percent of the distribution.

years, underscoring the general pattern observed in Figure 2. Contrary to what firms' assessment of their overseas affiliates' profitability (Figure 1) suggests, profit rates in China actually are not particularly low when compared with the US and the EU15. However, this discrepancy may be the result of the fact that managers expect a higher profitability when pursuing cost-reducing vertical FDI compared with trade friction-avoiding horizontal FDI. Or it may be because they take account of the severe competition with local firms in the US or EU market.[12] On the other hand, the slight improvement shown in the profitability of affiliates in China since the mid-1990s has been mirrored in a more upbeat assessment in the JBIC survey.

In addition, we can see a somewhat pro-cyclical movement in profit rates with the macro-economic conditions of the host countries, although this tendency is not very strong. In Figures 2 and 3, the profit rates of affiliates in the US affiliates dropped in 1990, then steadily improved throughout the 1990s, and fell again in 2001 – a pattern that roughly corresponds to macro-economic developments in the United States. Profit rates of affiliates in the EU also sharply contracted in 1991 and have been hovering below 2% since then, mirroring the sluggishness of the EU economy. Affiliates in Asia (particularly in the ASEAN4) experienced a fall in profit rates in 1997-1998 as a result of the Asian financial crisis, but profitability has been steadily recovering since.

INSERT Figures 2 and 3

Next, let us look at several affiliate-specific characteristics as well as other measures of profitability by region. Table 3 shows the mean and standard deviation for various variables representing affiliate-specific characteristics in 1995, 1998 (only for China) and 2001 for all

[12] Other possible reasons that may be partly responsible for the discrepancy is that less profitable affiliates may not report any profits or that the sample size for affiliates in China is relatively small for the early 1990s.

manufacturing industries.[13] Looking at the means of our profitability measures, we find that affiliates in the ASEAN4 are the most profitable, followed by those in the NIEs4, both in 1995 and 2001. Although the profitability of affiliates in China is the lowest in 1995, it gets closer to the level of profitability in the NIEs4 and becomes far larger than that of affiliates in the USA and the EU15 affiliates in 2001, which suggests that the profitability of affiliates in China has improved since the mid-1990s. As for other characteristics, affiliates in Asia, particularly in China, are much smaller in size in terms of sales compared with affiliates in the US and the EU. Average sales by Chinese affiliates were 2.2 billion yen in 1995 and 3.1 billion yen in 2001, which was less than one-sixth in 1995 and one-seventh in 2001 of the average sales of a US affiliate. Moreover, the average years of operation are much shorter for Chinese affiliates than for affiliates in other regions. Japanese ownership ratios are smaller in Asia than in other regions, which may reflect the fact that governments in developing countries often impose regulations on ownership ratios. Closely related to this issue, the share of affiliates established through joint ventures in the total number of affiliates is higher in Asia than in the USA and the EU15. As for local procurement ratios, the mean varies between 45 percent (EU15) and 66 percent (USA) in 1995 and between 50 percent (EU15) and 66 percent (USA) in 2001.[14] Although affiliates in the Asian regions show a smaller average local

[13] As mentioned before, some variables, such as assets and the assignment of local employees to positions of responsibility, are included only in the comprehensive survey conducted every three years. Although data from comprehensive survey are available for 1989, 1992, 1995, 1998, and 2001, Table 3 only shows summary statistics for 1995, 1998, and 2001 because of the small sample size for China for the years before 1995. For a detailed description of the variables, refer to Table 5.

[14] The relatively low local procurement ratio for the EU15 countries may be because affiliates in EU countries actively purchase materials and components from other EU member countries but due to data constraints our data do not take such intra-regional procurement into account. Our definition of local procurement is purchases within the host country. Although the survey breaks down purchases by region (local, Japan, North America, Asia, and Europe, etc.), we cannot distinguish procurements from EU member countries and procurements from non-EU member countries in Europe.

procurement ratio than those in the US, the gap among the regions is not very large. On the other hand, average local sales ratios range from 50 percent (China) to 88 percent (USA) in 1995 and from 57 percent (ASEAN4) to 89 percent (USA) in 2001.[15] China shows the smallest average local sales ratio of all the five regions in 1995, but the ratio becomes slightly larger than that for the ASEAN4 in 2001. Looking at Japanese affiliates in China, both the average local procurement and local sales ratios increased during the period from 1995 to 2001. In contrast, both the localization ratios decreased in the NIEs4, which most likely is due to the deepening international division of labor between the NIEs and China. As for the ASEAN4, the local sales ratio declined while the local procurement ratio increased, which suggests that many Japanese affiliates began to put more emphasis on exporting and may reflect the increasing importance of the intra-regional market for the ASEAN4 countries since the latter half of the 1990s.

As for the localization of management, affiliates in the ASEAN4 countries were the least likely to assign local staff to positions of responsibility when compared with affiliates in other regions. During the period from 1995 to 2001, the share of affiliates whose CEO was a local decreased in all the five regions. As for sales and procurement managers, the share of affiliates which had locals in these positions decreased in China and the NIEs4, while it increased in the ASEAN4.

Looking at affiliates which continued operating in China during the period from 1998 to 2001, the local procurement ratio increased by 5.5 percentage-points, while the local sales ratio increased by only 0.8 percentage-points. The Japanese ownership ratio also increased during this period. Local employees were less likely to appointed as CEO or manager in 2001 than in 1998, although the localization of procurements and sales showed some progress.

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[15] As explained in the previous footnote, in the case of affiliates in the EU, local sales do not include sales to other EU countries.

Table 4 shows the same information as Table 3, but this time only for the electrical machinery industry. The general pattern for the electrical machinery industry is similar to that for the manufacturing sector as a whole. However, the local procurement and sales ratios tend to be lower for affiliates in the electrical machinery industry than those for the manufacturing sector as a whole, though on the other hand, the Japanese ownership ratio tends to be higher. The average local sales ratio in the electrical machinery industry is much lower for Asian (China, NIEs4, and ASEAN4) affiliates than for affiliates in the USA and the EU15, which may be a reflection of the fact that Asian affiliates in this industry are more likely to be involved in the vertical division of labor and hence function as suppliers of components or finished products to other operations of the MNE through intra-firm exports. Moreover, local employees are less likely to hold positions of responsibility in the electrical machinery industry than in the manufacturing sector as a whole. These patterns are consistent with the observation in UNCTAD (2001) that headquarters tend to exert stronger control in the case of the vertical international division of labor. Looking at affiliates which continued operating in China during the period from 1998 to 2001, we find that the local sales ratio decreased by 5.1 percentage points, while the local procurement ratio slightly increased by 1.5 percentage points. This finding suggests that electrical machinery affiliates in China are becoming more export oriented.

As we have seen so far, both the local procurement and the local sales ratio increased in most regions both in the electrical machinery industry and in the manufacturing sector as a whole during the period from 1995-2001. The Japanese ownership ratio increased in all cases, while the share of affiliates whose CEO was a local decreased in most cases. These trends suggest that Japanese MNEs have been seeking to exert stronger control over their overseas affiliates while at the same time gradually promoting the localization of procurement and sales. Affiliates in China show a higher degree of localization of sales and procurements than those in the ASEAN4, although the degree of

localization still remains lower than in the USA and the EU15.

INSERT Tables 3 and 4

3. Does the Degree of Localization Determine the Profitability of Overseas Affiliates?

The descriptive analysis in the previous section has shown that Japanese affiliates in Asia have tended to be more profitable than those in the USA and the EU15 in most years in the period from 1989 to 2002, but the profitability has often fluctuated cyclically with the macroeconomic conditions in the host country. Thus, what we find is that profitability varies both across regions and over time.[16] Moreover, so do many of the affiliate-specific characteristics. Although the cross-regional variation in local sales and procurements and in the assignment of local staff to positions of responsibility are not particularly large, localization efforts may nevertheless have a significant impact on affiliates' profitability, once other affiliate- and region-specific factors are taken into consideration.

In this section, we briefly describe our hypotheses on the relationship between the degree of localization and the profitability of affiliates. Then, by conducting regression analyses by region, we test our hypotheses and whether the determinants of profitability differ across region.

Local linkages

We hypothesize that the extent of local procurements and sales depends on the type of FDI – horizontal or vertical – a particular investment represents. Foreign affiliates that are part of global production systems (vertical FDI) are likely to be more dependent on centralized corporate sourcing and less able to choose suppliers or sales destinations freely than other affiliates (UNCTAD 2001).

[16] Sakakibara and Yamawaki (2004) found that, in addition, affiliates' profit rates also vary across industries.

In the case of horizontal, i.e., market-seeking FDI, on the other hand, foreign affiliates generally have more decision-making autonomy and may be more likely to forge local linkages. However, even vertical FDI-type foreign affiliates may be able to improve their profitability if they can successfully develop local supplier networks. This is because backward linkages, as emphasized by Belderbos et al. (2001: 190), "are associated with frequent information flows, which allow for quality improvements, reduced delivery times, and fast upgrading of designs in response to changing demand conditions for final products." A greater local procurement ratio as a result of local content requirements, in contrast, may have a negative impact on profitability. As for the local sales ratio, greater sales in the local market should result in higher profits in horizontal FDI-type foreign affiliates when Japanese MNEs have a competitive advantage over local firms. However, in vertical FDI-type foreign affiliates, which are intended as low-cost production and export bases to third countries, the lower local sales ratio may be associated with higher profits.

Equity ownership

When parent firms hold a greater equity share, they are able to exert a greater degree of control over their affiliates. As Sakakibara and Yamawaki (2004) argue, firms whose source of competitive advantages springs from knowledge-based intangible assets may be motivated to maintain tighter control over their foreign affiliates to achieve better performance. Therefore, following Sakakibara and Yamawaki (2004), it may be hypothesized that profitability of the affiliate is positively associated with the Japanese ownership ratio. Furthermore, a greater equity involvement may allow parent firms to pursue more centralized sourcing and sales policies, which under some conditions may contribute to better performance. On the other hand, though, a greater equity ownership results in lower profitability at the affiliate if parent firms engage in transfer pricing in transactions with the affiliates.

In addition, particularly in developing countries, joint-ventures with local firms sometimes enjoy advantages in negotiations with local governments and with other local clients. In such cases, a higher Japanese ownership ratio may not be always associated with higher profits.

Assignment of local staff

Urata et al. (2006) found wide variations across job categories and across regions in the extent to which locals occupied positions of responsibility. Particularly in developing countries, local managers are better at negotiating with local governments and firms than expatriates from parent firms, which may have a positive impact on performance. Urata et al. (2006) assume that intra-firm technology transfers from parent firms to their foreign affiliates have been achieved if local employees, rather than Japanese employees, can be found in management positions. According to Urata et al.'s definition of technology transfer, affiliates where more locals are found in positions of responsibility can be considered to have absorbed more technology or know-how and may therefore achieve better performance.

Other affiliate-level characteristics

As discussed by Sakakibara and Yamawaki (2004), the scale of an affiliate can be used as a proxy for its market power and efficiency, and affiliates with longer experience in a host country usually have better location-specific skills and know-how than new foreign entrants. Therefore, we expect the profitability of an affiliate to be positively associated with its size and experience.

Taking these factors into account, we carry out regressions to examine what determines the profitability of Japanese overseas affiliates. We first run separate regressions for each of the five regions we are concerned with. We use a simple reduced-form specification, estimating the

following profit equation (1):

$$\Pi_{it} = \beta_0 + Z'_{it}\beta_1 + \gamma_j + \lambda_k + \omega_t + \varepsilon_{it} \quad (1)$$

where Π_{it} is the measure of profitability of affiliate *i* in year *t*, β_0 is the intercept, Z_{it} is a vector of affiliate-level control variables likely to influence firm performance, γ_j represents industry-specific fixed effects for industry *j* in which affiliate *i* operates, λ_k represents country-specific fixed effects for host country *k* where affiliate *i* operates, ω_t is a dummy for year-specific effects, and ε_{it} is the error term. As for the dependent variable, various measures of profitability are employed, but we primarily rely on the return on sales (ROS), which is defined as the ordinary profit over total sales. One may argue that the return on sales is not an appropriate measure of profitability because particularly in processing and assembly-type industries, value added is relatively small compared with the total sales amount. Therefore, as a supplementary measure, we employ the return on assets (ROA), defined as the ordinary profit over total assets, as the dependent variable.[17] Table 5 provides a summary of the description of variables and Table 6 presents the OLS regression results of our basic estimation. The results suggest that the size and experience of affiliates (LnSALE and AGE) in many cases, as expected, have a significant positive effect on profitability, while the Japanese ownership ratio (J_OWN) has a negative effect in all cases (the negative effect is significant in many equations).[18] The coefficients on the other explanatory variables, however, vary across regions. As for the effect of localization on profitability, the results show some conspicuous difference between China and the other regions: (1) for affiliates in China, profitability is positively associated with the

[17] Information on affiliates' total assets to calculate returns on assets is available in the comprehensive survey conducted every three years. Thus, because the number of observations for ROA is much smaller, we mainly concentrate on ROS as the dependent variable in our analysis.

[18] When the squared value of the Japanese ownership ratio (J_OWN) is included as an explanatory variable, the estimated coefficient on this variable is negative, while the estimated coefficient on J_OWN is positive in most cases. Using the estimated values, the Japanese ownership ratio at which profitability in China, for example, is highest is approximately 56%.

local procurement ratio (L_PRC) and negatively associated with the local sales ratio (L_SALES), whereas the opposite tends to be the case for affiliates in the other regions; (2) the localization of management, i.e., making a local the CEO (L_CEO), has a significant positive impact on profitability for affiliates in China, but no significant impact can be discerned in the other regions; (3) having a local as procurement manager (L_PRC_MNG) also has a significant positive impact on profitability for affiliates in China.[19]

As for forms of initial establishment, joint-venture affiliates and wholly-owned affiliates tend to show higher profitability than affiliates established by taking an equity share.

INSERT Tables 5 and 6

In sum, we found that local procurement and the assignment of locals to positions of responsibility has a positive impact on profitability in China, while local sales have a negative impact. We check the robustness of these results by estimating an equation that includes the parent firm dummy (eq. 2):

$$\Pi_{it} = \beta_0 + Z'_{it}\beta_1 + \gamma_j + \lambda_k + \omega_t + \theta_f + \varepsilon_{it} \qquad (2)$$

where θ_f denotes the specific effect for parent firm *f*. The results are presented in Table 7. We find that the sign on the coefficients in the regression for China do not change even when controlling for parent-firm specific factors. The results confirm that local sales-oriented affiliates in China are significantly less profitable than those in the other regions. In particular, we can see an interesting

[19] Hideshi Itoh has pointed out that a higher Japanese ownership ratio may mean stronger intervention by parent firms and this stronger intervention may negatively affect affiliates' incentives to increase their own profits. In such a case, by assigning a local person as CEO and lowering the Japanese ownership ratio, parent firms may be able to convince the affiliates that the parent will not intervene in the affiliate's operations. As a result, the affiliate's profitability may improve.

contrast between the China equation and the ASEAN4 equation. In China, profitability is positively associated with the local procurement ratio, but this is not the case in the ASEAN4. The insignificant coefficient in the ASEAN4 case may be a reflection of the fact that in the ASEAN countries, affiliates organize procurements at the regional rather than the national level, resulting in the weak relationship between local procurements and profitability. In China, profitability is negatively associated with the local sales ratio, while in the ASEAN4, profitability is positively related with local sales. The ASEAN4 countries have been very important destinations for vertical FDI by Japanese MNEs, and Japanese affiliates have played a key role in the industrial and technological development of these countries since the 1980s. Thus, Japanese affiliates in the ASEAN countries have become part of the local industrial landscape and possess their own sales networks. Affiliates in China, on the other hand, have less experience in the local market than their counterparts in the ASEAN4 and are still in the process of developing backward and forward linkages with locally-owned and foreign-owned firms. Moreover, as JBIC (2003) reports, many Japanese affiliates in China find it difficult to expand local sales because they cannot compete on price with locally-owned firms for general-purpose products. Yet another factor is the lack or inadequacy of local institutions, such as for the protection of intellectual property rights, which hinder the expansion of local sales by Japanese MNEs.

INSERT Table 7

One might argue that the pooled OLS regressions above do not yield meaningful results because firms can, to some extent, shift profits between the affiliate and the parent or among affiliates. As explained by Sakakibara and Yamawaki (2004), fixed-effect panel regression ameliorates this problem as long as the taxation/transfer pricing policy does not change for a given

affiliate over the period concerned. Furthermore, fixed-effect panel regression allows us to control for other unobserved affiliate-specific, parent-specific, industry-specific, and country-specific effects and to focus on the variables which change over time.

The results of the fixed-effects panel regression are shown in Table 8.[20] Although the local procurement ratio has a positive coefficient and the local sales ratio has a negative coefficient in the estimation for China, the estimated coefficients are not statistically significant. This may be because the sample size for China is relatively small and the local procurement and local sales ratios did not change much over time.[21] The local sales ratio still has a positive impact on profitability in the ASEAN4, which is consistent with the results shown in Tables 6 and 7. For affiliates in the NIEs4, the local procurement ratio has a significant positive coefficient and the local sales ratio has a significant negative coefficient. This may be a reflection of the fact that the NIEs4 countries possess large numbers of local suppliers with relatively high technological capabilities but domestic market growth has not been strong.

INSERT Table 8

[20] Although we can control for firm-specific fixed factors by employing the fixed-effects panel estimation, it may still be argued there could be an endogeneity problem. This would be serious if profitable firms were more aggressive in using local parts and components or selling their products locally. However, in general, sources of procurement and destinations of sales are planned in advance and profits are realized as a result of these activities. Therefore, we think that endogeneity should not be a serious problem in our setting. Actually, we tried to estimate the model using the system GMM estimation method developed by Blundell and Bond (1998) to eliminate firm-specific fixed effects and to correct for any potential endogeneity. However, we did not obtain any stable results. Moreover, the Hansen J test statistics indicated over identification and the Arellano-Bond test statistics indicated the existence of serial correlation.

[21] The average number of observations for an affiliate is 3.1 in the case of the China regression in Table 8, which means that the number of time-series observations for an affiliate is small and that it is difficult to test the effect of time-series variation in the localization variables.

4. The Profitability of Japanese Affiliates in China

In this section, we look more closely at the relationship between localization and the profitability of Japanese affiliates in China. As we have seen in the previous section, the local procurement ratio tends to have a positive impact on profitability while the local sales ratio tends to have a negative impact for Japanese affiliates in China.[22] However, we can conjecture that given the large size and the high growth rate of the local Chinese market, local sales oriented affiliates expect a higher growth rate of sales and higher profitability in the future even though they are currently suffering from low profitability. As for local procurement, China has a relatively better industrial infrastructure and a more abundant labor force than other developing countries, which may explain the positive impact of local procurement on profitability. In some developing countries, foreign MNEs are sometimes forced to use local parts and components under government local content requirements, even though local firms may lack the necessary capabilities and it would be more profitable to use imported parts and components. The positive relationship between the local procurement ratio and profitability in China we found in the regression analysis above may imply that foreign MNEs should promote local procurement and utilize local materials. In this section, we examine whether Japanese affiliates in China should indeed increase local sales and procurements.

First, let us look at differences in the performance and affiliate-specific characteristics of local affiliates that are local-sales oriented and those that are not.[23] Table 9 shows the mean value of each

[22] A potential concern regarding the reliability of our results is that the Chinese government offers preferential treatment to export-oriented foreign-owned firms and that this may cause the higher profitability of firms with a low sales ratio. In fact, many Japanese affiliates are located in special economic zones, where various tax exemption packages are applied to export-oriented firms. Moreover, in bonded areas or in export processing zones, exporting firms are offered tariff and tax exemptions for imports of necessary equipment and materials. In this study, we use the before-tax profit as our profit variable in order to remove or at least mitigate the effect of corporate tax exemptions.

[23] We used the following methodology to determine whether a Japanese affiliate in China is local sales-oriented or not. We first calculated the median of the local sales ratio for all manufacturing affiliates

variable for each of the two groups. We also conduct t-tests in order to examine whether the difference in the mean values of the two groups was statistically significant; the results of the t-tests are included in the table. The results suggest that local sales-oriented affiliates tend to have a higher local procurement ratio and tend to be joint ventures, while affiliates that are not local sales-oriented tend to have a higher Japanese ownership ratio and tend to be wholly-owned affiliates. The sales growth rate in 1995 and 2001 was significantly higher for local sales-oriented affiliates. Although local sales-oriented affiliates are not significantly more profitable, their average profitability improved relatively more during the period from 1998 to 2001 than that of affiliates that were not local sales-oriented.

INSERT Table 9

While we found that the local sales-oriented affiliates tend to have a higher sales growth rate, many Japanese MNEs in China indicated that they face difficulties in expanding local sales (JBIC 2004). The most difficult problem in China, mentioned by the majority of Japanese MNEs in the JBIC survey, is unclear laws and regulations and the frequent changes in them. However, according to the country's schedule of commitment submitted to the WTO, China has promised to remove most regulations on foreign-owned firms in the field of wholesale trade and retailing services within three years after China's accession to the WTO.[24] Since the accession to the WTO, various restrictions have already been phased out and foreign-invested enterprises have been allowed to distribute their products manufactured in China, while foreign service suppliers have been permitted to provide a full range of related subordinate services, including after sales services for the

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in China for each year. Then we divided the China sample into a local sales-oriented group consisting of affiliates whose local sales ratio was equal to or higher than the median and a group of affiliates that were not local sales-oriented, i.e., whose local sales ratio was lower than the median.

[24] Prior to the accession to the WTO, the Chinese government amended laws relating to foreign firms in 2000 and 2001, abolishing export duties and local content requirements for foreign firms. Other deregulation packages were also implemented.

products they distribute (WTO 2002). This improvement in local market access in China may have contributed to the increasing profitability in recent years found in the JBIC survey (JBIC 2003, 2005) and in our analysis above (Figures 2 and 3 and Tables 3 and 4). In order to determine the effect of these deregulation measures on affiliates' profitability in China, we conduct another regression analysis. As it is very difficult to find an appropriate quantitative measure to gauge the degree of freedom of market transactions, we use a dummy for WTO accession as a proxy for a measure of fewer restrictions. In order to check whether China's accession to the WTO had a positive impact on profitability, we include the WTO accession dummy which takes 1 for years after China's accession to the WTO, i.e., for 2001 and 2002, in the regression equation (2) above.[25] The regression results are shown as Equations (1) and (2) in Table 10. According to these estimated equations, a higher local sales ratio is associated with higher profitability after China's accession to the WTO, suggesting that the overall effect of the local sales ratio on profitability has been positive in recent years (the coefficient on L_SALES plus the coefficient on L_SALES*WTO becomes positive). Although the interaction term of the local procurement ratio and the WTO dummy (L_PRC*WTO) does not have a statistically significant coefficient, the overall effect of the local procurement ratio on profitability is still positive (the coefficient on L_PRC plus the coefficient on L_PRC*WTO becomes positive) when controlling for parent firm-specific fixed effects (equation 2).

INSERT Table 10

[25] One may argue that some deregulation measures were implemented only several years after China's accession to the WTO and that particularly in the year 2001, deregulation had not yet proceeded because China joined the WTO only in December 2001. However, this study also takes into account the effects of the announcement itself and therefore sets the WTO dummy variable to 1 for 2001 and 2002. In fact, many firms started to change their business attitude in advance of China's WTO accession based on the expectation of the country's accession in the near future.

The estimated equations (1) and (2) in Table 10 suggest that Japanese affiliates in China should promote the localization of procurements and sales in order to improve profitability. China is relatively abundant in terms of the presence of local suppliers compared with other developing countries and has a huge and growing local market, factors that make the localization of procurements and sales profitable.

We test the validity of this conjecture by estimating our profit equation using observations of all Japanese manufacturing affiliates around the world and controlling for the size of the local market and purchasing power and wage levels. Equations (3) and (4) in Table 10 include the logarithm of GDP as a proxy for local market size (or size of local production capacity) and the logarithm of GDP per capita as a proxy for local purchasing power (or wage levels). The results for equations (3) and (4) suggest that profitability is negatively associated with the local procurement ratio and positively associated with the local sales ratio. Looking at the interaction terms of the localization variables with GDP or GDP per capita, a higher GDP per capita has a negative impact for affiliates with a high local procurement ratio and a positive impact for affiliates with a high local sales ratio. GDP has the opposite impact in each case. The signs of the estimated coefficients suggest that local procurement may lower profitability in countries with a higher GDP per capita. A possible explanation is that higher GDP per capita is associated with higher wage levels and higher production costs. However, higher GDP per capita is also associated with higher purchasing power, which may contribute to the higher profitability of local sales-oriented affiliates. As for GDP, the result may be interpreted to imply that GDP as a proxy for a country's production capacity improves the profitability of local procurement probably because foreign affiliates can easily find efficient suppliers in the host country. On the other hand, GDP as a proxy for a country's market size will not improve the profitability of local sales, maybe because there are more competitors in the market and the fierce competition lowers the profitability of firms.

Using the coefficients estimated in equations (3) and (4) in Table 10, we can calculate the overall effect of local procurement and local sales on affiliates' profitability. For China, average GDP per capita and average GDP for our sample are 750.6 dollars (6.62 in logarithm) and 936 billion dollars (27.56 in logarithm) (in 1995 constant US dollars), respectively. Using these values and the estimated coefficients of equation (4), we find that the overall impact of local procurement is 0.001 while the overall impact of local sales is −0.004, implying that local procurement is positively associated with profitability but local sales are still negatively associated with profitability in China. However, when controlling for the degree of restrictions on market transactions using the WTO accession dummy, we find both local procurement and local sales are positively associated with profitability in China.[26] Using the estimated coefficients of equation (6), the calculated overall impact of local procurement and sales is 0.001 and 0.006, respectively, for China after the country's accession to the WTO.[27] This result suggests that promoting local procurement has a positive impact on profitability in China, which may be due to the relative abundance of local suppliers and low-wage labor. The results in Table 10 also imply that promoting local sales contributed to the profitability of affiliates in China when regulations on foreign-owned firms' activities were removed after the country's WTO accession.

5. Conclusion

[26] Although the WTO accession dummy may not be an appropriate quantitative measure, we employed this dummy variable because no better measure representing the degree of restrictions on market transactions is available. We may need to construct a more rigorous measure in order to examine more precisely the effect of WTO accession or deregulation. This, however, is an issue that is left for closer scrutiny in future investigations.

[27] For China after the WTO accession (the years 2001 and 2002 in our sample), average GDP per capita and average GDP are 914.2 dollars (6.82 in logarithm) and 1,167 billion dollars (27.79 in logarithm) (in 1995 constant US dollars), respectively.

This study investigated the determinants of the profitability of Japanese overseas affiliates using affiliate-level data for the period from 1989 to 2002. Specifically, focusing on Japanese affiliates in China, we examined whether the localization of procurements, sales, and management contributes to affiliates' profitability. Despite the potential importance of the local market, affiliates in China with a higher local sales ratio tended to be less profitable — a pattern that is conspicuously different from that observed for Japanese affiliates in other regions, such as the USA and the ASEAN-4, where local sales orientation had a positive impact on profitability. On the other hand, we found that Japanese affiliates' profitability was positively associated with their local procurement ratio in China.

Our interpretation of the results was that China had a relatively better industrial infrastructure and a more abundant labor force than other developing countries, resulting in the positive impact of local procurement on profitability, while regulations in favor of local firms, particularly in the wholesale and retail trade industries, may have been an obstacle to improving the profitability of local sales. Our empirical examination provided evidence that after China's WTO accession, firms that had a higher local sales ratio were more profitable than firms with a low local sales ratio, suggesting that Japanese affiliates in China should promote the expansion of local sales. Moreover, in order to test whether the localization of procurement and sales contributes to an affiliate's profitability in general, we estimated profit equations using a sample of Japanese affiliates around the world. The results supported our conjecture that profitability is positively associated with the local procurement ratio in countries with lower wage levels (proxied by per-capita GDP) and a larger local production capacity (proxied by GDP) and that profitability is also positively associated with the local sales ratio in countries with larger purchasing power (proxied by per-capita GDP). Given the level of GDP and per-capita GDP, both local procurement and sales expansion have contributed to profitability in China following the country's accession to the WTO.

The results presented in this paper suggest that promoting both local procurement and local sales should have a positive impact on profitability of affiliates in China as deregulation of foreign-owned firms' activities continues to make progress following the country's WTO accession. According to interviews we conducted with managers of Japanese affiliates in China,[28] however, it is often difficult for them to purchase from local suppliers even though there are many local suppliers offering much lower prices. Japanese parent firms or Japanese assemblers in China require them to purchase parts and components from non-local suppliers in order to maintain the quality levels. Moreover, many affiliates of Japanese firms greatly depend on transactions with parent firms or other Japanese affiliates in China and are not actively promoting sales to local firms. Although anti-Japanese sentiments as well as institutional uncertainty may be partly responsible for preventing Japanese firms from gaining a foothold in the Chinese market, reluctance by Japanese affiliates to expand local sales could sometimes also be seen. Based on our findings in this paper we suggest that the localization of both procurement and sales is an important determinant of profitability in China and that the Chinese affiliates of Japanese MNEs should become more aggressive in penetrating the Chinese local market and local industries.

However, we should mention some caveats regarding the results of this study. Although we included variables representing per-capita income levels and nation-wide market size as proxies for wage levels, technology levels, industry agglomeration, etc., in our regression model, it would be preferable to use other direct measures of these factors. Although it is difficult to find such direct measures by industry and by country, particularly in the case of many developing countries, it would

[28] Professor Deqiang Liu of Tokyo Gakugei University and the authors carried out interviews with managers of the Chinese affiliates of Japanese MNEs and other foreign MNEs and of local firms in September 2004 and March 2006 in cooperation with Professor Yanyun Zhao of Renmin University of China. We visited approximately thirty firms in Shandong, Guangdong, Jiangsu, Zhejiang, and Liaoning provinces.

be worth investigating these factors in greater detail at least for some specific countries or industries in the future. Another issue that is left for future studies is the construction of a direct measure of deregulation.

Although this study was mainly concerned with the localization of procurement and sales, another interesting finding is that in most regions, profitability is negatively associated with the Japanese ownership ratio. Profitability and governance structure is an issue that deserves further investigation in future studies.

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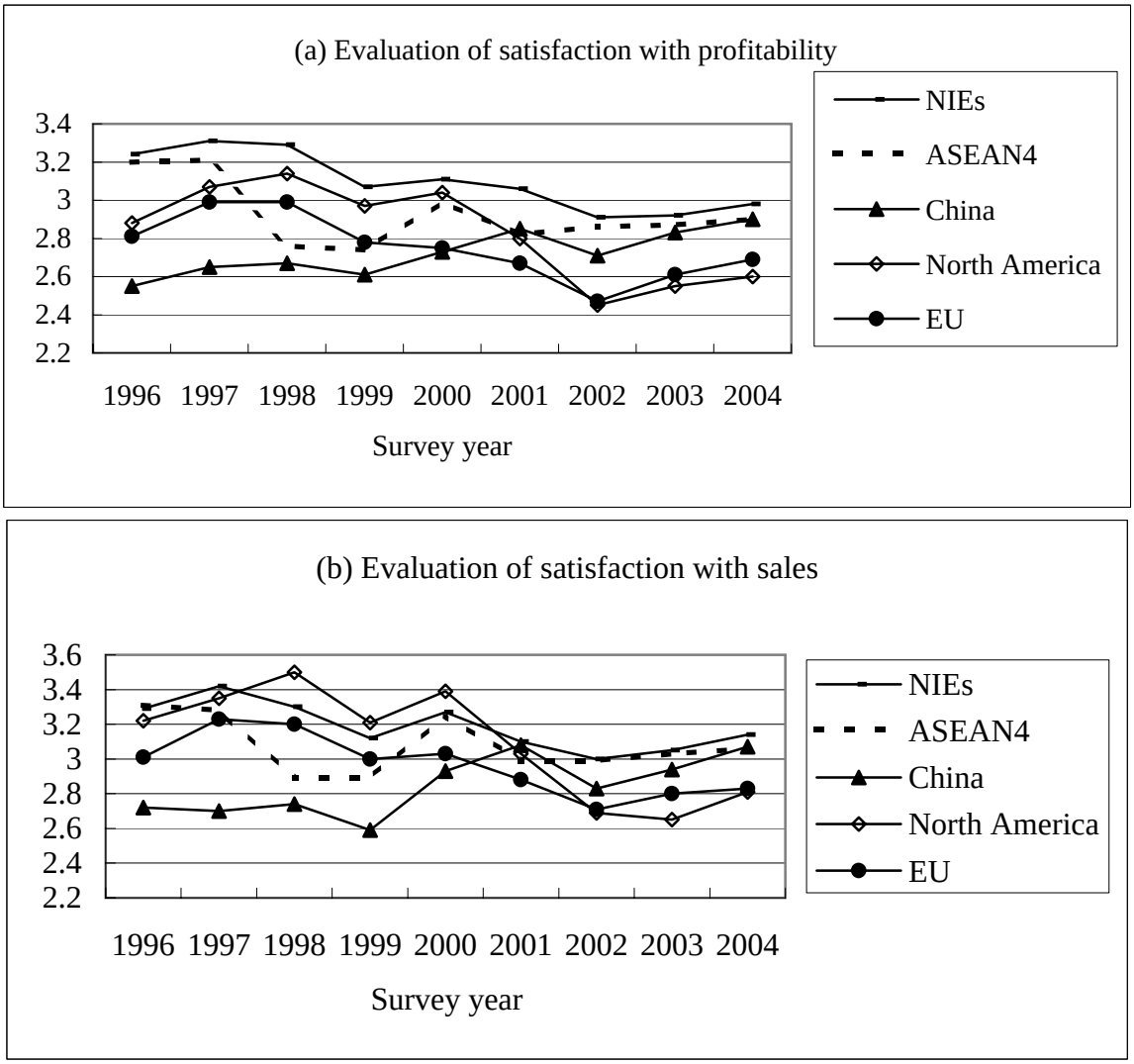
<www.wto.org/english/tratop_e/serv_e/serv_commitments_e.htm#commit_exempt> on April 10, 2006.

Figure 1. Evaluation of overseas business performance by Japanese multinational firms: FDI survey by the Japan Bank for International Corporation



Notes: Evaluation criteria (against initial performance goal): 1. Unsatisfactory 2. Somewhat unsatisfactory 3. Cannot say either way 4. Somewhat satisfactory 5. Satisfactory.
The business performance in a host country is scored by each firm and the above figures show the average score for each region.
Satisfaction with the sales performance refers to sales other than those to the parent company. Satisfaction with profitability refers to returns on investment. Furthermore, the evaluation is based on head offices' satifaction with the business performance in each country.
Sources: JBIC (2003, 2005).

Table 1. Overseas activities by Japanese multinational firms:
Japanese overseas affiliates in manufacturing

	1989					
	No. of affiliates		Sales amount (mil. yen)		No. of workers	
World Total	2,518	(100)	21,105,740	(100)	868,236	(100)
China	71	(3)	47,004	(0)	14,206	(2)
USA	594	(24)	11,729,540	(56)	268,178	(31)
EU15	324	(13)	2,908,151	(14)	81,906	(9)
NIEs4	667	(26)	3,262,725	(15)	189,093	(22)
ASEAN4	567	(23)	1,754,341	(8)	189,937	(22)

	1995					
	No. of affiliates		Sales amount (mil. yen)		No. of workers	
World Total	4,098	(100)	31,742,588	(100)	1,702,066	(100)
China	503	(12)	718,033	(2)	194,071	(11)
USA	861	(21)	12,377,839	(39)	334,747	(20)
EU15	557	(14)	5,529,330	(17)	181,715	(11)
NIEs4	900	(22)	5,079,700	(16)	247,001	(15)
ASEAN4	941	(23)	5,360,806	(17)	588,805	(35)

	2001					
	No. of affiliates		Sales amount (mil. yen)		No. of workers	
World Total	5,885	(100)	60,134,401	(100)	2,513,239	(100)
China	1,105	(19)	3,297,286	(5)	485,733	(19)
USA	1,055	(18)	26,058,120	(43)	453,051	(18)
EU15	689	(12)	9,464,855	(16)	234,247	(9)
NIEs4	1,065	(18)	7,355,176	(12)	282,602	(11)
ASEAN4	1,469	(25)	8,465,804	(14)	829,682	(33)

Notes: Figures in parentheses indicate shares in World Total. EU15 refers to the original 15 European countries. NIEs4 refers to Hong Kong, Korea, Singapore, and Taiwan. ASEAN4 refers to Indonesia, Malaysia, Philippines, and Thailand.
Source: Compiled from affiliate-level data underlying METI (various years).

Table 2. Inward FDI in China, by home country

(a) Number of inward FDI projects and amount of investment (all industries) (Unit: US$10,000)

	No. of projects				Amount of investments fulfilled			
	2003		2004		2003		2004	
World Total	41,081	(100.0)	43,664	(100.0)	5,350,467	(100.0)	6,062,998	(100.0)
Hong Kong	13,633	(33.2)	14,719	(33.7)	1,770,010	(33.1)	1,899,830	(31.3)
Japan	3,254	(7.9)	3,454	(7.9)	505,419	(9.4)	545,157	(9.0)
Taiwan	4,495	(10.9)	4,002	(9.2)	337,724	(6.3)	311,749	(5.1)
Macau	580	(1.4)	715	(1.6)	41,660	(0.8)	54,639	(0.9)
Korea	4,920	(12.0)	5,625	(12.9)	448,854	(8.4)	624,786	(10.3)
USA	4,060	(9.9)	3,925	(9.0)	419,851	(7.8)	394,095	(6.5)
Canada	901	(2.2)	995	(2.3)	56,351	(1.1)	61,387	(1.0)
Europe	2,074	(5.0)	2,423	(5.5)	393,031	(7.3)	423,904	(7.0)
Germany	451	(1.1)	608	(1.4)	85,697	(1.6)	105,848	(1.7)
France	269	(0.7)	289	(0.7)	60,431	(1.1)	65,674	(1.1)
Italy	297	(0.7)	358	(0.8)	31,670	(0.6)	28,082	(0.5)
Netherland	189	(0.5)	199	(0.5)	72,549	(1.4)	81,056	(1.3)
UK	438	(1.1)	488	(1.1)	74,247	(1.4)	79,282	(1.3)
ASEAN-5	2,128	(5.2)	2,156	(4.9)	285,309	(5.3)	290,962	(4.8)
Singapore	1,144	(2.8)	1,279	(2.9)	205,840	(3.8)	200,814	(3.3)
Indonesia	143	(0.3)	122	(0.3)	15,013	(0.3)	10,452	(0.2)
Malaysia	350	(0.9)	352	(0.8)	25,103	(0.5)	38,504	(0.6)
Philippines	297	(0.7)	241	(0.6)	22,001	(0.4)	23,324	(0.4)
Thailand	194	(0.5)	162	(0.4)	17,352	(0.3)	17,868	(0.3)
Others	5,036	(12.3)	5,650	(12.9)	1,092,258	(20.4)	1,456,489	(24.0)
Br. Virgin Iss.	2,218	(5.4)	2,641	(6.0)	577,696	(10.8)	673,030	(11.1)

(b) Cumulative number and amount of investment of inward FDI projects (all industries) (Unit: US$100 mil.)

	No. of projects				Amount of investments fulfilled			
	up to 2003		up to 2004		up to 2003		up to 2004	
World Total	465,277	(100.0)	508,941	(100.0)	5,015	(100.0)	5,612	(100.0)
Hong Kong	224,509	(48.3)	239,228	(47.0)	2,226	(44.4)	2,416	(43.0)
Japan	28,401	(6.1)	31,855	(6.3)	414	(8.3)	468	(8.3)
Taiwan	60,186	(12.9)	64,188	(12.6)	365	(7.3)	396	(7.1)
Macau	8,407	(1.8)	9,122	(1.8)	52	(1.0)	57	(1.0)
Korea	27,128	(5.8)	32,753	(6.4)	197	(3.9)	259	(4.6)
USA	41,340	(8.9)	45,265	(8.9)	441	(8.8)	480	(8.6)
Canada	6,941	(1.5)	7,936	(1.6)	39	(0.8)	45	(0.8)
Europe	16,158	(3.5)	18,581	(3.7)	379	(7.6)	421	(7.5)
Germany	3,504	(0.8)	4,112	(0.8)	89	(1.8)	99	(1.8)
France	2,302	(0.5)	2,591	(0.5)	61	(1.2)	68	(1.2)
Italy	2,137	(0.5)	2,495	(0.5)	25	(0.5)	28	(0.5)
Netherland	1,254	(0.3)	1,453	(0.3)	51	(1.0)	59	(1.0)
UK	3,856	(0.8)	4,344	(0.9)	114	(2.3)	122	(2.2)
ASEAN-5	21,158	(4.5)	23,314	(4.6)	321	(6.4)	350	(6.2)
Singapore	11,871	(2.6)	13,150	(2.6)	235	(4.7)	255	(4.6)
Indonesia	1,079	(0.2)	1,201	(0.2)	13	(0.3)	14	(0.2)
Malaysia	2,888	(0.6)	3,240	(0.6)	31	(0.6)	35	(0.6)
Philippines	1,945	(0.4)	2,186	(0.4)	16	(0.3)	19	(0.3)
Thailand	3,375	(0.7)	3,537	(0.7)	25	(0.5)	27	(0.5)
Others	31,049	(6.7)	36,699	(7.2)	582	(11.6)	718	(12.8)
Br. Virgin Iss.	8,877	(1.9)	11,518	(2.3)	302	(6.0)	369	(6.6)

Notes: Figures in parentheses indicate shares in World Total in percent.
Source: Ministry of Commerce, People's Republic of China (2004, 2005).

Figure 2. Return on Sales: Manufacturing industry

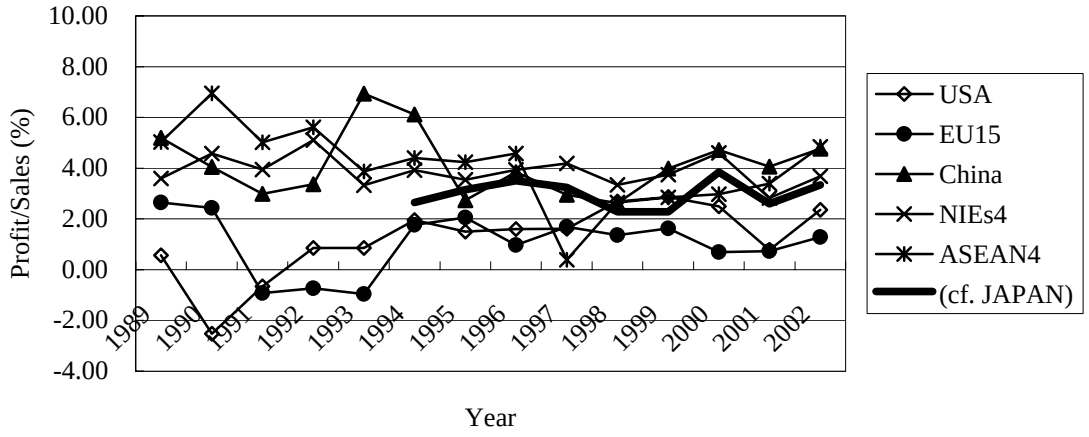
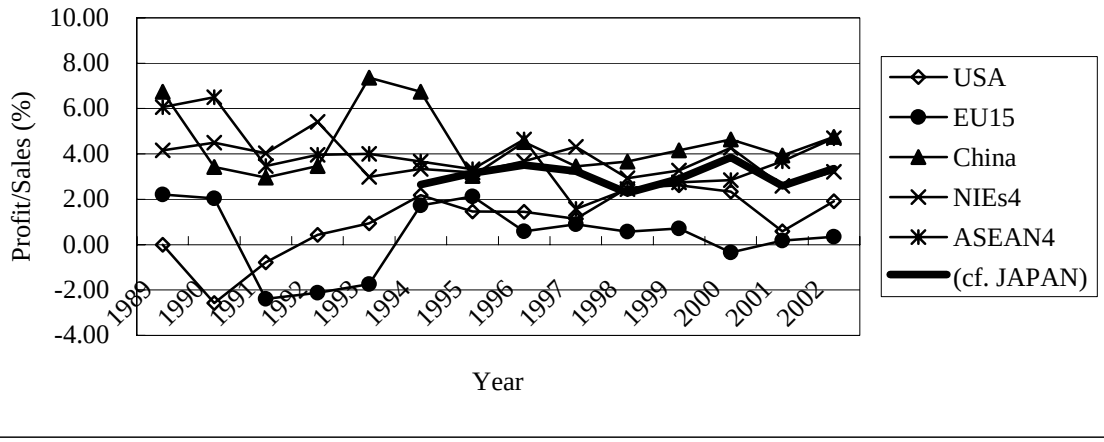


Figure 3. Return on Sales: Machinery industry
(General, electrical, transportation, & precision machinery)



Source: Compiled from micro-data underlying METI (various years a and various years b).

Table 3. Summary statistics, by region: Mean values and standard deviations: All manufacturing industries

	China							USA		EU15		NIEs4		ASEAN4	
	All observations			1995-2001 Stayers		1998-2001 Stayers		All observations		All observations		All observations		All observations	
	1995	1998	2001	1995	2001	1998	2001	1995	2001	1995	2001	1995	2001	1995	2001
No. of observations	141	469	535	63	63	243	243	470	553	265	285	469	556	408	778
Profit on sales (ROS)	-0.001	-0.008	0.030	-0.006	0.041	-0.006	0.041	0.014	-0.005	0.023	0.010	0.033	0.039	0.048	0.053
	(0.139)	(0.128)	(0.111)	(0.147)	(0.091)	(0.118)	(0.101)	(0.095)	(0.100)	(0.079)	(0.079)	(0.079)	(0.080)	(0.087)	(0.087)
Profit on assets (ROA) †	0.027	0.018	0.042	0.024	0.044	0.014	0.049	0.034	0.012	0.040	0.022	0.048	0.053	0.065	0.071
	(0.094)	(0.083)	(0.080)	(0.088)	(0.068)	(0.081)	(0.073)	(0.115)	(0.112)	(0.101)	(0.093)	(0.095)	(0.095)	(0.101)	(0.096)
Sales amount (mil. yen)	2,202	2,450	3,058	2,556	5,001	2,983	3,600	13,311	22,597	9,614	10,526	5,379	6,174	6,959	5,057
	(5,777)	(5,779)	(5,625)	(5,922)	(8,665)	(6,483)	(6,678)	(41,770)	(134,433)	(23,183)	(28,000)	(13,378)	(13,629)	(14,990)	(11,464)
Years in operation	4.1	4.7	7.0	4.0	10.0	4.8	7.8	10.5	14.4	10.1	14.1	13.6	17.1	11.3	12.3
	(2.4)	(2.3)	(2.5)	(2.453)	(2.453)	(2.390)	(2.390)	(7.0)	(8.3)	(6.5)	(8.9)	(8.2)	(9.7)	(8.3)	(8.4)
Local procurement ratio	0.512	0.540	0.587	0.495	0.607	0.528	0.583	0.655	0.656	0.453	0.499	0.554	0.541	0.502	0.566
	(0.374)	(0.369)	(0.359)	(0.359)	(0.345)	(0.365)	(0.346)	(0.335)	(0.364)	(0.365)	(0.375)	(0.342)	(0.357)	(0.351)	(0.416)
Local sales ratio	0.495	0.525	0.582	0.480	0.532	0.560	0.568	0.875	0.887	0.657	0.673	0.679	0.650	0.603	0.565
	(0.396)	(0.409)	(0.396)	(0.395)	(0.384)	(0.402)	(0.389)	(0.209)	(0.206)	(0.349)	(0.357)	(0.344)	(0.371)	(0.393)	(0.386)
Japanese ownership ratio	0.625	0.679	0.734	0.666	0.690	0.691	0.721	0.889	0.921	0.877	0.919	0.766	0.784	0.674	0.755
	(0.243)	(0.242)	(0.241)	(0.219)	(0.263)	(0.229)	(0.231)	(0.223)	(0.185)	(0.233)	(0.184)	(0.270)	(0.270)	(0.265)	(0.261)
Established by joint venture †	0.779	0.724	0.663	n.a.	n.a.	n.a.	n.a.	0.258	0.238	0.230	0.195	0.450	0.432	0.659	0.598
	(0.416)	(0.448)	(0.473)	n.a.	n.a.	n.a.	n.a.	(0.438)	(0.426)	(0.422)	(0.397)	(0.498)	(0.496)	(0.475)	(0.491)
Established as a wholly-owned affiliate †	0.206	0.202	0.242	n.a.	n.a.	n.a.	n.a.	0.530	0.584	0.519	0.498	0.418	0.410	0.274	0.313
	(0.406)	(0.402)	(0.428)	n.a.	n.a.	n.a.	n.a.	(0.500)	(0.493)	(0.501)	(0.501)	(0.494)	(0.492)	(0.447)	(0.464)
Established by acquisition †	0.000	0.012	0.015	n.a.	n.a.	n.a.	n.a.	0.171	0.143	0.177	0.195	0.041	0.042	0.015	0.016
	(0.000)	(0.109)	(0.121)	n.a.	n.a.	n.a.	n.a.	(0.377)	(0.351)	(0.382)	(0.397)	(0.199)	(0.200)	(0.123)	(0.125)
Established by taking an equity stake †	0.015	0.060	0.081	n.a.	n.a.	n.a.	n.a.	0.040	0.035	0.074	0.112	0.091	0.116	0.051	0.074
	(0.119)	(0.238)	(0.272)	n.a.	n.a.	n.a.	n.a.	(0.196)	(0.185)	(0.262)	(0.316)	(0.288)	(0.321)	(0.221)	(0.262)
CEO is a local	0.458	0.266	0.219	0.333	0.267	0.254	0.234	0.257	0.206	0.373	0.320	0.460	0.318	0.289	0.176
	(0.504)	(0.442)	(0.414)	(0.488)	(0.458)	(0.436)	(0.425)	(0.439)	(0.405)	(0.487)	(0.467)	(0.500)	(0.466)	(0.456)	(0.381)
(No. of obs.)	48	433	493	15	15	209	209	136	494	83	253	161	497	114	733
Sales manager is a local	0.708	0.579	0.555	0.733	0.600	0.594	0.558	0.621	0.617	0.622	0.733	0.625	0.589	0.375	0.382
	(0.459)	(0.494)	(0.497)	(0.458)	(0.507)	(0.492)	(0.498)	(0.487)	(0.487)	(0.488)	(0.443)	(0.486)	(0.493)	(0.486)	(0.486)
(No. of obs.)	48	423	472	15	15	197	197	132	465	82	240	160	467	112	685
Procurement manager is a local	0.729	0.648	0.631	0.733	0.600	0.658	0.601	0.733	0.745	0.683	0.766	0.731	0.674	0.509	0.561
	(0.449)	(0.478)	(0.483)	(0.458)	(0.507)	(0.476)	(0.491)	(0.444)	(0.437)	(0.468)	(0.424)	(0.445)	(0.469)	(0.502)	(0.497)
(No. of obs.)	48	421	471	15	15	193	193	131	462	82	235	160	457	112	692

Notes: † The number of observations is reduced because some outliers were eliminated. Standard deviation in parentheses. n.a.: Not applicable.
Source: Compiled from affiliate-level data underlying METI (various years).

Table 4. Summary statistics, by region: Mean values and standard deviations: Electrical machinery industry

	China							USA		EU15		NIEs4		ASEAN4	
	All observations			1995-2001 Stayers		1998-2001 Stayers		All observations		All observations		All observations		All observations	
	1995	1998	2001	1995	2001	1998	2001	1995	2001	1995	2001	1995	2001	1995	2001
No. of observations	30	106	132	18	18	64	64	95	91	80	77	147	169	103	206
Profit on sales (ROS)	-0.018	0.013	0.031	0.015	0.061	0.012	0.048	0.015	-0.023	0.009	0.006	0.022	0.027	0.029	0.040
	(0.145)	(0.122)	(0.100)	(0.146)	(0.069)	(0.124)	(0.084)	(0.089)	(0.098)	(0.065)	(0.079)	(0.073)	(0.063)	(0.086)	(0.082)
Profit on assets (ROA) †	0.013	0.039	0.047	0.032	0.054	0.033	0.061	0.032	-0.021	0.029	0.012	0.046	0.043	0.051	0.070
	(0.085)	(0.089)	(0.079)	(0.088)	(0.058)	(0.098)	(0.069)	(0.126)	(0.140)	(0.110)	(0.102)	(0.099)	(0.081)	(0.104)	(0.105)
Sales amount (mil. yen)	5,316	5,076	5,619	6,541	10,551	5,151	6,386	22,856	59,260	13,360	15,279	8,291	11,028	8,460	8,765
	(8,537)	(8,669)	(7,012)	(10,001)	(12,645)	(8,082)	(8,148)	(71,734)	(317,698)	(25,770)	(32,982)	(14,511)	(19,084)	(12,823)	(15,440)
Years in operation	4.1	4.8	7.2	4.8	10.8	4.8	7.8	11.7	16.3	10.9	14.8	14.0	17.8	8.4	11.4
	(2.7)	(2.6)	(2.5)	(3.073)	(3.073)	(2.524)	(2.524)	(8.5)	(9.8)	(6.2)	(7.5)	(8.7)	(10.3)	(6.3)	(7.1)
Local procurement ratio	0.273	0.439	0.423	0.306	0.499	0.429	0.444	0.491	0.452	0.288	0.356	0.476	0.420	0.386	0.476
	(0.237)	(0.340)	(0.321)	(0.238)	(0.309)	(0.332)	(0.293)	(0.348)	(0.336)	(0.284)	(0.327)	(0.322)	(0.335)	(0.289)	(0.309)
Local sales ratio	0.445	0.555	0.483	0.502	0.449	0.543	0.492	0.829	0.884	0.648	0.659	0.556	0.554	0.394	0.447
	(0.399)	(0.392)	(0.388)	(0.428)	(0.354)	(0.383)	(0.361)	(0.227)	(0.198)	(0.337)	(0.343)	(0.336)	(0.369)	(0.368)	(0.374)
Japanese ownership ratio	0.684	0.688	0.746	0.648	0.663	0.670	0.691	0.945	0.953	0.930	0.968	0.848	0.873	0.832	0.856
	(0.220)	(0.189)	(0.216)	(0.219)	(0.182)	(0.182)	(0.181)	(0.174)	(0.135)	(0.198)	(0.118)	(0.238)	(0.229)	(0.246)	(0.219)
Established by joint	0.724	0.784	0.673	n.a.	n.a.	n.a.	n.a.	0.101	0.164	0.122	0.109	0.317	0.306	0.394	0.376
venture †	(0.455)	(0.414)	(0.471)	n.a.	n.a.	n.a.	n.a.	(0.303)	(0.373)	(0.329)	(0.315)	(0.467)	(0.463)	(0.491)	(0.486)
Established as a wholly-	0.276	0.165	0.287	n.a.	n.a.	n.a.	n.a.	0.730	0.776	0.730	0.641	0.592	0.621	0.566	0.591
owned affiliate †	(0.455)	(0.373)	(0.455)	n.a.	n.a.	n.a.	n.a.	(0.446)	(0.420)	(0.447)	(0.484)	(0.493)	(0.487)	(0.498)	(0.493)
Established by acquisition	0.000	0.000	0.000	n.a.	n.a.	n.a.	n.a.	0.146	0.030	0.095	0.172	0.042	0.048	0.010	0.011
†	(0.000)	(0.000)	(0.000)	n.a.	n.a.	n.a.	n.a.	(0.355)	(0.171)	(0.295)	(0.380)	(0.202)	(0.215)	(0.101)	(0.105)
Established by taking an	0.000	0.052	0.040	n.a.	n.a.	n.a.	n.a.	0.022	0.030	0.054	0.078	0.049	0.024	0.030	0.022
equity stake †	(0.000)	(0.222)	(0.196)	n.a.	n.a.	n.a.	n.a.	(0.149)	(0.171)	(0.228)	(0.270)	(0.217)	(0.154)	(0.172)	(0.147)
CEO is a local	0.125	0.163	0.150	0.000	0.333	0.143	0.143	0.111	0.127	0.435	0.219	0.481	0.190	0.100	0.068
	(0.354)	(0.372)	(0.358)	(0.000)	(0.577)	(0.354)	(0.354)	(0.320)	(0.335)	(0.507)	(0.417)	(0.504)	(0.394)	(0.305)	(0.253)
(No. of obs.)	8	104	107	3	3	49	49	27	71	23	64	54	142	30	191
Sales manager is a local	0.750	0.590	0.475	1.000	0.667	0.702	0.553	0.556	0.634	0.478	0.625	0.566	0.478	0.172	0.317
	(0.463)	(0.494)	(0.502)	(0.000)	(0.577)	(0.462)	(0.503)	(0.506)	(0.485)	(0.511)	(0.488)	(0.500)	(0.501)	(0.384)	(0.466)
(No. of obs.)	8	100	101	3	3	47	47	27	71	23	64	53	138	29	180
Procurement manager is a	0.500	0.576	0.561	0.667	0.667	0.568	0.545	0.692	0.638	0.609	0.746	0.679	0.588	0.414	0.503
local	(0.535)	(0.497)	(0.499)	(0.577)	(0.577)	(0.501)	(0.504)	(0.471)	(0.484)	(0.499)	(0.439)	(0.471)	(0.494)	(0.501)	(0.501)
(No. of obs.)	8	99	98	3	3	44	44	26	69	23	63	53	136	29	185

Notes: † The number of observations is reduced because some outliers were eliminated. Standard deviation in parentheses. n.a.: Not applicable.
Source: Compiled from affiliate-level data underlying METI (various years).

Table 5. Description of variables and their predicted signs

Variable name	Definition	Predicted sign
ROS ROA	Ordinary profit / total sales Ordinary profit / total assets	Dependent variable
LnSALE	Logarithm of total sales in million yen	+
AGE	Years in operation: The number of years that have passed since the establishment of a	+
L_PRC	Local procurement ratio: Procurement from the host country / total procurement.	+/-
L_SALES	Local sales ratio: Sales in the host country / total sales.	+/-
J_OWN	Japanese equity ownership ratio.	+/-
COAST	A dummy variable that takes 1 if the affiliate is located in one of coastal provinces of China, otherwise 0.	+/-
WTO	A dummy variable that takes 1 if the host country is a WTO member, otherwise 0. (1 for all years for original WTO members)	+
L_CEO	CEO of local person: A dummy variable that takes 1 if the CEO is a local person , otherwise 0.	+
L_SLS_MNG	Sales manager is a local: A dummy variable that takes 1 if the sales manager is a local person, otherwise 0.	+
L_PRC_MNG	Procurement manager is a local: A dummy variable that takes 1 if the procurement manager is a local person, otherwise 0.	+
JV	Established by joint venture: A dummy variable that takes 1 if the affilite was established by a joint-venture project, otherwise 0.	+/-
WHOLLY	Established as a wholly-owned affiliate: A dummy variable that takes 1 if the affiliate was established as a wholly-owned affiliate.	+/-
ACQUIRE	Established by acquisition: A dummy variable that takes 1 if the affiliate was established by acquisition.	+/-
EQUITY	Established by taking an equity share: A dummy variable that takes 1 if the affiliate was established by taking an equity share. --> this is the standard case in the regressions.	standard case
LnGDPPC	Logarithm of GDP per capita in 1995 constant US dollars. Data are taken from World Bank (2004) and ICSEAD (2005) for Taiwan.	+/-
LnGDP	Logarithm of GDP in 1995 constant US dollars. Data are taken from World Bank (2004) and ICSEAD (2005) for Taiwan.	+/-

Table 6. Determinants of affiliates' profitability: Pooled OLS, by region

	ROS					ROA				
	China	USA	EU15	NIES4	ASEAN4	China	USA	EU15	NIES4	ASEAN4
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
LnSALE	0.0126 ***	0.0114 ***	0.0028	0.0080 ***	0.0047 **	0.0121 ***	0.0112 ***	0.0036	0.0089 ***	0.0067 ***
	(3.93)	(5.78)	(1.09)	(4.45)	(2.13)	(6.09)	(4.89)	(1.42)	(4.58)	(3.39)
AGE	0.0030 *	0.0012 ***	0.0010 ***	0.0003	0.0015 ***	0.0018	0.0006	0.0004	-0.0003	0.0013 ***
	(1.87)	(2.85)	(2.66)	(0.94)	(4.49)	(1.53)	(1.25)	0.93	(-0.89)	(3.77)
L_PRC	0.0199 *	0.0076	-0.0213 **	-0.0019	-0.0162 **	0.0160 *	0.0044	-0.0355 ***	-0.0074	-0.0123
	(1.77)	(0.86)	(-1.99)	(-0.27)	(-2.00)	(1.95)	0.48	(-3.01)	(-0.89)	(-1.64)
L_SALES	-0.0194 *	0.0310 **	-0.0078	0.0114 *	0.0232 ***	-0.0202 **	0.0138	0.0037	0.0114	0.0233 ***
	(-1.74)	(2.15)	(-0.87)	(1.79)	(2.84)	(-2.46)	(0.83)	0.35	1.39	2.97
J_OWN	-0.0496 **	-0.0227	-0.0555 ***	-0.0155	-0.0275 *	-0.0266 *	-0.0462 ***	-0.0485 **	-0.0377 **	-0.0219
	(-2.40)	(-1.57)	(-2.87)	(-1.20)	(-1.91)	(-1.68)	(-2.77)	(-2.57)	(-2.53)	(-1.61)
COAST	0.0070					0.0036				
	(0.44)					0.35				
L_CEO	0.0241 **	0.0001	0.0102	0.0069	0.0014	0.0101	0.0012	0.0134	0.0042	0.0048
	(2.45)	(0.01)	(1.20)	(1.04)	(0.18)	(1.45)	0.14	(1.47)	(0.58)	(0.64)
L_SLS_MNG	-0.0019	0.0088	-0.0004	0.0061	-0.0006	0.0006	0.0093	-0.0047	0.0056	-0.0032
	(-0.18)	(1.36)	(-0.05)	(1.01)	(-0.09)	(0.08)	(1.30)	(-0.50)	(0.80)	(-0.52)
L_PRC_MNG	0.0225 **	-0.0156 **	-0.0030	0.0079	0.0127 **	0.0101	-0.0144 *	-0.0002	0.0042	0.0110 *
	(2.19)	(-2.35)	(-0.35)	(1.34)	(2.12)	(1.36)	(-1.93)	(-0.02)	0.58	(1.86)
JV	0.0363 **	0.0076	0.0261 *	0.0088	0.0022	0.0240 **	0.0083	0.0142 **	0.0169 **	0.0135
	(2.13)	(0.60)	(1.79)	(1.22)	(0.22)	(2.39)	0.47	(0.98)	(2.11)	(1.46)
WHOLLY	0.0469 **	-0.0058	0.0357 **	0.0136	0.0195	0.0342 **	-0.0043	0.0181 ***	0.0303 ***	0.0216 *
	(2.39)	(-0.45)	(2.30)	(1.58)	(1.59)	(2.56)	(-0.25)	(1.27)	(3.07)	(1.87)
ACQUIRE	-0.025	-0.009	0.024	0.008	0.010	-0.0267	-0.0102	0.001	0.005	-0.0050
	(-0.70)	(-0.66)	(1.41)	(0.67)	(0.58)	(-0.92)	(-0.57)	(0.05)	(0.27)	(-0.27)
_cons	-0.0811 *	-0.1290 ***	0.0193	-0.0289	0.0020	-0.0340	-0.0586 *	0.0507	0.0285	0.0001
	(-1.68)	(-4.39)	(0.70)	(-1.31)	(0.08)	(-1.15)	(-1.66)	(1.54)	(1.05)	(0.01)
2-digit industry dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Country dummies	no	no	yes	yes	yes	no	no	yes	yes	yes
Parent firm dummies	no	no	no	no	no	no	no	no	no	no
Number of obs.	910	1498	771	1614	1679	896	1428	738	1575	1620
R-squared	0.1127	0.0737	0.1498	0.0472	0.0739	0.1205	0.06	0.1568	0.0452	0.074
Root MSE	0.1147	0.1036	0.0880	0.0868	0.1056	0.0807	0.1126	0.0936	0.1005	0.1007

Notes: The figures in parentheses are t-statistics based on White's robust standard errors (White 1980).
* Significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level (two-tailed test).

Table 7. Determinants of affiliates' profitability: Pooled OLS with parent firm dummies, by region

	ROS				
	China	USA	EU15	NIES4	ASEAN4
	(1)	(2)	(3)	(4)	(5)
LnSALE	0.0249 ***	0.0187 ***	0.0100 ***	0.0117 ***	0.0125 ***
	(9.73)	(10.18)	(4.08)	(7.91)	(7.61)
AGE	0.0022 *	0.0006 **	0.0007 ***	0.0002	0.0012 ***
	(1.80)	(2.38)	(2.85)	(0.97)	(5.52)
L_PRC	0.0154 **	-0.0011	-0.0140 **	-0.0019	0.0004
	(2.07)	(-0.18)	(-2.33)	(-0.45)	(0.08)
L_SALES	-0.0184 **	0.0278 ***	0.0118 **	0.0081 *	0.0228 ***
	(-2.20)	(2.92)	(2.13)	(1.95)	(4.23)
J_OWN	-0.0358 ***	-0.0198 **	-0.0093	-0.0106	-0.0185 **
	(-3.04)	(-2.40)	(-0.95)	(-1.52)	(-2.57)
COAST	-0.0056				
	(-0.48)				
_cons	-0.2582 ***	-0.2422 ***	-0.0227	0.1225 ***	0.0365
	(-2.84)	(-8.92)	(-0.52)	(5.42)	(1.56)
2-digit industry dummies	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes
Country dummies	no	no	yes	yes	yes
Parent firm dummies	yes	yes	yes	yes	yes
Number of obs	3932	6532	3896	7206	7366
R-squared	0.4268	0.3889	0.3862	0.3951	0.3611
Root MSE	0.0968	0.0886	0.0776	0.0723	0.0932

Notes: The figures in parentheses are t-statistics based on White's robust standard errors (White 1980).
* Significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level (two-tailed test).

Table 8. Determinants of affiliates' profitablity: Fixed effect panel estimates, by region

	ROS				
	China	USA	EU15	NIEs4	ASEAN4
	(1)	(2)	(3)	(4)	(5)
LnSALE	0.0774 ***	0.0496 ***	0.0343 ***	0.0278 ***	0.0573 ***
	(13.40)	(9.53)	(6.76)	(9.23)	(13.83)
AGE	0.0002	-0.0002	-0.0010	-0.0003	0.0002
	(0.06)	(-0.31)	(-1.40)	(-0.66)	(0.30)
L_PRC	0.0050	0.0162 **	-0.0067	0.0197 ***	-0.0031
	(0.54)	(2.21)	(-0.90)	(3.70)	(-0.48)
L_SALES	-0.0043	0.0194	0.0085	-0.0116 *	0.0193 **
	(-0.32)	(1.52)	(1.25)	(-1.90)	(2.14)
J_OWN	-0.0305	0.0069	-0.0092	0.0146	0.0120
	(-1.57)	(0.65)	(-0.62)	(1.41)	(0.97)
_cons	-0.4826 ***	-0.4465 ***	-0.2449 ***	-0.1763 ***	-0.4026 ***
	(-8.78)	(-9.88)	(-5.71)	(-7.19)	(-11.97)
2-digit industry dummies	no	no	no	no	no
Year dummies	yes	yes	yes	yes	yes
Hausman	125.93	71.94	85.51	74.97	128.93
Number of obs.	3932	6532	3896	7206	7366
Number of groups	1255	1620	1037	1801	1944

Notes: The figures in parentheses are t-statistics based on White's robust standard errors (White 1980).
* Significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level (two-tailed test).

Table 9. Comparison of profitability and affiliates' characteristics between local sales-oriented and not local sales-oriented affiliates -- Manufacturing affiliates in China --

	1995			1998			2001		
	Local sales oriented	Not local sales oriented	t-test	Local sales oriented	Not local sales oriented	t-test	Local sales oriented	Not local sales oriented	t-test
No. of obs.	6	5		87	86		113	113	
ROS	0.10	0.06		0.01	0.02		0.04	0.03	
ROA	0.07	0.08		0.02	0.04	*	0.04	0.05	
Sales growth	0.05	0.02	**	0.01	0.01		0.03	0.01	***
AGE	5.67	6.80		4.74	5.08		6.83	7.65	**
L_PRC	0.89	0.36	**	0.62	0.47	***	0.71	0.52	***
L_SALES	0.62	0.04	***	0.94	0.20	***	0.94	0.22	***
J_OWN	0.44	0.77	*	0.59	0.74	***	0.69	0.79	***
L_CEO	0.67	0.40		0.30	0.22		0.22	0.13	*
L_SLS_MNG	0.83	0.40		0.57	0.60		0.56	0.53	
L_PRC_MNG	0.67	0.60		0.68	0.62		0.65	0.65	
JV	1.00	0.40	*	0.87	0.67	***	0.76	0.58	***
WHOLLY	0.00	0.60	*	0.08	0.30	***	0.14	0.29	***
ACQUIRE	0.00	0.00		0.00	0.00		0.00	0.03	*
EQUITY	0.00	0.00		0.05	0.02		0.10	0.10	

Notes: An affiliate is defined as local sales-oriented if the local sales ratio is equal to or higher than the median of all manufacturing affiliates.
Sales growth is defined as the average growth rate of an affiliate's total sales from one-year before to one-year after the indicated year. (i.e., from year *t-1* to year *t+1*).
The number of observations is reduced because for many firms data for three consecutive years are not available.
The t-tests are performed based on the assumption of unequal variances and significanly larger figures are highlighted.
* Significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level (two-tailed test).
Source: Compiled from affiliate-level data underlying METI (various years).

Table 10. Determinants of affiliates' profitability: Japanese affiliates in China vs. Japanese affiliates in the rest of the world

	China		ROW			
	ROS	ROS	ROS	ROS	ROS	ROS
	(1)	(2)	(3)	(4)	(5)	(6)
LnSALE	0.0126 ***	0.0247 ***	0.0072 ***	0.0078 ***	0.0075 ***	0.0078 ***
	(8.25)	(9.67)	(16.19)	(17.20)	(16.57)	(17.23)
AGE	0.0042 ***	0.0023 *	0.0010 ***	0.0009 ***	0.0009 ***	0.0009 ***
	(5.56)	(1.93)	(13.16)	(12.22)	(12.87)	(11.92)
L PRC	0.0092	0.0175 **	-0.0383	-0.0573 **	-0.0408	-0.0600 **
	(1.44)	(2.09)	(-1.40)	(-2.06)	(-1.49)	(-2.16)
L PRC*LnGDPPC			-0.0031 **	-0.0035 **	-0.0030 **	-0.0037 **
			(-2.39)	(-2.70)	(-2.21)	(-2.64)
L PRC*LnGDP			0.0022 **	0.0030 **	0.0023 **	0.0031 **
			(1.99)	(2.71)	(2.15)	(2.87)
L PRC*WTO	-0.0130	-0.0045			-0.0032	-0.0012
	(-1.24)	(-0.41)			(-0.65)	(-0.23)
L SALES	-0.0235 ***	-0.0271 ***	0.1042 ***	0.1021 **	0.0701 **	0.0773 **
	(-3.87)	(-3.03)	(3.30)	(2.91)	(2.19)	(2.19)
L SALES*LnGDPPC			0.0068 ***	0.0051 ***	0.0044 ***	0.0026 **
			(5.62)	(4.11)	(3.50)	(2.00)
L SALES*LnGDP			-0.0058 ***	-0.0051 ***	-0.0043 ***	-0.0040 **
			(-4.87)	(-3.87)	(-3.55)	(-3.03)
L SALES*WTO	0.0280 ***	0.0314 ***			0.0189 ***	0.0220 ***
	(3.00)	(3.26)			(4.39)	(5.01)
J OWN	-0.0388 ***	-0.0355 ***	-0.0307 ***	-0.0240 ***	-0.0302 ***	-0.0242 ***
	(-5.02)	(-3.02)	(-12.34)	(-9.29)	(-12.11)	(-9.38)
COAST	0.0023	-0.0058				
	(0.30)	(-0.49)				
LnGDP			-0.0049 ***	-0.0852 ***	-0.0065 ***	-0.0820 ***
			(-4.77)	(-4.23)	(-6.16)	(-4.04)
LnGDPPC			-0.0050 ***	0.0614 **	-0.0026 **	0.0562 **
			(-5.18)	(2.87)	(-2.47)	(2.53)
WTO	-0.0446	0.0070			-0.0182 ***	-0.0072
	(-1.37)	(0.16)			(-4.89)	(-1.50)
cons	-0.0095	-0.2517 ***	0.1646 ***	1.8421 ***	0.1982 ***	1.8025 ***
	(-0.27)	(-2.69)	(5.77)	(4.64)	(6.85)	(4.53)
2-digit industry dummies	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes
Country dummies	no	no	no	yes	no	yes
Parent firm dummies	no	yes	no	no	no	no
Number of obs.	3932	3932	31169	31169	31169	31169
R-squared	0.0777	0.4286	0.0523	0.0594	0.0535	0.0602
Root MSE	0.1112	0.0967	0.1009	0.1006	0.1009	0.1006

Notes: The figures in parentheses are t-statistics based on White's robust standard errors (White 1980).
* Significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level (two-tailed test).