"The Economic Analysis of International Production/Distribution Networks

in East Asia and Latin America:

The Implication of Regional Trade Arrangements" [*]

December 2003

January 2004 (revised)

May 2004 (re-revised)

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Abstract

This paper applies the economic approach and empirically investigates differences in inward foreign direct investment (FDI) pattern between East Asia and Latin America and discusses the implication of regional trade arrangements. International production/distribution networks in East Asia effectively utilize new economic logic of fragmentation, agglomeration, and optimal internalization and seem to greatly contribute economic development. The paper examines statistical data of international trade as well as the activities of Japanese and U.S. multinational enterprises (MNEs) and argues that international production/distribution networks, particularly in machinery industries, are extensively developed in East Asia while staying immature in Latin America.

The impact of regional trade arrangements would be substantially different, depending on whether international production/distribution networks have already been developed or not. Our findings suggest that the impact of FTAA on FDI in Latin America by East Asian MNEs would be either positive or negative, depending on the contents of FTAA and accompanied policies. If differentials between intra-regional tariffs and MFN-based tariffs are kept large, import-substituting FDI from East Asia may be stagnant or even decrease. With a proper policy package to nurture international production/distribution networks, on the other hand, FDI from East Asia would be accelerated and contributed to deeper integration of Latin America.

1. Introduction: free trade agreements (FTAs) and foreign direct investment (FDI)

What would be the gains from concluding FTAs from the viewpoint of less developed countries (LDCs)? FTAs concluded between developed countries (DCs) and LDCs are always asymmetric; LDCs typically pledge an extensive set of policy reform for liberalization while DCs provide little commitment. Despite such seemingly unequal nature of FTAs, why do LDCs wish to have one? Market access to developed countries (DCs)' markets is a classical answer. However, trade barriers in DCs are already low for most of the products with some notable exceptions, and thus the effect of tariff removal in DCs may not be very large. More important and crucial motivation for LDCs to conclude FTAs with DCs is to stimulate inward FDI. FDI is not a simple capital flow. It brings in a bundle of capital, technology, and managerial ability as well as providing a channel to access to international markets. Although the old fear of foreign giant firms has not completely been overcome, policymakers in LDCs instinctively know that FDI is the key to effectively utilize the wave of globalization and accelerate economic growth in the current globalizing economic environment.

Development patterns of East Asia and Latin America, particularly in connection with FDI, have been of great difference, however. In East Asia, "the dual-track approach" has been applied for long; i.e., both import-substituting industries and export-oriented industries (network-forming industries) have been promoted at the same time. In addition, since the mid 1980s or the early 1990s, aggressive utilization of incoming FDI has accelerated the formation of critical mass of agglomeration, leading to the development of international production/distribution networks. In Latin America, on the other hand, with Mexico as a notable exception, most of the incoming FDI has been still import-substitution-type, and the development of international production/distribution networks has yet to be seen.

While international businessmen may have already taken them for granted, international production/distribution networks in East Asia have not been formally analyzed yet in either theoretical or empirical literature of economics. They are qualitatively different from horizontal business exchanges observed in the European Union; for example, the production networks in East Asia are extended to a number of countries with different income levels and at different development stages. The production networks in East Asia are not made of simple intra-firm cross-border

production sharing, which is observed in other regions such as the U.S.-Mexico relationship, but are made of sophisticated combination of intra-firm and arm's-length transactions. Moreover, unlike production networks in Central and Eastern Europe, location concentration of production activities seems to be important in East Asia, and large transactions of intermediate products can be observed even between LDCs. To the authors' understanding, writing down the economic logic behind the international production/distribution networks in the form of economic theory is of great importance in order to understand how incoming FDI can be beneficial to LDCs.

Furthermore, statistical data to analyze the nature of international production/distribution networks are in paucity. Although detailed international commodity trade can be traced by international trade statistics, figures do not tell what sort of firms are trading with whom. When we would like to know the behavior of multinational enterprises (MNEs), FDI data do not provide enough information on the magnitude of activities. A clue to capture the characteristics of networks, though a partial one, is a micro data set of MNEs, which is available only for a small number of countries. To go beyond case studies, however, the analysis of firm-level micro data is essential for stepping into formal statistical analysis.

Whether international production/distribution networks are developed or not is crucially important in evaluating effects of regional trade arrangements. When LDCs do not yet provide favorable environment for such networks and limit incoming foreign companies' activities to import substituting one, regional trade arrangements are likely to have strong asymmetric effects on partner and non-partner DCs. In their import-substituting operations, MNEs typically import key parts and components from the home country or some other major production sites in the world. If a regional trade arrangement removes trade barriers only for a specific DC, MNEs from the country can obtain substantially advantageous position vis-à-vis MNEs from other DCs. On the other hand, if policy environment favorable for developing international production/distribution networks is prepared, regional trade arrangements may have completely different impacts. When substantial part of the economy is already open to trade on the MFN basis, removal of trade barriers in import-substituting industries, even in the context of regional trade arrangements, will have strong restructuring effects that would be beneficial to everybody at least in the long run. Regional trade arrangements would further activate the formation of networks by MNEs and indigenous firms.

When we consider possible effects of FTAA on FDI coming from East Asia, i.e, whether FTAA would be cursing or blessing for East Asian MNEs, the overall policy environment and the contents of the agreement are particularly important checkpoints.

Admitting that economic approach, both theoretical and empirical ones, to analyze international production/distribution networks is still immature, the next section starts by presenting a tentative list of new economic logic explaining international production/distribution networks in East Asia. Statistical overview with international trade statistics follows, with particular emphasis on the contrast between East Asia and Latin America in machinery trade. Section 3 analyzes differences in investment pattern in East Asia and Latin America by Japanese and U.S. investors. We have an access to two kinds of micro data sets on Japanese MNEs and thus, using these data sets, try to draw the nature of international production/distribution networks as well as the contrast between East Asia and Latin America from various angles. Comparable data set for U.S. MNEs exists though the micro data are not accessible by the authors. Therefore, only published, hard-copy information is carefully investigated for the patterns of U.S. corporate activities. Section 4 presents the assessment of investment climate in East Asia and Latin America from the viewpoint of investors. Such information confirms differences in policy environment in the two regions as a background. The last section summarizes what we found and discusses the implication of FTAA.

2. Economic Logics of the formation of international production/distribution networks

We have observed the unprecedented formation of international production/distribution networks in the East Asian economies in the last decade. The international production/distribution networks consist of vertical production chains extended across countries in the region as well as distribution networks throughout the world. The major players are corporate firms belonging to the machinery industries including general machinery, electrical machinery, transport equipment, and precision machinery. Machines are typically made of a large number of parts and components, and the competitiveness in machines depends on both the quality/production cost of parts and components and managerial ability of vertical production networks, while some firms in other industries such as textiles and garment also develop such networks.

To explain the pattern of the international division of labor in East Asia, the

theory of comparative advantage based on the relative production costs in autarky is still valid in a number of circumstances. Technological gaps and factor price differences explain location patterns of industries to some extent. In interpreting the mechanics of international production/distribution networks, however, we must at least incorporate three lines of new thought into our analytical framework.[1]

The first line of thought is the fragmentation theory. It is a powerful conceptual tool when we analyze patterns of FDI going to developing countries in order to formulate vertical production links or cross-border production sharing system.[2] The traditional international trade theory primarily explains industry-wise location patterns. In East Asia, however, production-process-wise location patterns are extensively observed, particularly in machinery industries. The fragmentation theory lucidly presents the logic behind such a location pattern. Suppose that a large factory producing electronic products initially exists in Japan, which covers a long value chain from upstream to downstream (see Figure 1). A closer look at the detailed nature of production processes may find that some processes intensive watch by technicians while others may be simply labor-intensive. Fragmentation, i.e., locating fragmented production blocks (PBs) in Japan, Malaysia, China, and Singapore, for example, becomes cost saving when the cost of service links (SL) connecting PBs is low enough. SL cost includes transport costs, telecommunication costs, and various coordination costs between PBs. Globalization reduces SL cost in general and enables firms in many industries to fragment their PBs further to reduce the total production cost. As SL tend to carry strong external economies of scale, globalization may accelerate concentration and fragmentation at the same time.

== Figure 1 ==

The second line of thought is the agglomeration theory. This is an extension of international trade theory with external economies of scale while introducing the

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[1] The conceptual framework presented in this section is shared with Ando and Kimura (2003).

[2] As for the fragmentation theory, see Jones and Kierzkowski (1990), Arndt and Kierzkowski (2001), Deardorff (2001a, 2001b), and Cheng and Kierzkowski (2001).

concept of "space" from city planning and other academic fields.[3]   Economies of scale or agglomeration effects do not necessarily depend on the initial condition under autarky; in an extreme case, a country may start having agglomeration purely by chance (see Figure 2).   In this sense, the source of gains from trade in the "new" international trade theory is logically different from those in the traditional theory of comparative advantage, and such nature of the "new" theory generates room for possible new roles of government.   In the case of agglomeration in international production/distribution networks, the particular importance of agglomeration resides in vertical connection between upstream and downstream firms for parts and components that require just-in-time delivery and/or frequent spec changes.

== Figure 2 ==

The third line of thought is the internalization theory of corporate firms.   A firm typically does not do everything from upstream to downstream.   It sets its upstream-side boundary by purchasing raw materials or intermediate goods from other firms and determines its downstream-side boundary by selling their products to other firms or consumers.   Such boundary setting decision is here called "internalization decision."   In addition, a firm cuts its internalized activities into thin slices and places these slices at appropriate places.   This is called "location decision."   A firm makes internalization decision and location decision at the same time, considering its own firm-specific assets such as technology and managerial know-how (see Figure 3 as an illustration).   Such sophistication is particularly important in machinery industries. Technological progress in developing "modules" as well as the development of business models of OEM contracts and EMS companies, for instance, accelerates the formation of sophisticated inter-firm relationship.

== Figure 3 ==

While the formation of similar international links is observed between

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[3]   As for the agglomeration theory, see Krugman (1991, 1995) and Fujita, Krugman, and Venables (1999).

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Germany and Hungary/Czech and between the U.S. and Mexico, the networks in East Asia are distinctive, at least at this point in time, in the following aspects: first, the networks have already become a substantial component of each country's economy in the region so that each country's manufacturing sector, particularly machinery sector, and international trade of such commodities cannot be discussed without considering the existence of the networks anymore. Second, the networks involve a large number of countries at different income levels in the region. Cross-country differences in factor prices and other location advantages are effectively utilized in the formation of vertical production chains. Third, the networks include both intra-firm and arm's-length relationships, partially across firms with different firm nationalities. Multinational enterprises (MNEs) as well as indigenous firms in each country are forming sophisticated inter-firm relationships.

Figure 4 presents the proportion of "machineries" and "parts and components of machineries" in exports and imports of selected countries in 2000.[4] The figure plots countries from the one with the highest share of machinery parts and components' exports, aiming at statistically addressing the relative significance of machinery parts and components' trade in various countries in the world.[5] It clearly presents that the shares of machineries in each East Asian country's total exports and imports are indeed very large. Except some cases, the shares of machinery trade are as high as 40 percent or even higher up to more than 70 percent for both export and import sides. Furthermore, the shares of parts and components in machinery trade are also very high; they are 40 percent to 50 percent or even higher in cases of the Southeast Asian countries. These suggest the existence of active back-and-forth transactions of intermediate goods in the international production/distribution networks in machinery industries. In East Asia, the trade pattern is not simple one-way trade based on international differences in resource endowments anymore. Rather, sophisticated vertical production chains as well as distribution connection are extended to region-wide networks.

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[4] "Machineries" include general machinery, electric machinery, transport equipment, and precision machinery, being defined as HS 84-92.
[5] To vividly capture the features observed in East Asia and Latin America, some countries in other regions are also included in Figure 1.

== Figure 4 ==

In other regions, on the other hand, higher shares of machinery trade and those of machinery parts and components' trade are observed only for some specific countries such as Mexico, the U.S., Hungary, Czech Republic, and Germany. These suggest the existence of networks in machinery industries between the U.S. and Mexico and between Germany and Central and Eastern European countries, but these networks are not extensively covering a number of countries in the regions. Other countries, particularly the ones in Latin America, present by far lower shares of machinery exports than those observed for countries in East Asia. It indicates that they are not forming networks in the machinery sector yet. In addition, the shares of machinery imports are much higher than those of exports in such countries. This suggests that their manufacturing production activities are still of import-substituting type.

3. Evidence from micro data analysis: East Asia vs. Latin America

East Asia (except Japan) and Latin America have about the same economic size: U.S. $2,059 billion for East Asia & Pacific and $1,995 billion for Latin America & Caribbean in 2000.[6] Despite the statistics, Latin America remains very far from the eyes of Japanese MNEs. In East Asia, the logic of international production/distribution networks, which has been discussed above, is fully explored while not yet in Latin America.

This section presents some empirical evidence of corporate firms' behavior to understand investment pattern and the mechanics of international production/distribution networks by analyzing micro data of Japanese corporate firms and U.S. corporate firms, focusing on differences in the two regions.[7]

(1) Japanese corporate activities

Tables for Japanese corporate firms are constructed from the two sets of micro data, both of which are collected by Ministry of International Trade and Industry (MITI),

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[6] Data are obtained from the World Bank (2002, Table 3).
[7] Data analysis for Japanese firms is partially drawn from Ando and Kimura (2003) and Kimura and Ando (2003).

Government of Japan: 1) the F/Y 1996 and F/Y 2001 Basic Survey of Business Structure and Activity and 2) the F/Y 1999 Survey (the 27th Basic Survey) of Overseas Business Activities of Japanese Companies. In Tables 1 to 3, constructed from the former database, foreign affiliates are defined as those with no less than 20 percent Japanese ownership. Due to the deficiency of recent data for Latin America, their data in Tables 1 to 3 are the ones in 1995 though those for East Asia are the ones in 2000.[8] On the other hand, in Table 4 and Figure 5, constructed from the latter database, foreign affiliates include both "affiliates abroad" with no less than 10 percent ownership by Japanese parent firms and "affiliates of affiliates abroad" with no less than 50 percent ownership by "affiliates abroad".[9] Tables 5 to 7 and Figure 7 for U.S. corporate firms are constructed with the data available from U.S. Department of Commerce (2002) *U.S. Direct Investment Abroad*, which include non-bank foreign affiliates with more than 50 percent U.S. ownership.[10]

Table 1 presents (a) the number of parent firms with affiliates in East Asia and the number of affiliates in East Asia; and (b) the number of parent firms with affiliates in Latin America and the number of affiliates in Latin America, by the industry of parent firms and by the industry of affiliates.[11] In 2000, 2,994 firms located in Japan (in the data set) totally have 10,224 affiliates in East Asia.[12] In other words, 79 percent of the Japanese firms investing abroad have at least one affiliate in East Asia, and 54 percent of the affiliates of Japanese firms are located in East Asia. On the other hand, for Latin America, the small number of Japanese firms investing in the region is observed; only eight percent of the Japanese firms going abroad have affiliate(s) in Latin America, and as small as six percent of the affiliates of Japanese firms are located in Latin America in 1995.[13] Thus, the Japanese commitment to Latin America in terms of FDI is much

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[8] "East Asia" in tables 1 to 4 includes all Asian countries east of Pakistan. However, Japanese FDI to South Asia is pretty small.

[9] "Affiliates abroad" of parent firms in finance, insurance, or real estates are not included. See the Appendix for further data description.

[10] "East Asia" in tables 5 to 7 includes developing economies in Asia and Pacific (Australia and Japan are excluded), while "Latin America" in corresponding tables includes economies in Latin America and other Western Hemisphere.

[11] See Table A.1 for industry classification.

[12] In the data set for 2000 F/Y, 3,773 out of 27,655 firms located in Japan totally have 18,943 foreign affiliates with no less than 20% Japanese ownership in the world.

[13] In the data set for 1995 F/Y, 3,486 out of 26,353 firms located in Japan have in total

lower than the commitment to East Asia.

==Table 1==

Table 1 also reveals that close to 70 percent of the parent firms with affiliates in East Asia / Latin America are in the manufacturing sector (Industries 120 to 340) and half of them are in the machinery sector (290 to 320), where Japanese firms have international competitive edge.   However, the sectoral composition of parent firms in terms of the number of affiliates as well as the sectoral composition of affiliates presents sharp contrast between the two regions.   In East Asia, over 60 percent of the affiliates in the region are owned by manufacturing firms.   Also, about 60 percent of the affiliates in the region are manufacturing affiliates.   These figures clearly show how dominant manufacturing activities are in East Asia in terms of both Japanese parent firms and their affiliates.   In Latin America, in contrast, the share of affiliates with manufacturing parent firms is much lower (35 percent), and the share of affiliates with wholesale parent firms is higher (63 percent).   In addition, the share of manufacturing affiliates is only a quarter while the share of affiliates in the "other" sector is extremely high; among 516 affiliates categorized into "others", as many as 485 affiliates are in the "other" sector.[14]   These indicate that manufacturing activities in Latin America by Japanese firms are much smaller than in East Asia.

Japanese SMEs, defined as firms with less than 300 regular workers, have contributed to such concentration of manufacturing activities in East Asia by Japanese firms.   Table 2 presents the number of Japanese parent firms with affiliates in East Asia and those with affiliates in Latin America by the size of parent firms (the number of regular workers at home) and by the number of affiliates of each firm.   Japanese firms investing in East Asia vary in employment size at home: for instance, 14 percent of the firms have 50 to 99 workers, 20 percent have 100 to 199 workers, and 12 percent 200 to 299 workers.   It means that more than 40 percent of the Japanese firms going to East Asia are SMEs.   In addition, a considerable number of firms, including SMEs, have

18,113 foreign affiliates with no less than 20 percent Japanese ownership in the world.

[14] The "other" sector categorized into "others" in Table 1 includes sectors such as other transportation business (174 affiliates), finance and insurance (110), goods rental services (53), and other services (48).

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more than three affiliates in East Asia.   Such active FDI by Japanese SMEs in East Asia, which mainly supply intermediate goods in vertical production chains, have contributed to forming a critical mass of industrial clusters and international production/distribution networks.

== Table 2 ==

On the other hand, most of the Japanese firms investing in Latin America are large in size: 64 percent of the firms with affiliates in Latin America have at least 1,000 workers at home.   Moreover, all firms with less than 1,000 workers at home, except a few cases, have only one or two affiliates in Latin America, which is apparently different from the case for East Asia.   These facts indicate that in this region, active FDI by Japanese firms, particularly Japanese SMEs, contributing to forming industrial cluster by supplying intermediate goods, can barely be observed.

As suggested by Table 1, Japanese parent firms do not necessarily establish affiliates in their own industries where they have main activities.[15]   In general, parent firms have various activities across industries and establish foreign affiliates in order to conduct a subset of those activities abroad.   Table 3 provides the detailed information on sector switching (a) between parent firms with affiliates in East Asia and their affiliates in East Asia and (b) between parent firms with affiliates in Latin America and their affiliates in Latin America.   The rows denote the industry of parent firms while the columns the industry of foreign affiliates.   Diagonal cells of the tables indicate the number of non-sector-switching affiliates while non-diagonal cells denote the number of sector-switching affiliates.

==Table 3==

In East Asia, 75 percent of the affiliates owned by manufacturing parent firms are manufacturing affiliates.   Among them, we observe many sector-switching

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[15] A firm often has various activities at the same time.   The industrial classification of a firm located in Japan is determined by the largest activities the concerned firm conducts in terms of the value of sales.

manufacturing affiliates with manufacturing parent firms (in non-diagonal cells for industries 120 to 340 in both rows and columns), in particular sector-switching machinery affiliates with manufacturing parent firms (in non-diagonal cells for industries 120 to 340 in rows and industries 290 to 320 in columns). Such pattern reflects the existence of manufacturing activities aimed at supplying intermediate goods for other firms or for their own affiliates. It implies that Japanese firms have played an important role in developing vertical production networks in the region. Moreover, manufacturing parent firms also have non-manufacturing affiliates, particularly in the wholesale trade sector. Sector-switching non-manufacturing affiliates with manufacturing parent firms (in cells for industries 120 to 340 in rows and industries 480 and others in columns) make up 25 percent of the affiliates owned by manufacturing parent firms, suggesting their strategy in East Asia to establish global production/distribution networks by internalizing wholesale trade activities.[16]

The pattern in Latin America is completely different. Unlike East Asia, it is difficult to find many sector-switching manufacturing affiliates with manufacturing parent firms; that is, sector switching within manufacturing is rare. Instead, almost all of the sector-switching affiliates with manufacturing parent firms are found in the wholesale trade sector and in the "others" sector. This suggests that Japanese manufacturing parents have affiliates in Latin America to sell products in local markets, sometimes with simple local processing, rather than building dense production networks.

Let us, in turn, focus on the behavior of Japanese affiliates abroad. Table 4 presents 1) by-destination sales and 2) by-origin purchases by (a) Japanese affiliates in East Asia and (b) Japanese affiliates in Latin America, and Figure 5 shows by-destination sales and by-origin purchases by Japanese manufacturing affiliates in both regions. Most of the goods and services produced by Japanese affiliates in East Asia head for the region, that is, the local market (50 percent for all sectors and 49 percent for manufacturing sectors), to Japan (22 percent and 25 percent), or to countries in the region other than local market and Japan (21 percent and 17 percent).[17] The pattern of

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[16] This ratio, though, is much lower than the case of affiliates in North America or the case of affiliates in Europe: 49 percent for North America and 60 percent for Europe. See Ando and Kimura (2003) for the detailed discussion.

[17] Contrary to popular belief, sales to North America by Japanese affiliates in East Asia

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by-origin purchases by Japanese affiliates in East Asia also shows that they purchase most goods and services from the region: local market (41 percent and 43 percent), or import them from Japan (33 percent and 35 percent) or other East Asian countries (21 percent and 19 percent).[18] These facts reveal that more than 90 percent of both sales and purchases by Japanese affiliates are transactions among the East Asian countries with a relatively large share of other East Asian countries and suggest the presence of strong intra-regional production networks in East Asia including Japan through back-and-forth transactions of intermediate goods.

== Table 4 ==

== Figure 5 ==

In contrast, sales and purchases by Japanese affiliates in Latin America, particularly those by Japanese manufacturing affiliates, show that the transaction share of countries within the region is pretty small. The share of sales to Latin American countries other than the local market is 11 percent, and the share of purchases from them is as low as three percent. Moreover, in the manufacturing sector, shares of sales to/purchases from Latin American countries except the local market are only two percent and 0.5 percent, respectively. The main destination of sales is the local market, where 63 percent of the goods and services produced by Japanese affiliates in Latin America is sold, and 71 percent of those produced by only Japanese manufacturing affiliates is sold. The main origins for purchases are the local market (39 percent for all sectors and 55 percent for manufacturing sectors) and Japan (40 percent and 30 percent). North America is also a relatively important origin for purchases compared to East Asia, though the percentage of North America is still not very large (12 percent and eight percent). This evidence suggests that Japanese firms have not succeeded yet in constructing effective intra-regional production/distribution networks in Latin America, particularly in the manufacturing sector, where Japanese firms have international competitive edge.

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are small (three percent for all sectors and five percent for manufacturing), except in the leather and leather products sector.

[18] The share of purchases from North America is quite small.

To quantify the importance of transactions and confirm the magnitude of Japanese firms' activities in exporting from Japan and producing in East Asia and who is trading with whom, we introduce the concept of value added contents since intermediate inputs embodied in traded commodities may be counted multiple times in the amount of gross sales. The numbers in Figure 6 stand for the estimated Japanese value added contents of each transaction added at the starting point of the corresponding arrow in 2000, which are obtained in the three-country setting of the firm nationality approach.[19] The three-country setting consists of three geographical territories, i.e., Japan, Asia, and the rest of the world (ROW) as well as three nationals, i.e., Japanese, Asians, and foreigners (the national of ROW). "Japanese" include Japanese-owned firms located in Japan, households and governments located in Japan, and foreign affiliates of Japanese firms (FAJFs) located in Asia and ROW.[20] Asians and foreigners are defined in the symmetric way. Three nationals reside in three different locations, and thus nine blocks are drawn as in Figure 6, for which figures are calculated with statistical data from the Japanese side.

==Figure 6==

Although these figures are only rough estimates with a number of reservations on the data set, the value added account provides useful insights into the activities of Japanese MNEs with intra-firm and arm's length relationships. When value added in exports by Japanese in Japan to Asians (Asian firms) and foreigners (MNEs other than Japanese) in Asia is compared with that to Japanese (Japanese affiliates) in Asia, we find that the former is larger than the latter. Also, when value added in sales by Japanese affiliates in Asia to Asians (Asian firms) and foreigners (MNEs other than Japanese) in Asia is compared with that to Japanese-owned firms in Japan, the former is larger than the latter. These indicate that the activities by Japanese firms are not solely

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[19] The firm nationality approach is first proposed by Baldwin and Kimura (1998) and Kimura and Baldwin (1998) in a two-country setting and is extended to a three-country setting by Kimura (1998). See Kimura (1998) and Ando and Kimura (2003) for the detailed explanation of how these figures are estimated.

[20] Note that "Japanese" in this definition is different from those on the residency basis or those in the sense of productive factor holders; we treat FAJF as controlled by Japanese and regard the whole activities of FAJF as activities by Japanese.

based on subcontracting relationships or intra-firm relationships among Japanese firms only; rather, the activities do include transactions with indigenous firms and other MNEs in Asia. In other words, intra-regional production networks in East Asia consist not only of Japanese firms but also of the mixture of firms of different nationalities.

The empirical observation we have discussed may not directly indicate the new three lines of thought. However, active FDI by Japanese SMEs, the existence of many sector-switching manufacturing affiliates, and intra-regional trade and production activities by Japanese firms (including their affiliates) with indigenous firms and MNEs in Asia indeed imply how such logics work in developing international production/distribution networks in East Asia while such logics have not been fully employed in Latin America, at least from the perspective of Japanese firms.

(2) U.S. corporate activities

Considering the closer distance and economic relationship between Latin America and the United States, the following part conducts similar analysis for the U.S. corporate firms to see what we have discussed for Japanese firms can be applied to the case for the U.S. firms as well.[21] As discussed in section 1, the data set for U.S. MNEs, which is comparable to the data sets for Japanese MNEs, exists though the micro data are not accessible by the authors. Therefore, this section investigates the patterns of U.S. corporate activities by carefully using the data available from the only published, hard copy. The general pattern of FDI by the U.S. firms is first investigated without distinguishing the location of affiliates abroad.[22] Table 5 presents the number of parent firms with foreign affiliates and the number of foreign affiliates, by the industry of parent firms and by the industry of affiliates.[23] U.S. firms in non-manufacturing, particularly services sectors, are more active in FDI than Japanese firms; 54 percent of parent firms are in the manufacturing sector, 11 percent are in the wholesale trade sector, and 35 percent are in other sectors including services sectors. The sectoral

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[21] See Lipsey (2003) for further discussion on FDI activities of U.S. firms in East Asia and Latin America.
[22] Unfortunately, this paper cannot identify the locations of affiliates abroad due to the limited availability to the micro data for U.S. MNEs as is the case for Japanese MNEs.
[23] Foreign affiliates of U.S. firms in this paper are defined as majority-owned non-bank foreign affiliates with more than 50 percent of U.S. ownership.

composition of affiliates of U.S. firms also shows a different pattern from the pattern for Japanese MNEs. Foreign affiliates of U.S. firms more intensively concentrate on the non-manufacturing sector than those of Japanese firms do; 36 percent for the manufacturing sector, and 64 percent for the non-manufacturing sector including services sectors.

== Table 5 ==

Table 6 in turn presents the performance of U.S. affiliates in East Asia and Latin America in terms of (a) sales and (b) gross products.[24] U.S. firms have in total 2,846 affiliates in East Asia and 3,403 affiliates in Latin America. Among those affiliates in Latin America, 799 affiliates are located in Mexico, and 526 affiliates are in Brazil, and these affiliates in the two countries hold a large portion of manufacturing activities by U.S. affiliates in Latin America (more precisely, activities by U.S. manufacturing affiliates) in terms of both sales and gross products. Therefore, the table also shows by-industry sales/gross products by affiliates in Latin American countries excluding Mexico and Brazil are also presented.

== Table 6 ==

The table reviews that manufacturing activities, particularly in machinery sectors, are dominant for affiliates in East Asia; 48 percent of the sales by affiliates in East Asia are by manufacturing affiliates, 70 percent of which are machinery sectors, while 44 percent of the gross products are by manufacturing affiliates, 60 percent of which are machinery sectors. These suggest that manufacturing activities by U.S. firms, particularly in machinery sectors, are pretty intensive in East Asia as the manufacturing activities by Japanese firms are in East Asia though foreign affiliates of U.S. firms in general more intensively work in the non-manufacturing sector.

In Latin America, on the other hand, the portion of manufacturing activities is

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[24] See Ekholm, Forslid, and Markusen (2003) and Markusen (2003) for theoretical and empirical discussion on the sales by U.S. affiliates; local sales, exports to the U.S., and exports to third countries.

small, particularly when Mexico and Brazil are excluded, unlike the case for East Asia. U.S. affiliates in Mexico and Brazil contribute to as high as 90 percent of the sales/gross products by U.S. affiliates in machinery sectors in the region. Once Mexico and Brazil are excluded, the manufacturing share becomes 32 percent for sales and 35 percent for gross products, and the machinery share goes down to as low as five percent for sales and four percent for gross products. These indicate that manufacturing activities by U.S. firms, particularly in machinery sectors, are extremely thin in Latin America except Mexico and Brazil.

Let us focus on sales by U.S. affiliates in terms of by-destination shares to understand the development of production networks in Latin America. Since the information on the purchases by U.S. affiliates is not available, unlike the case for Japanese affiliates, this paper investigates only the patterns of sales for U.S. affiliates. Table 7 presents shares of by–destination sales for East Asia, Latin America, Mexico, and Brazil as well as the portions of other U.S. affiliates in sales to the local market, portions of U.S. parent firms in sales to the U.S., and portions of other U.S. affiliates in sales to their countries (countries other than the local market and the U.S.). The reason why those figures for Mexico and Brazil are separately presented is that, as discussed above, Mexico and Brazil hold as high as 90 percent of the sales/gross products by U.S. affiliates in machinery sectors in the region. Figure 7 shows shares of local sales to non-U.S. affiliates, those of local sales to other U.S. affiliates, those of exports to non-parent firms in the U.S., those of exports to parent firms in the U.S., those of exports to other Latin American countries, those of exports to East Asia, and those of exports to other countries for sales by affiliates in East Asia, Mexico, and Brazil.

== Table 7 ==

== Figure 7==

Table 7 and Figure 7 provide several interesting insights. First, the by-destination shares within the region are different between those in East Asia and those in Latin America. In East Asia, a significant portion of the goods and services produced by U.S. affiliates in East Asia are sold to the East Asian countries other than the local market: 56 percent for the local market and 17 percent for other East Asian economies. This suggests the presence of strong intra-regional production networks involving not

only the local market but also other East Asian countries through back-and-forth transactions of intermediate goods, which is also observed for Japanese corporate firms.

In Latin America, in contrast, the share of the region other than the local market is pretty small: eight percent on average, five percent for Mexico, and six percent for Brazil. Considering large shares of the local market (66 percent on average, 64 percent for Mexico, and 84 percent for Brazil) and much smaller intra-regional transactions than the case observed for U.S. affiliates in East Asia even for Mexico and Brazil, where U.S. manufacturing activities concentrate, U.S. firms in general have affiliates in Latin America to sell products in local markets, sometimes with simple local processing, rather than building dense production networks in the region, as we claim for Japanese firms.

Second, most of the goods and services by the U.S. affiliates sold to the U.S. go back to the U.S. parent firms. In East Asia, 17 percent of the goods and services are sold to the U.S., 87 percent of which are for their parent firms in the U.S. In Latin America, on average, 18 percent of the goods and services are sold to the U.S., 88 percent of which are for their parent firms in the U.S. The ratio of U.S. parent firms for Brazil is almost on average, 86 percent, but the ratio for Mexico is even higher than the average, 91 percent of the local sales (i.e., 25 percent in total sales). Although such data are not available for Japanese firms, the proportion of goods and services going back to parent firms would be much smaller in the case of Japanese firms.

Third, production networks in the manufacturing sector are found only in transactions between the U.S. and Mexico. As discussed above, most of manufacturing activities by the U.S. affiliates in Latin America are conducted in Mexico and Brazil. The share of the U.S. as a destination of sales is relatively large, 27 percent, for Mexico while the share is quite small, six percent, for Brazil. Even when their goods and services are sold to the local market, 13 percent of them go to other U.S. firms in Mexico (i.e., eight percent in total sales) while only three percent go to other U.S. firms in Brazil (i.e., three percent in total sales).

The analysis of U.S. corporate firms' behavior confirms that although their FDI is more concentrated in services sectors in general than the Japanese FDI, by-industry investment pattern in the two regions is similar to the pattern of Japanese corporate firms; U.S. firms invest in East Asia for manufacturing activities, particularly in machinery sectors, contributing the formation of international production/distribution

networks, while U.S. firms go to Latin America not for development of such networks in machinery sectors, and such networks can be observed only between the U.S. and Mexico.

4. The assessment of investment climate

This section focuses on the voices of private sector on how they assess Latin America as a potential destination of their FDI and discuss its policy implication.   The Japan Bank for International Cooperation (JBIC) annually conducts a questionnaire survey for Japanese MNEs.   One of the key questions of the survey is to list countries which they think are prospective destinations of their FDI in the short run and the long run.   The short-run choices reflect their immediate strategies for globalizing corporate activities.   In 2001 F/Y and 2002 F/Y, China is by far the most important possible destination for their FDI (Table 8).[25]   The United States and other East Asian countries follow with quite a distance.   Brazil and Mexico are only at the 13th place in 2001 F/Y and 10th and 14th in 2002 F/Y; merely 4 percent to 5 percent of the firms that returned effective answers list these countries.   Other Latin American countries do not even appear in the top-20.   As for the long-run choices, Brazil climbs up to the 7th place in both 2001 F/Y and 2002 F/Y due to its market potentials.   Mexico stagnates at the 15th place in both years.   Despite the market size of Latin America, Japanese firms seem to suffer from a pretty high psychological barrier to investing in Latin America.

==Table 8==

The reasons for their choices indicate that "market potential" and "inexpensive labor" are important conditions that attract incoming FDI in most of the East Asian countries (see the upper part of Table 9).   In addition, factors related to vertical production chains or intra-regional trade such as "to supply intermediate goods for assemblers", "to export to the third countries", and "to export to Japan" are also listed by many firms for most of the countries.   These imply that many Japanese manufacturing firms involve vertical production activities and form industrial clusters in

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[25] See Kaburagi, et al. (2002) for the 2001 F/Y survey and Marugami, et al. (2003) for the 2002 F/Y survey.

East Asia, contributing to the formation of the international production/distribution networks.   The lower part of the table presents what Japanese manufacturing firms are worrying about in each prospective destination of their FDI.   Many firms raise issues of "insufficient infrastructure," "non-transparency in the legal system," "political and social environment," and others as weak points of destination countries, particularly of China, Vietnam, and India.   Considering that Vietnam and India have received a small amount of FDI from Japan though they have been listed in the top 10 of prospective destinations in the surveys in the last few years, this survey also confirms that the development of economic infrastructure, transparency, fairness, and predictability are essential for hosting FDI as discussed above.

==Table 9==

The overall investment climate in Latin America seems to have room for improvement.   Table 10 presents average measures of business costs (compiled from the World Economic Forum (2003)) and those of governance indicators (compiled from Kaufmann et al. (2003)).   East Asia, particularly countries except China, presents most of the indicators over Latin America.

== Table 10 ==

Furthermore, we have to realize that discriminatory treatment between FTA member countries and non-member countries does not bring much benefit if we think much of quick formulation of competitive agglomeration.   A business association in Japan, Business Council on Facilitation of Trade and Investment (BCFTI), annually compiles Japanese firms' complaints and requests on trade and FDI-related policies abroad.   BCFTI (2002) lists a number of claims as shown in Table 11.   A number of claims and complaints for the Latin American countries are those related to regional trade agreements and their implementation.   Some claims are not obviously headed for host countries but should be for the Japanese Government; for example, the lack of FTAs, tax treaties, or investment treaties is largely the responsibility on the Japanese side.   However, at the same time, it is serious that some policies accompanied with FTAs seem to unduly hurt activities of affiliates of Japanese firms.   In addition, various

uncertainty and instability in implementing commercial policies often irritate Japanese firms.

== Table 11 ==

In the case of Mexico, the transition from the Maquiladora scheme to a new system with NAFTA has forced Japanese firms to have a hard time. Moreover, the Mexican Government raised tariffs for about 85 percent commodity items in January 1999, which expanded tariff gaps between countries with FTAs and those without and aggravated negative effects of trade diversion. While the Mexican Government explained this move as a policy for taking care of fiscal deficit, Japanese investors took it as a virtual threat to force the Japanese Government to seriously consider concluding Mexico-Japan FTA. The conclusion of Mexico-EU FTA strengthened the belief of Japanese investors. In fact, the tariff elevation worked quite effectively, and now the Japanese Government is seriously negotiating over a FTA with Mexico. However, it was unfortunate that Japanese remember the Mexican policy change as an unfriendly move. We must note that regionalism may work adversely for investment, particularly FDI coming from nonmember countries.[26]

5. Implication for regional trade arrangements such as FTAA

This paper provides tentative economic analysis of international production/distribution networks from both theoretical and statistical approach, with particular emphasis on the contrast between East Asia and Latin America. We claim that international production/distribution networks in East Asia are being developed with utilizing new economic logic such as fragmentation, agglomeration, and optimal internalization. On the other hand, Latin America with Mexico as a notable exception has not been successful yet in developing such networks. With the contrast in economic background, regional trade arrangements would have completely different impacts.

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[26] The Japan-Mexico FTA finally reached "agreements in substance" in March 2004 (http://www.mofa.go.jp/region/latin/mexico/joint0403.html) though official conclusion is yet to come as of the end of April 2004.

The formation of FTAA is a massive effort that will surely influence the world economy to a large extent. Potential investors outside the region, however, are probably watching the formation process with a mixture of good expectations and concerns.

Concerns are from possible discriminatory treatment against non-regional investors. Most of the FDI in Latin America are still import-substituting-type investment with trade protection. And thus, if tariffs are removed by FTAA, incumbent investors will face more competition and will be forced to reorganize their activities in the framework beyond national border. Such restructuring itself is good; inefficient firms will get out while competitive firms expand their operation. A potential problem, however, is that intra-regional trade liberalization would generate asymmetric effects on intra-regional investors and outside investors. Since local supporting industries are typically immature in LDCs, MNEs must often import some key parts and components from the home country. Thus, MNEs from outside the region would face serious disadvantages in competition with intra-regional MNEs. This is what actually occurred in Mexico, and a number of Japanese firms actually closed their operations in Mexico.[27] There is thus a danger that FDI from outside the region would not increase or would rather decrease, particularly in cases of import-substituting-type FDI.

There are also a lot of good expectations, of course. Latin America is a huge market as a whole and has great growth potential. Particularly from the viewpoint of East Asian MNEs, there is a lot of room for developing vertical production chains across countries, utilizing abundant human resources. Despite the geographical distance, FDI from East Asia would contribute to the formation of international production/distribution networks in Latin America.

In order to prevent from the withdrawal of East Asian investors and rather to attract more FDI, FTAA is expected to accompany the following policy measures beyond intra-regional tariff removal. First, MFN tariff reduction, particularly for intermediate goods for industrial production, must be conducted so as to neutralize disadvantages that MNEs from outside the region would bear. Otherwise, even

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[27] See Casanova (2003, appendix) for a list of selected companies that have transferred operations from Mexico to other countries.

incumbent investors would withdraw.

Second, more importantly, Latin American countries should construct and implement a policy package to stimulate the formation of international production/distribution networks. Trade liberalization is of course necessary but is not enough by itself. Policy measures to reduce service link costs and encourage the creation of critical mass of agglomeration are essential. In this regards, Latin America can learn a lot from East Asian experience.

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Appendix: Data sources for Japanese corporate firms

The Basic Survey of Business Structure and Activity (Kigyo Katsudo Kihon Chosa in Japanese) is the MITI survey, first conducted for F/Y 1991, then for F/Y 1994, and annually since then.   The Basic Survey has several attractive features.   First, the samples in the survey are comprehensive, covering all firms with more than 50 workers, capital of more than 30 million yen, and establishments in mining, manufacturing, wholesale/retail trade, and restaurants.   Foreign affiliates covered in the survey are those with no less than 20 percent Japanese ownership.   Second, the ratios of questionnaire returns are high; the actual ratios are not disclosed, but are about 90 to 95 percent.   Statistics collected by the Government of Japan are legally classified into two categories: designated statistics (*shitei toukei*) and approved statistics (*shounin toukei*).   The Basic Survey is the first type, and thus firms in the survey must return the questionnaires under the Statistics Law.   Third, it provides firm-level data rather than the data on an establishment basis.   Although establishment-level data are useful in analyzing production activities, firm-level data are much more appropriate to examine corporate activities as a whole.

The Survey of Overseas Business Activities of Japanese Companies, which is also conducted by MITI, has been conducted annually since F/Y 1970.   Firms targeted by the survey are those with Japanese affiliates abroad of Japanese firms, except firms in finance, insurance, or real estates.   The Survey of Overseas Business Activities is of the approved type, so that the effective return ratios tend to be as low as 60 percent (in the case of the F/Y 1999 Survey, the returned ratio is 56.0 percent).   As explained in section 3, foreign affiliates include both "affiliates abroad" with no less than 10 percent ownership by Japanese parent firms and "affiliates of affiliates abroad" with more than 50 percent ownership by such "affiliates abroad".

The industry classification used in this paper is presented in Table A.1. Since the industry classification of the Survey of Overseas Business Activities is different from that of the Basic Survey, the latter industry classification is matched with the former to make them comparable.   Unfortunately, services sectors are not fully covered by both surveys.

Figure 1　Fragmentation: an illustration

Before fragmentation

upstream   downstream

After fragmentation

PB: production block
SL: service link
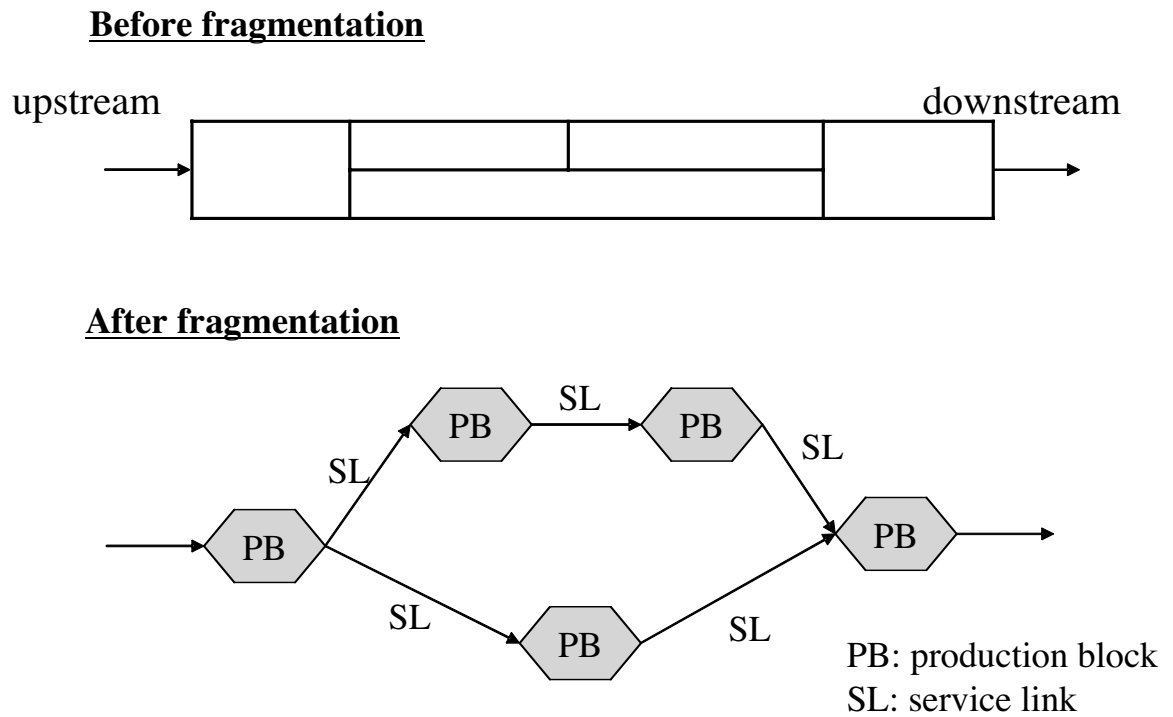
Figure 2　Agglomeration or industrial clusters: an illustration

　　　　Economies of scale in the spatial version

　　　　"Agglomeration makes agglomeration"
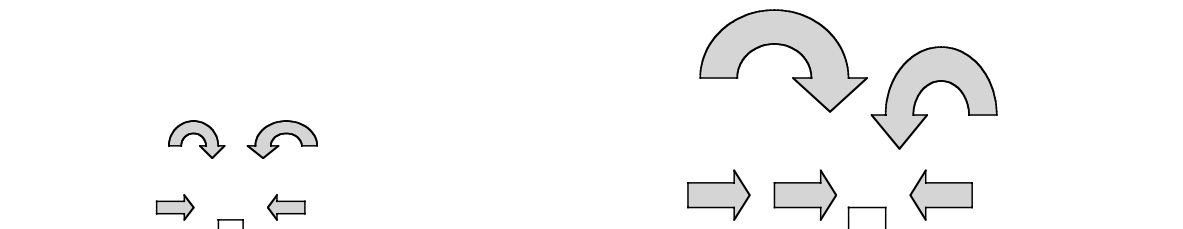
Figure 3 Internalization and location decisions: an illustration

Upstream

Downstream

Basic parts

Modules

Assembly (OEM)

Wholesales
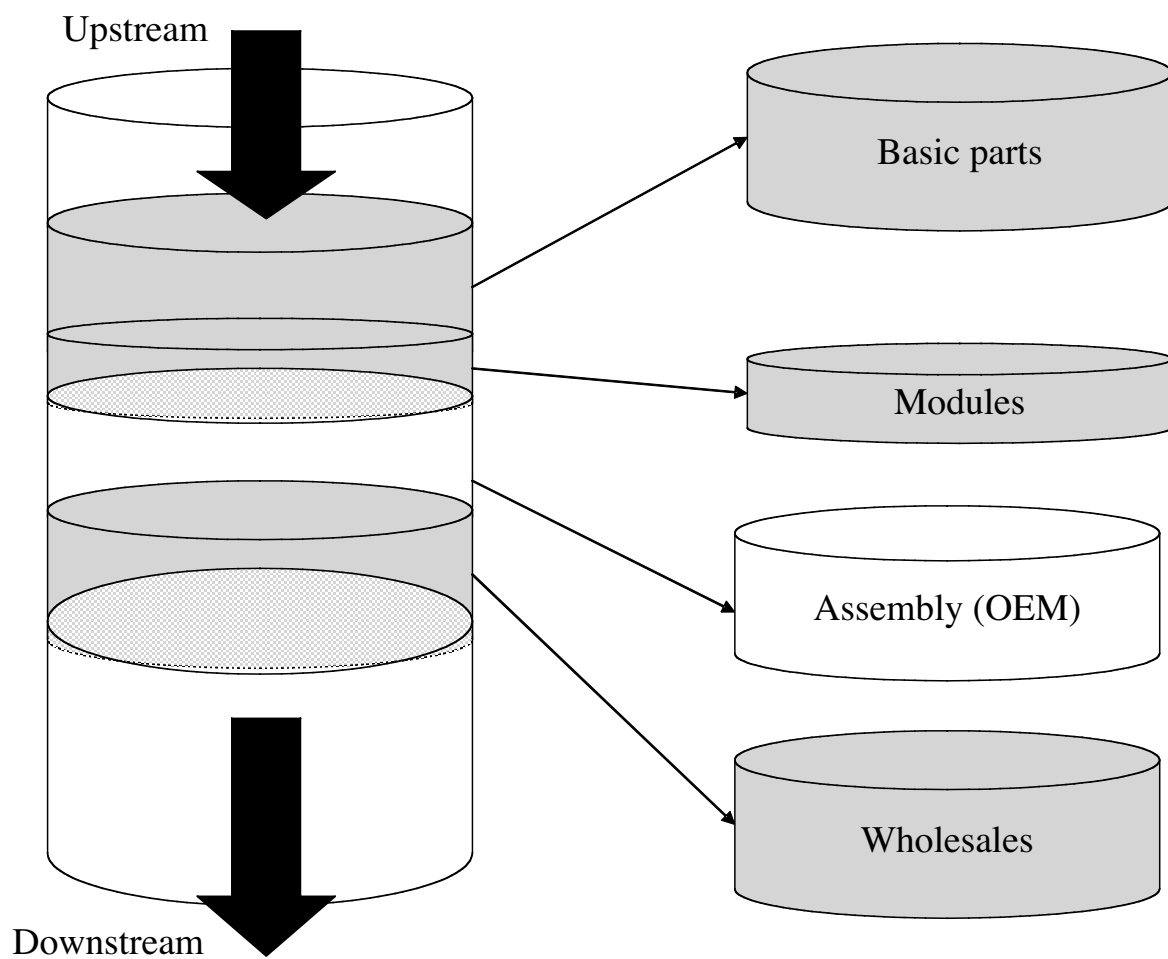
Figure 4 Trade in machinery goods and machinery parts and components: shares in total exports and imports in 2000
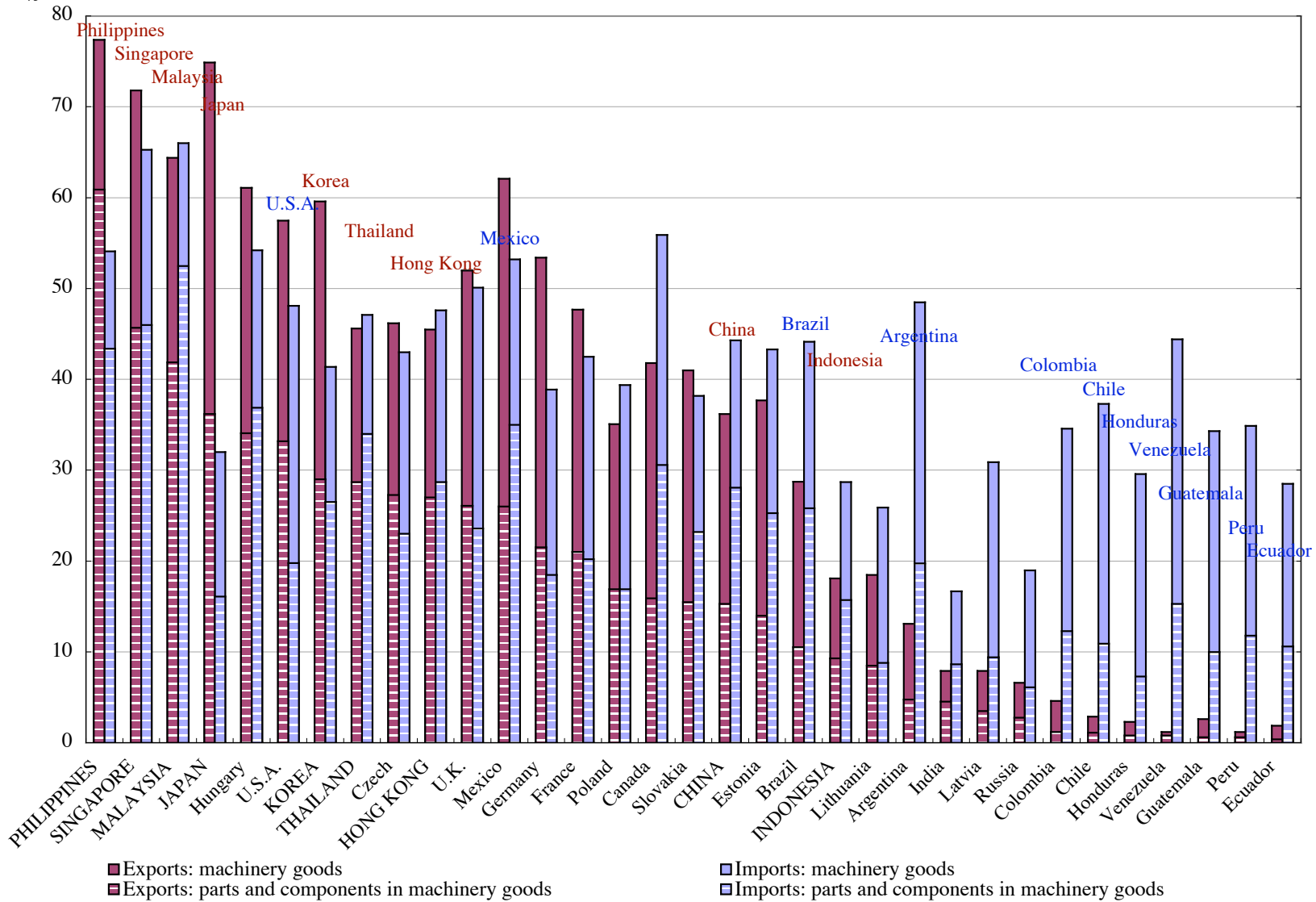
Data source: Ando and Kimura (2003).

(Original data source: Authors' calculation , based on PC-TAS (UN Comtrade only for exports of Hong Kong and exports and imports of Russia and Slovakia).)

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Table 1 Japanese parent firms and affiliates in East Asia and Latin America by industry

Industry	By industry of parent firm				By industry of affiliate	
	Number of parent firms	Share in total (%)	Number of affiliates	Share in total (%)	Number of affiliates	Share in total (%)
(a) Parent firms with affiliates in East Asia (2000 F/Y)						
Manufacturing sector	**2050**	**68**	**6296**	**62**	**6082**	**59**
Non-machinery sectors						
120-280, 340	1038	35	2910	28	3198	31
Machinery sectors	1012	34	3386	33	2884	28
290	286	10	810	8	543	5
300	429	14	1598	16	1475	14
310	222	7	752	7	664	6
320	75	3	226	2	202	2
Non-manufacturing sector	**944**	**32**	**3928**	**38**	**4142**	**41**
480	697	23	3350	33	2627	26
Others	247	8	578	6	1515	15
Total	**2994**	**100**	**10224**	**100**	**10224**	**100**
Share in total		**79**		**54**		**54**
(b) Parent firms with affiliates in Latin America (1995 F/Y)						
Manufacturing sector	**197**	**68**	**385**	**35**	**286**	**26**
Non-machinery sectors						
120-280, 340	90	31	157	14	136	12
Machinery sectors	107	37	228	21	150	14
290	32	11	58	5	36	3
300	35	12	94	8	68	6
310	31	11	65	6	40	4
320	9	3	11	1	6	1
Non-manufacturing sector	**91**	**32**	**725**	**65**	**824**	**74**
480	73	25	700	63	308	28
Others	18	6	25	2	516	46
Total	**288**	**100**	**1110**	**100**	**1110**	**100**
Share in total		**8**		**6**		**6**

Data sources: Ando and Kimura (2003) for the case (a) and Kimura and Ando (2003) for the case (b). (Original data source: MITI database.)

Notes:

Foreign affiliates are those with no less than 20% Japanese ownership.

Number of affiliates is the (a) number of affiliates in East Asia and (b) number of affilaites in Latin America.

Share in total indicates the (a) share of East Asia in the total number of Japanese parent firms / foreign affiliates for 2000 and (b) share of Latin America in the number of total Japanese parent firms / foreign affiliates for 1995.

"Others" include industries "050", "540", and "other".

Table 2 Foreign affiliate ownership patterns of Japanese parent firms by firm size

Number of regular workers of parent Firm	Number of affiliates												
	1	2	3	4	5	6	7	8	9	10	More	Total	%
in East Asia (2000 F/Y)													
50 to 99	301	67	25	12	1	2	1	.	.	.	1	410	13.7
100 to 199	413	101	34	23	7	1	2	.	2	.	.	583	19.5
200 to 299	196	92	30	12	8	10	3	2	1	.	1	355	11.9
300 to 499	242	99	36	28	18	8	6	4	2	.	4	447	14.9
500 to 999	209	117	65	42	27	20	5	2	4	2	10	503	16.8
1,000 and more	136	107	77	54	55	45	27	38	16	19	122	696	23.2
Total	1497	583	267	171	116	86	44	46	25	21	138	2994	100.0
in Latin America (1995 F/Y)													
50 to 99	15	1	.	.	.	.	.	.	.	1	.	17	5.9
100 to 199	15	2	.	.	.	.	.	.	.	.	.	17	5.9
200 to 299	6	3	1	.	1	.	.	.	.	.	.	11	3.8
300 to 499	22	5	.	2	.	.	.	.	.	.	.	29	10.1
500 to 999	27	2	.	.	2	.	.	.	.	.	.	31	10.8
1,000 and more	89	37	22	5	7	7	2	1	1	2	10	183	63.5
Total	174	50	23	7	10	7	2	1	1	3	10	288	100.0

Data sources: Ando and Kimura (2003) for East Asia and Kimura and Ando (2003) for Latin America. (Original data source: MITI database.)

Notes: Foreign affiliates are those with no less than 20% Japanese ownership.

Figures are the number of parent firms.

Table 3 Sector switching between parent firms and their affiliates

(a) Industries of Japanese parent firms and their affiliates in East Asia, 2000 F/Y (number of affiliates in East Asia)

Industry of parent firm	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	340	480	Other	Total
120	145	1							2														20	15	183
130	5	28							12														19	10	74
140			70	7			2				2								1	2		2	10	0	96
150			5	73			2				2								1				12	1	96
160					14	1																1	2	0	18
170					2	25																1	8	0	36
180							45				2							1					5	3	56
190								63													1	6	4	7	81
200	9	2	43	4	1		1	3	520	3	15	2		4		4	7	6	8	1	3	10	174	47	867
210									2	2	4								1				9	18	36
220									7		184	6		1		1	2	2	8	1		5	33	4	254
230		1							1		3	89					2	1		4	1	3	15	8	128
240													6									1		0	7
250			1						1		4			87		1	7	1	3	1	4	2	21	26	159
260														1	51	3	10	2	8	4			7	29	115
270									1		2	1		1		161	14	3	30	14		2	30	23	282
280	1		1	2			1				4			2		14	161	7	27	5	1	8	34	9	277
290	4								10		4			1	8	1	15	362	65	20	18	15	214	73	810
300			2	2	1		1		5		12			5	1	3	6	79	1009	6	17	9	308	132	1598
310						1					2			2	5		9	22	25	569		3	59	55	752
320			1						2		1			3			1	6	14		131		56	11	226
340			1				1				10	1					2				3	66	48	11	145
480	115	11	83	157	13	8	14	9	142	11	60	22	3	70	47	32	63	39	266	34	22	56	1516	557	3350
Others	5	0	1	15	6	1	1	0	4	1	2	0	2	2	1	2	4	12	7	3	1	9	23	476	578
	284	43	208	258	38	37	63	80	709	17	313	121	11	179	113	222	303	543	1475	664	202	199	2627	1515	10224

(b) Industries of Japanese parent firms and their affiliates in Latin America, 1995 F/Y (number of affiliates in Laitn America)

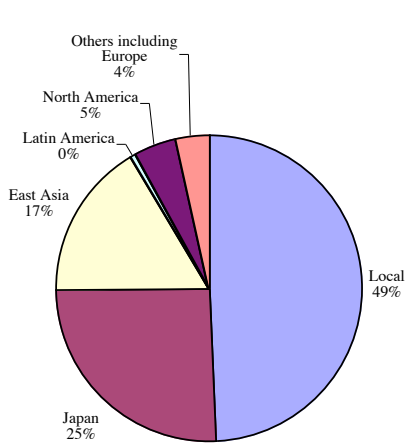| Industry of parent firm	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	340	480	Other	Total
120	5	1																					5	10	21
130		2							1														1	9	13
140			9																				1	1	11
150			2	3																					5
160					1																		1		2
170						1																			1
180																								3	3
190								2																	2
200	4		6						18		2												5	8	43
210																							7	3	10
220																								1	1
230																									0
240																									0
250									1					1										1	3
260											1				5							1	1	5	13
270																3				1				2	6
280																	11						1	6	18
290																		26	1	2			17	12	58
300																	1	5	46			1	33	8	94
310																	1		1	33			11	19	65
320																					3		5	3	11
340																					2			3	5
480	13	1	7		6	1	3		6			1			4	3	3	2	21	4	1		217	407	700
Others				3							1							2				1		18	25
	22	4	24	3	10	2	3	2	26	1	3	1	0	1	9	7	15	36	68	40	6	3	308	516	1110

Data sources: Ando and Kimura (2003) for the case (a) and Kimura and Ando (2003) for the case (b). (Original data source: MITI database.)

Notes: Foreign affiliates are those with no less than 20% Japanese ownership.

    "Others" include industries "050", "540", and "other".

Table 4 Intra-regional production networks: sales and purchases by Japanese affiliates in East Asia and Latin America, 1998 F/Y

Industry	Number of affiliates	Share in total (%)	Total sales (million JPY)	Share in total (%)	Local	Japan	Third countries (Total)	East Asia	North America	Europe	Latin America	Total purchases (million JPY)	Share in total (%)	Local	Japan	Third countries (Total)	East Asia	North America	Europe	Latin America
(a) East Asia																				
Manufacturing Sector																				
120+130	162	2.6	343,929	1.5	69.1	16.2	14.7	6.4	3.3	3.5	0.0	137,424	0.9	78.8	6.6	14.6	8.0	0.4	0.5	2.3
140+150	399	6.4	503,397	2.2	43.6	30.2	26.1	12.2	4.9	7.4	0.2	254,218	1.7	54.0	26.6	19.4	13.1	2.3	0.8	0.0
160	23	0.4	17,204	0.1	15.3	56.3	28.3	24.0	0.9	0.1	0.0	7,818	0.1	94.0	2.7	3.3	0.0	0.0	3.3	0.0
170	14	0.2	7,073	0.0	52.8	34.3	12.9	8.8	4.0	0.0	0.0	4,821	0.0	75.2	13.8	11.0	7.9	0.0	3.0	0.0
180	36	0.6	50,256	0.2	74.2	12.5	13.3	9.0	3.5	0.0	0.8	15,328	0.1	62.5	20.5	17.0	14.1	1.8	1.1	0.0
190	27	0.4	27,536	0.1	77.8	0.4	21.8	11.5	0.4	5.5	0.0	2,694	0.0	73.7	16.6	9.8	0.0	1.9	7.8	0.0
200	529	8.5	1,414,684	6.1	69.8	6.7	23.5	15.7	5.0	1.5	0.5	579,333	3.8	53.6	19.4	27.0	13.3	6.8	1.9	0.0
210	17	0.3	36,418	0.2	21.2	65.7	13.1	2.9	0.0	10.2	0.0	32,061	0.2	21.7	18.0	60.4	45.4	10.3	3.9	0.0
220	109	1.8	92,230	0.4	64.7	20.1	15.2	9.7	1.7	2.9	0.0	38,584	0.3	68.0	25.7	6.3	5.1	0.2	0.5	0.0
230	54	0.9	107,614	0.5	41.4	34.3	24.3	13.2	4.9	5.1	0.2	24,259	0.2	57.4	23.6	19.0	17.1	0.3	1.6	0.0
240	16	0.3	7,196	0.0	4.5	21.2	74.3	22.5	44.0	7.8	0.0	5,282	0.0	10.0	6.8	83.2	41.2	9.8	3.2	6.4
250	160	2.6	334,130	1.4	69.7	17.2	13.2	8.8	3.5	0.8	0.0	140,533	0.9	41.3	31.5	27.2	23.1	3.3	0.5	0.1
260	166	2.7	423,491	1.8	85.4	2.9	11.7	6.5	2.6	0.1	1.9	229,136	1.5	19.2	70.0	10.8	10.4	0.0	0.2	0.0
270	110	1.8	281,041	1.2	55.9	15.6	28.6	26.3	0.9	1.0	0.1	155,313	1.0	44.1	31.7	24.2	19.0	0.3	1.1	0.2
280	121	1.9	97,240	0.4	70.9	13.4	15.7	11.9	1.9	1.4	0.1	47,014	0.3	67.8	29.0	3.2	1.7	0.3	1.1	0.0
290	315	5.1	688,971	3.0	32.4	40.7	27.0	14.8	5.5	4.6	0.3	400,705	2.6	57.7	32.2	10.1	8.8	0.8	0.4	0.0
300	916	14.7	5,191,673	22.3	32.3	32.9	34.8	24.9	5.3	3.0	0.6	3,711,079	24.4	35.8	37.0	27.2	26.3	0.4	0.2	0.0
310	478	7.7	2,140,129	9.2	81.0	11.1	7.9	2.2	3.5	1.5	0.2	1,380,996	9.1	53.4	37.2	9.4	6.1	2.5	0.7	0.0
320	100	1.6	464,375	2.0	27.2	45.9	26.9	23.1	1.5	2.0	0.1	271,580	1.8	40.2	41.2	18.6	14.5	2.6	1.5	0.0
330+340	83	1.3	95,985	0.4	22.3	63.6	14.1	2.8	7.5	2.9	0.1	63,645	0.4	55.1	37.7	7.1	5.9	0.4	0.7	0.0
Non-Manufacturing Sector																				
050	11	0.2	22,074	0.1	32.9	67.1	0.0	0.0	0.0	0.0	0.0	354	0.0	98.4	1.6	0.0	0.0	0.0	0.0	0.0
480	957	15.4	8,524,268	36.7	41.3	19.4	39.3	33.0	2.2	2.8	0.4	6,333,657	41.6	28.4	35.2	36.4	28.3	1.5	2.7	0.5
540	170	2.7	731,660	3.1	88.5	5.8	5.7	5.4	0.1	0.2	0.0	597,713	3.9	75.0	21.4	3.6	1.1	2.3	0.2	0.0
Others	1240	20.0	1,632,575	7.0	70.1	15.0	14.9	9.8	2.6	1.9	0.4	789,214	5.2	70.9	17.9	11.2	9.1	0.1	0.8	0.0
Total	6213	100.0	23,235,149	100.0	49.6	21.9	28.4	21.2	3.4	2.6	0.4	15,222,761	100.0	41.1	33.4	25.5	20.7	1.5	1.3	0.2
(b) Latin America																				
Manufacturing Sector																				
120+130	11	1.4	77,160	1.9	78.6	9.1	12.3	0.4	1.6	7.4	0.9	34,822	1.8	99.6	0.0	0.4	0.0	0.4	0.0	0.0
140+150	30	3.7	60,881	1.5	86.0	6.3	7.7	0.1	4.8	0.3	2.5	22,201	1.2	67.6	2.6	29.8	0.9	13.6	0.0	8.9
160	6	0.7	4,280	0.1	27.8	22.8	49.4	2.8	31.1	2.8	4.3	1,976	0.1	100.0	0.0	0.0	0.0	0.0	0.0	0.0
180	2	0.2	36,815	0.9	9.5	37.9	52.6	4.0	13.4	30.7	4.5	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
200	23	2.8	64,816	1.6	88.1	0.4	11.5	0.2	2.8	0.5	8.1	22,683	1.2	72.0	5.9	22.1	0.0	20.7	0.6	0.9
210	2	0.2	1,602	0.0	95.8	4.2	0.0	0.0	0.0	0.0	0.0	723	0.0	86.6	1.7	11.8	0.0	11.8	0.0	0.0
220	2	0.2	567	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	87	0.0	95.4	4.6	0.0	0.0	0.0	0.0	0.0
250	6	0.7	8,830	0.2	23.7	1.7	74.6	0.0	74.6	0.0	0.0	5,240	0.3	15.5	13.7	70.7	12.3	58.5	0.0	0.0
260	9	1.1	23,575	0.6	97.1	2.9	0.0	0.0	0.0	0.0	0.0	10,420	0.5	37.9	42.5	19.6	2.0	17.7	0.0	0.0
270	4	0.5	101,311	2.5	23.6	28.7	47.7	2.1	17.0	28.5	0.0	54,006	2.8	85.7	0.0	14.3	0.0	14.3	0.0	0.0
280	4	0.5	8,766	0.2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	1,104	0.1	52.4	26.7	20.9	0.0	20.9	0.0	0.0
290	24	3.0	58,976	1.5	74.7	2.5	22.8	1.3	17.3	3.2	1.0	22,903	1.2	58.1	28.4	13.5	0.2	7.9	5.4	0.1
300	69	8.5	406,293	10.2	78.6	5.2	16.2	0.0	13.2	0.6	2.5	301,944	15.9	46.3	33.1	20.6	14.1	2.1	4.3	0.1
310	62	7.7	789,548	19.8	83.1	0.4	16.5	0.3	13.2	0.1	2.9	331,059	17.4	39.0	49.4	11.6	0.8	9.3	1.5	0.0
320	6	0.7	12,816	0.3	82.9	1.3	15.8	0.1	4.0	3.1	8.7	7,086	0.4	44.7	38.9	16.5	16.0	0.1	0.4	0.0
330+340	8	1.0	8,945	0.2	50.5	45.0	4.6	0.0	4.6	0.0	0.0	3,460	0.2	16.0	26.7	57.3	0.0	57.3	0.0	0.0
Non-Manufacturing Sector																				
050	22	2.7	210,308	5.3	8.1	37.0	54.8	19.7	5.1	16.3	12.9	23,556	1.2	86.0	0.0	14.0	0.0	14.0	0.0	0.0
480	160	19.8	1,861,388	46.8	69.4	6.6	24.0	0.4	2.0	0.7	20.9	972,718	51.1	23.6	51.1	25.3	3.7	15.2	0.5	5.2
540	15	1.9	49,661	1.2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	15,907	0.8	55.8	31.1	13.1	0.0	13.1	0.0	0.0
Others	344	42.5	193,722	4.9	41.1	35.2	23.7	3.1	1.9	17.4	0.7	71,649	3.8	46.7	40.0	13.2	3.5	3.3	2.3	3.9
Total	809	100.0	3,980,260	100.0	62.6	11.7	25.6	2.6	6.5	5.2	11.1	1,903,544	100.0	38.8	40.4	20.9	4.2	11.9	1.2	3.1

Data sources: Kimura and Ando (2003) and Ando and Kimura (2003). (Original data source: MITI database.)

Note: Foreign affiliates are those with no less than 20% Japanese ownership.

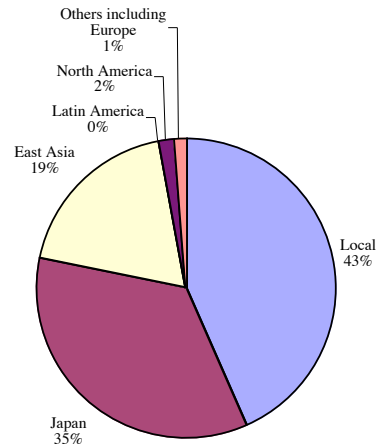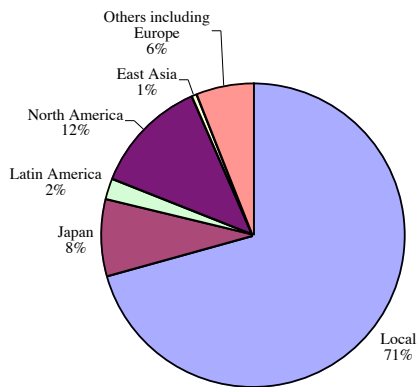Figure 5 Intra-regional production networks: sales and purchases by Japanese manufacturing affiliates in two regions
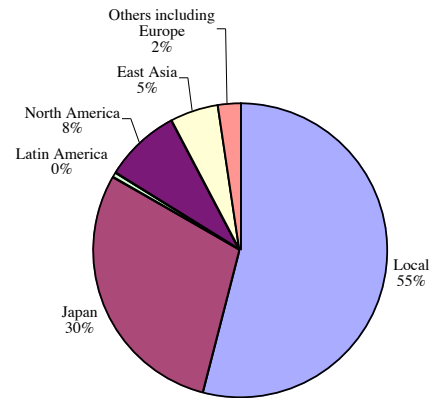
(a-1) Sales by Japanese manufacturing affiliates in East Asia

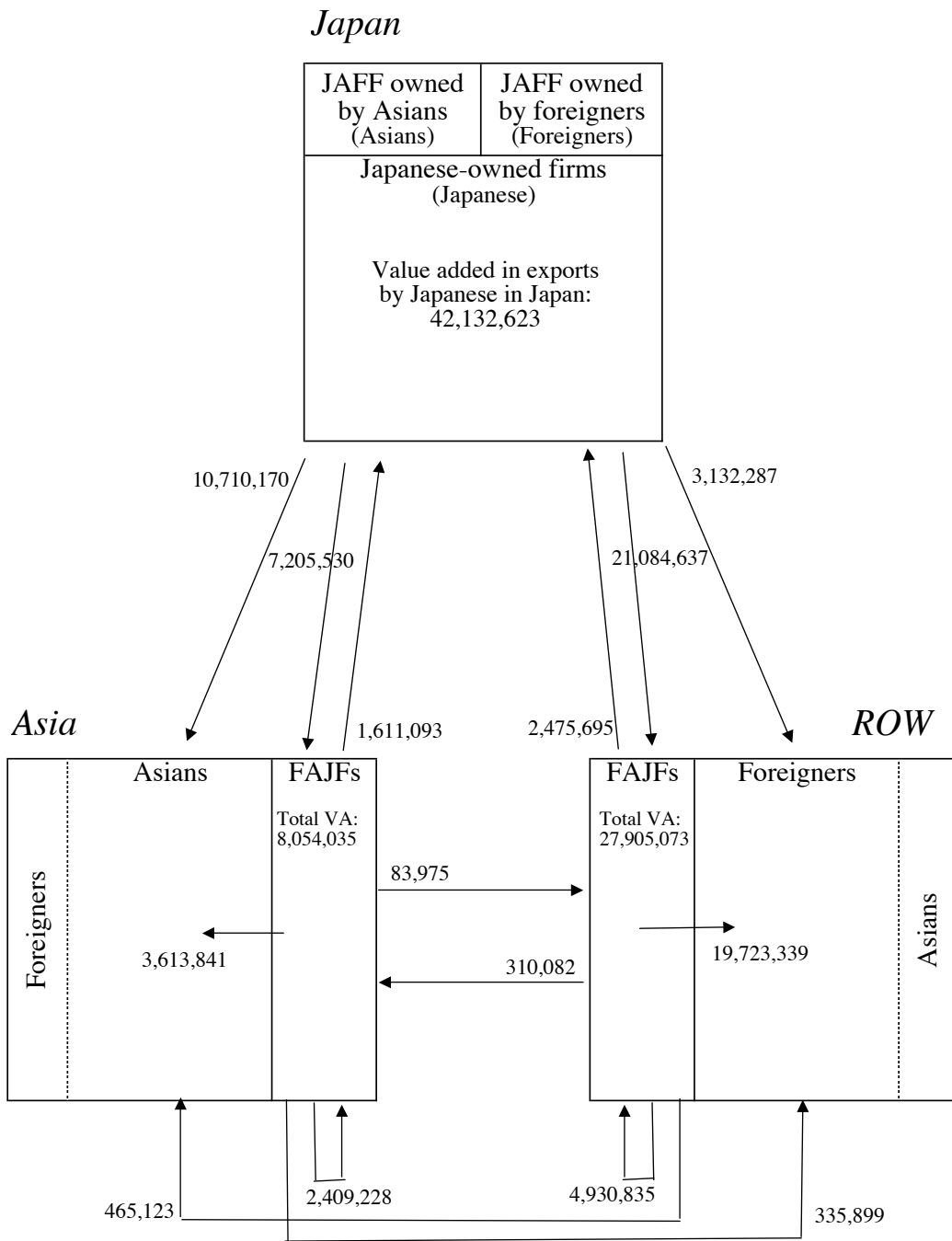(a-2) Purchases by Japanese manufacturing affiliates in East Asia

(b-1) Sales by Japanese manufacuring affiliates in Latin America

(b-2) Purchases by Japanese manufacturing affiliates in Latin America

Data source: Authors' calculation, based on Table 4.

Figure 5 Japanese value added embodied in sales to Asians and foreigners by Japanese: three-country setting (2000)

(Unit: million JPY)

Japan

JAFF owned by Asians (Asians)	JAFF owned by foreigners (Foreigners)

Japanese-owned firms
(Japanese)

Value added in exports
by Japanese in Japan:
42,132,623

10,710,170

7,205,530

1,611,093

2,475,695

21,084,637

3,132,287

Asia   *ROW*

Asians	FAJFs	FAJFs	Foreigners

Total VA:
8,054,035

Total VA:
27,905,073

Foreigners

Asians

83,975

3,613,841

310,082

19,723,339

465,123

2,409,228

4,930,835

335,899

Drawn from Ando and Kimura (2003). (Original data sources: METI (2001) *White Paper on International Trade 2001* for exports of Japan; METI (2002) *The 35th Survey of Japanese Affiliates of Foreign Firms* for exports of JAFF; MITI (2002) *The 31th Survey of Overseas Business Activities of Japanese Companies* for sales and purchases of FAJF; Management and Coodination Agency (1999) *1995 Input-Output Tables: Explanatory Report* for the import inducement coefficient of export in Japan for 1995.)

Table 5 U.S. parent firms and foreign affiliates by industry, 1999 F/Y

Industry	By industry of parent firm				By industry of affiliate	
	Number of parent firms	Share in total (%)	Number of affiliates	Share in total (%)	Number of affiliates	Share in total (%)
Manufacturing sector	**1300**	**54**	**13541**	**64**	**7601**	**36**
Non-machinery sectors	746	31	7709	36	4744	22
Machinery sectors	554	23	5832	28	2857	14
Machinery	169	7	1428	7	885	4
Computer and electronic products	235	10	1781	8	878	4
Electrical equipment, appliances etc.	56	2	676	3	308	1
Trasnport equipments	94	4	1947	9	786	4
Non-manufacturing sector	**1109**	**46**	**7598**	**36**	**13538**	**64**
Wholesale trade	262	11	1613	8	4907	23
Others	847	35	5985	28	8631	41
Total	**2409**	**100**	**21139**	**100**	**21139**	**100**

Data source: Authors' calculation, based on U.S. Department of Commerce (2002).

Note: Foreign affiliates of U.S. firms in this paper are defined as majority-owned non-bank foreing affiliates with more than 50% U.S. ownership.

Table 6 Sales and gross products by U.S. affiliates in East Asia and Latin America by industry, 1999 F/Y

	East Asia (2846)		Latin America				
			Total (3403)		*excl. Brazil (526) and Mexico (799)* (2078)		Share of Brazil and Mexico (%)
	Value	Share in total (%)	Value	Share in total (%)	Value	Share in total (%)	
(a) Sales (million US$)							
Manufacturing	**112,036**	**48**	**130,977**	**53**	**35156**	**32**	**73**
Non-machinery sectors	33,479	14	73,155	30	29152	26	60
Machinery sectors	78,557	34	57,822	24	6,004	5	90
Machinery	3,781	2	7,342	3	285	0	96
Computer and electronic products	68,613	29	14,382	6	1456	1	90
Electrical equipment, appliances, etc.	2,747	1	2,747	1	234	0	91
Transport equipments	3,416	1	33,351	14	4029	4	88
Non-manufacturing	**121,656**	**52**	**114,592**	**47**	**75,839**	**68**	**34**
Wholesale trade	75,337	32	40,422	16	28080	25	31
Others	46,319	20	74,170	30	47759	43	36
Total	233,692	100	245,569	100	110995	100	55
(b) Gross products (million US$)							
Manufacturing	**22,079**	**44**	**33,833**	**57**	**9120**	**35**	**73**
Non-machinery manufacturing	8,938	18	23,164	39	8080	31	65
Machinery sectors	13,141	26	10,669	18	1,040	4	90
Machinery	1,042	2	2,220	4	71	0	97
Computer and electronic products	10,628	21	1,069	2	232	1	78
Electrical equipment, appliances, etc.	648	1	805	1	59	0	93
Transport equipments	823	2	6,575	11	678	3	90
Non-manufacturing	**28,067**	**56**	**25,528**	**43**	**17,000**	**65**	**33**
Wholesale trade	7,636	15	5,568	9	3869	15	31
Others	20,431	41	19,960	34	13131	50	34
Total	50,146	100	59,361	100	26120	100	56

Data source: Authors' calculation, based on U.S. Department of Commerce (2002).
Notes:
  U.S. affiliates are majority-owned non-bank foreing affiliates with more than 50% U.S. ownership.
  Number of affiliates for each case is shown in parenthesis.
  Shares of Brazil and Mexico indicate their shares in total sales/gross products by U.S. affiliates in Latin America.

Table 7 Intra-regional production networkds: by-destination sales by U.S. affiliates in East Asia and Latin America, 1999 F/Y

| | Number of affiliates | Total sales (million JPY) | Share in total sales (%) | | | | | | | | |
			Local		U.S.		Third countries (Total)				
				other U.S. affilaites		U.S. parent firms		other U.S. affilaites	East Asia	Europe	Latin America
East Asia	2846	233692	56.2	(8.1)	17.1	(87.0)	26.7	(59.4)	17.1	n.a.	0.9
Latin America	3403	245569	65.8	(7.6)	17.5	(88.0)	16.8	(57.5)	2.3	5.4	7.8
Mexico	799	79328	64.0	(12.5)	27.4	(91.1)	8.6	(72.5)	1.0	1.7	4.5
Brazil	526	55248	83.9	(3.0)	5.8	(85.6)	10.2	(60.3)	0.3	3.6	5.9

Data source: Authors' calculation, based on U.S. Department of Commerce (2002).

Notes:

U.S. affiliates are majority-owned non-bank foreing affiliates with more than 50% U.S. ownership.

Figures in parenthesis are shares of other U.S. affiliates in local sales, shares of U.S. parent firms in sales to U.S., and shares of other U.S. affiliates in sales to third countries.

Figure 7 Intra-regional production networks: Sales by U.S. affiliates in East Asia, Mexico, and Brazil
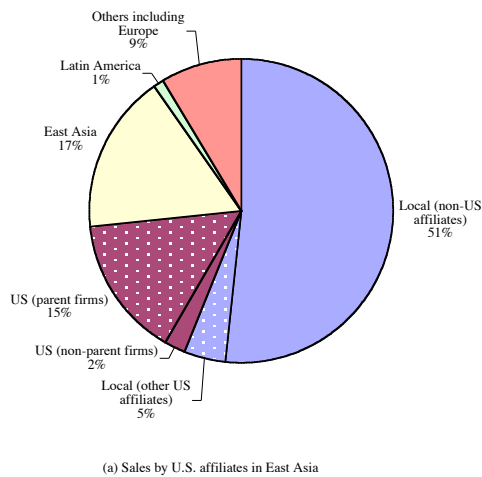
(a) Sales by U.S. affiliates in East Asia
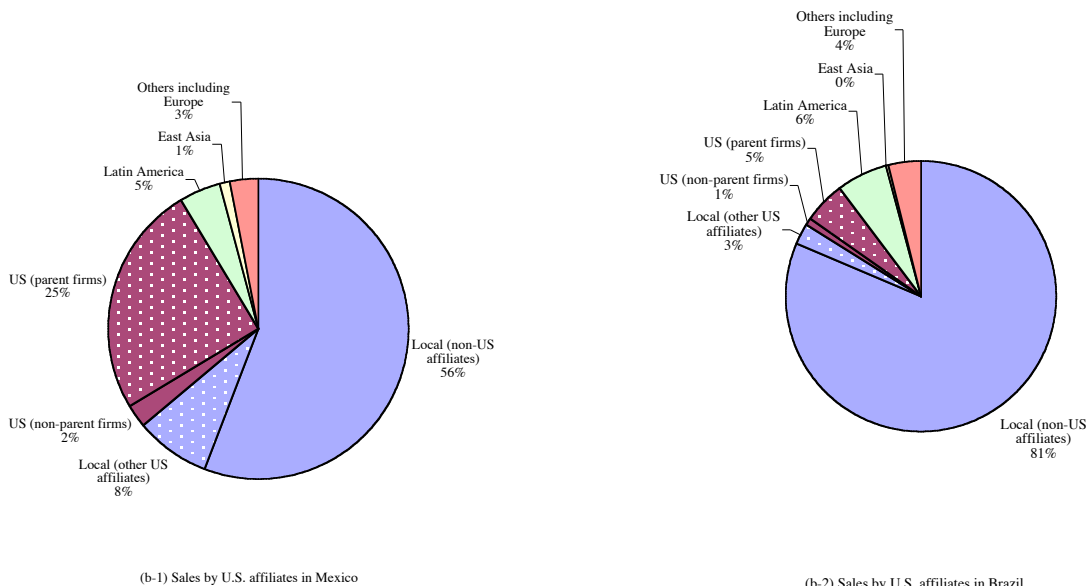
(b-1) Sales by U.S. affiliates in Mexico

(b-2) Sales by U.S. affiliates in Brazil

Data source: Authors' calcuration, based on Table 7.

Table 8 Prospective destination countries for Japanese FDI

(a) Short run (incoming 3 years)

	2001 F/Y Country	Number of firms			2002 F/Y Country	Number of firms	
		401	100%			418	100%
1	China	327	82%	1	China	373	89%
2	United States	127	32%	2	Thailand	118	28%
3	Thailand	99	25%	3	United States	108	26%
4	Indonesia	56	14%	4	Indonesia	63	15%
5	India	52	13%	5	Vietnam	62	15%
6	Vietnam	48	12%	6	India	54	13%
7	Taiwan	44	11%	7	Korea	34	8%
8	Korea	33	8%	7	Taiwan	34	8%
9	Malaysia	32	8%	9	Malaysia	33	8%
10	Singapore	24	6%	10	Brazil	19	5%
11	The Philippines	22	5%	11	Singapore	18	4%
12	Germany	19	5%	12	The Philippines	17	4%
13	Brazil	18	4%	13	Germany	16	4%
13	Mexico	18	4%	14	Mexico	15	4%
15	France	17	4%	15	Czech	13	3%
16	Czech	15	4%	16	United Kingdom	11	3%
17	United Kingdom	14	3%	16	Russia	11	3%
18	Hungary	12	3%	18	Poland	10	2%
19	Poland	11	3%	19	Hong Kong	9	2%
20	Hong Kong	8	2%	19	Hungary	9	2%

(b) Long run (incoming 10 years)

	2001 F/Y Country	Number of firms			2002 F/Y Country	Number of firms	
		318	100%			344	100%
1	China	274	86%	1	China	306	89%
2	India	88	28%	2	United States	92	27%
3	United States	80	25%	3	India	89	26%
4	Thailand	59	19%	4	Vietnam	70	20%
5	Vietnam	46	14%	5	Thailand	56	16%
6	Indonesia	43	14%	6	Indonesia	49	14%
7	Brazil	25	8%	7	Brazil	28	8%
8	Taiwan	22	7%	8	Russia	27	8%
9	Malaysia	20	6%	9	Malaysia	20	6%
10	Korea	17	5%	10	Korea	15	4%
10	The Philippines	17	5%	10	Germany	15	4%
12	Russia	14	4%	12	Taiwan	14	4%
13	Singapore	12	4%	13	Singapore	11	3%
14	United Kingdom	11	3%	13	The Philippines	11	3%
15	Mexico	10	3%	15	Mexico	10	3%
15	Germany	10	3%	15	Czech	10	3%
17	Hungary	9	3%	17	Myanmar	7	2%
18	Myanmar	7	2%	17	United Kingdom	7	2%
18	France	7	2%	19	Italy	6	2%
20	Australia	6	2%	19	Poland	6	2%
				19	Hungary	6	2%

Data sources: Kaburagi, et al. (2002) for the 2001 F/Y survey and Marugami, et al. (2003) for the 2002 F/Y survey
Notes:

This JBIC questionnaire survey was conducted for Japanese firms with three or more foreign affiliates including at least one manufacturing foreign affiliate at the end of October 2000 (2000 F/Y survey)/ November 2001 (2001 F/Y survey), in which 501/ 508 firms out of 792 / 812 returned effective answers.

"Prospective destination country" means that the firm would consider FDI to the country in the short or long run

Multiple listings of destination countries are allowed.

Table 9 Prospective destination countries for Japanese manufacturing FDI: their strong and weak points

Ranking	1	2	3	4	5	6	7	7	9	10
Country	China	Thailand	U.S.	Indonesia	Vietnam	India	Korea	Taiwan	Malaysia	Brazil
(a) Strong points										
Number of firms[1]	373	112	108	61	54	50	32	32	30	19
Market potential	86.3	54.5	39.8	47.5	55.6	84.0	53.1	53.1	33.3	73.7
Inexpensive labor	68.9	48.2	0.9	73.8	70.4	60.0	12.5	15.6	40.0	26.3
To supply intermediate goods for assemblers	28.7	33.0	26.9	21.3	9.3	16.0	25.0	37.5	23.3	26.3
Present market size	17.2	9.8	62.0	9.8	1.9	14.0	28.1	43.8	10.0	10.5
To export to the third countries	25.2	32.1	2.8	36.1	24.1	16.0	6.3	21.9	30.0	5.3
Cheap parts and components / low materials	30.0	9.8	2.8	16.4	11.1	16.0	12.5	9.4	10.0	15.8
To export to Japan	26.8	21.4	-	24.6	7.4	16.0	15.6	12.5	13.3	-
Human capital	11.0	8.0	16.7	-	33.3	6.0	25.0	25.0	10.0	-
R&D for the local market	9.9	6.3	27.8	4.9	5.6	30.0	6.3	9.4	3.3	15.8
Development of infrastructure	5.6	7.1	9.3	1.6	3.7	10.0	9.4	18.8	13.3	-
Investment incentives / deregulation measures	7.2	11.6	-	1.6	3.7	6.0	3.1	9.4	13.3	5.3
Investment by other firms in the same industry	9.1	7.1	4.6	4.9	3.7	-	3.1	9.4	10.0	-
Advancement of regional integration	1.3	5.4	-	6.6	-	4.0		-	13.3	10.5
(b) Weak points										
Number of firms[2]	356	89	73	60	43	43	28	31	28	15
Insufficient infrastructure	24.4	12.4	-	26.7	41.9	44.2	-	-	14.3	20.0
Underdevelopment of legal system	46.3	4.5	-	8.3	46.5	32.6	-	-	7.1	-
Nontransparency in the legal system	55.6	10.1	-	23.3	27.9	20.9	-	6.2	3.6	6.7
Frequent and sudden changes in institutional arrangements	51.7	4.5	-	10.0	11.6	7.0	3.6	3.2	7.1	6.7
Complicated taxation system	17.7	5.6	6.8	10.0	11.6	9.3	3.6	-	3.6	20.0
Nontransparency in the implementation of taxation system	37.4	10.1	-	10.0	9.3	16.3	3.6	-	-	20.0
Frequent and sudden changes in taxation system	36.5	3.4	-	3.3	11.6	2.3	3.6	3.2	-	13.3
High import tariffs	19.9	13.5	2.7	8.3	11.6	9.3	3.6	-	-	33.3
Insufficient deregulation for foreign capital	27.5	11.2	-	5.0	20.9	11.6	14.3	-	25.0	13.3
Compilicated administrative procedure	41.0	7.9	1.4	13.3	16.3	11.6	3.6	3.2	3.6	6.7
Political and social environment	27.8	11.2	2.7	81.7	32.6	55.8	3.6	12.9	28.6	40.0
Instability of local currency	8.7	46.1	9.6	58.3	27.9	20.9	17.9	16.1	17.9	46.7
Difficulty in purchasing raw materials and parts and compoments in local market	20.5	20.2	5.5	18.3	25.6	18.6	10.7	6.5	7.1	6.7
Underdevelopment of indogenious supporting industries	10.1	7.9	-	15.0	20.9	9.3	-	3.2	10.7	6.7
Difficulty in local financing	15.4	10.1	8.2	13.3	11.6	14.0	14.3	3.2	7.1	-
Harsh competiton with other firms in the local market	27.5	25.8	68.5	23.3	9.3	18.6	64.3	54.8	25.0	6.7
Insufficient human capital for manegerial positions	25.8	30.3	24.7	30.0	16.3	16.3	17.9	16.1	25.0	6.7
Low level of local labor	12.9	9.0	9.6	11.7	2.3	11.6	3.6	6.5	3.6	13.3
Rising labor costs in host country	16.0	25.8	20.5	20.0	4.7	4.7	21.4	32.3	21.4	6.7
Local labor problems	11.8	7.9	16.4	25.0	7.0	14.0	25.0	-	7.1	13.3
Insufficient information on the host country	9.6	5.6	-	5.0	18.6	32.6	3.6	3.2	7.1	40.0

Data source: Marugami, et al. (2003).

Notes:
1) Number of Japanese manufacturing firms who answered the question on strong points among those who chose the country as a prospective destination for their FI
2) Number of Japanese manufacturing firms who answered the question on weak points among those who chose the country as a prospective destination for their FD
3) This JBIC 2002 F/Y questionnaire survey was conducted for Japanese manufacturing firms with three or more foreign affiliates including at least one manufacturing foreign affiliate at the end of November 2001, in which 508 firms out of 812 returned effective answers.
4) Multiple listings of destination countries are allowed.

Table 10 Investment climate: average measures of business costs and governance indicators

	East Asia excl. China	China	Latin America
(a) Business costs			
Soundness of banks	4.7	4.0	4.4
Regulatory obstacles to business	4.3	3.5	4.6
Hidden trade barriers	4.8	4.9	4.1
Cost of importing foreign equipment	2.1	2.3	3.0
Technological sophistication	4.3	3.9	3.3
Quality of scientific research institutions	4.5	4.4	3.5
Quality of math and science education	4.8	4.1	3.3
Efficiency of legal framework	4.3	4.4	2.8
Property rights	5.0	4.1	3.8
Intellectual property protection	4.1	3.6	3.1
Burden of regulation	3.2	3.3	2.2
Extent of bureaucratic red tape	3.0	3.0	2.8
Irregular payments in exports & imports	4.6	5.1	4.3
Frequency of payments or bribes	4.6	5.2	3.5
Business cost of corruption	4.7	4.4	3.9
(b) Governance indicators			
Voice and accountability 2002	0.2	-1.4	0.2
Political stability 2002	0.3	0.2	0.0
Government effectiveness 2002	0.8	0.2	-0.1
Regulatory quality 2002	0.7	-0.4	0.1
Rule of law 2002	0.6	-0.2	-0.2
Control of corruption 2002	0.4	-0.4	-0.1

Data sources: Lipsey (2003) for (a) business costs (original data source: The World Economic Forum (2003) *The Global Competitiveness Report 2002-2003)* ; authors' calculation for (b) governance indicators, based on Daniel Kaufmann, Aart Kraay, and Massimo Mastruzzi (2003) "Governance Matters III: Governance Indicators for 1996-2002" *World Bank Policy Research Working Paper 3106* .

Note: Governance indicators are measured in units ranging from about -2.5 to +2.5, with higher values corresponding to better government outcomes. The methodology used to construct the indicators are described in "Governance Matters III: Governance Indicators for 1996-2002" *World Bank Policy Research Working Paper 3106* .

Table 11 Trade and FDI-related problems and requests raised by Japanese firms in the selected Latin American countries

Mexico

1 Restriction on foreign ownership ratios, industries with foreign entry ban.
2 Leftover of local contents requirements, trade balance requirements.
3 Sudden changes and instability in PROSEC-applied products as a substitution of Maquiladora system.
4 Uncertainty of policies on transitions from Maquiladora related to permanent establishments, value added taxes, and others.
5 Continual tariff increases, high tariffs.
6 Expansion of tariff differences between countries with RTAs and those without.
7 Excessive preferential arrangements for labor such as profit sharing and wage/retirement payment system, cost elevation due to wage increases, difficulty in meeting labor demand.
8 Delay and complexity due to peculiar NOMS standard system.
9 Not enough capability of supporting industry, lack of supporting industry promotion policy.
10 Worsening security problem.

Chile

1 Expansion of tariff differences between countries with RTAs and those without.
2 Lack of tax treaty and investment treaty with Japan.
3 High value added tax and delay in tax rebate.
4 Insufficient infrastructure and high cost in port services.

Brazil

1 Domestic contents requirements, export requirements.
2 Large tariff differentials between intra-MERCOSUR and other trade.
3 Sudden changes in tariffs, import regulations and customs procedure, inefficiency in customs procedure, complexity, delays, and high cost.
4 Heavy taxes, complicated and frequently changed tax system.
5 Regulations on foreign remittances, restrictions on dividend payments, restrictions on credit amount.
6 Wage determination preferential to labor, employment customs, social security system, difficulty and delay in obtaining visa.
7 Residence requirement for board members.
8 Insufficient infrastructure, lack of human capital, lack of supporting industry.
9 Large fluctuation in currency valuation and the existence of exchange rate risk.
10 Pervasive illegal imports and smuggling.

MERCOSUR

1 Losing competitiveness of Japanese products due to high common tariffs for nonmember countries.
2 Existence of both intra-regional and individual countries' contents requirements, non-transparency in local contents requirements.
3 Large risk due to intra-regional exchange rate fluctuation.

Data source: BCFTI (2002).

Table A1 Industry Classification

Manufacturing sector			Non-manufacturing sector		
	120	Food processing		050	Mining
	130	Beverages, tobacco, and animal feed		480	Wholesale trade
	140	Textiles		540	Retail trade
	150	Apparel		Other	Services and other
	160	Wood and wood products			
	170	Furniture and fixures			
	180	Pulp, paper, and paper products			
	190	Publishing and printing			
	200	Chemicals			
	210	Petroleum and coal products			
	220	Plastic products			
	230	Rubber products			
	240	Leather and leather products			
	250	Ceramics, clay, and stone products			
	260	Iron and steel			
	270	Nonferrous metal			
	280	Metal products			
	290	General machinery			
	300	Electric machinery			
	310	Transport equipment			
	320	Precision machinery			
	330	Arms			
	340	Other manufacturing			
290+300+310+320		Machinery sector			