Korea's Direct Investment in China and Its Implications for Economic Integration in Northeast Asia

I. Introduction

Economic relations between the Republic of Korea (henceforth Korea) and the People's Republic of China (henceforth China) have been expanding ever since China undertook the Four Modernization reforms in the late 1970s. Ever since then, bilateral trade between the two countries has been growing steadily in terms of both the volume and the variety of goods traded. Capital flows between the two likewise have been increasing although the flows have been mostly from Korea to China and in the form of direct investment. Between 1989 and 2000, for instance, Korea's merchandise exports to China grew from $213 million to $18.4 billion while China's merchandise exports to Korea grew from $3.9 million to $11.3 billion (ICSEAD 2002). In fact, China has now emerged as Korea's third largest trading partner. Also, by the end of 1999 Korea had invested $4.3 billion in China where it had virtually no investment before the late 1970s, and in the year of 2000 alone Korea invested $307 million in China (China Statistical Press 1999, and Lee 2001). These increases in both trade and investment are signs of growing economic interdependence and integration of the two economies, which, we expect, will further economic growth in both countries.[1]

China and Korea are two key players in Northeast Asia, a region that stretches from Japan on its eastern edge to the Mongolian People's Republic in the west and the Russian Federation's Far Eastern provinces in the north. It is one of the most dynamic regions in the world although it has yet to develop into a well-integrated economic entity with formal regional machinery similar to the European Union and the NAFTA.

The European experience has clearly demonstrated that the establishment of formal regional institutions such as a free trade area and supranational or intergovernmental institutions can pave the way toward greater regional economic integration. Such institutions are, however, unlikely to emerge unless the region develops its own identity through economic interdependence and creates political support for them (Seliger 2002). Trade and investment are what brings national economies together into close economic interdependence and will thus contribute to the process of regional economic integration.[2]

[1] There are disputes regarding the effect of membership in economic union on the member countries' long-term economic growth, but a recent empirical study points out that membership in European Union has had a positive effect on the long-term growth of the member countries (Crespo-Cuaresma et al. 2002).

[2] Economic integration is usually defined as "a state of affairs or a process involving attempts

In this paper we investigate Korea's direct investment in China and its implications for economic integration in Northeast Asia by investigating its effect on bilateral trade between Korea and China and other possible effects on economic integration. These two countries are key players in Northeast Asia and increasing interdependence between the two through trade and investment will significantly contribute to region-wide economic integration, as their increasing interdependence will lead to a greater division of labor, greater scale economies, and a higher rate of growth in their economies and thus create further incentives for other countries to join in.

In the following section we lay out various possible linkages between outward direct investment (ODI) and bilateral trade between home and host countries. In section II we discuss the motives for Korea's ODI in China with the purpose of shedding light on the investment-trade linkages between the two economies, and in section III we investigate the geographical distribution of Korea's ODI within China and its determinants. We offer some concluding remarks in Section IV.

II. Overseas Direct Investment, Trade, and Economic Integration

ODI makes a direct contribution to economic integration of home and host economies by leading to the establishment of an affiliate or a subsidiary in a foreign country and thus transforming a national enterprise into a transnational one. Within this enterprise, as within any internal organizations, there is a hierarchical relationship between home office and affiliates and an up-and-down flow of information and personnel. Such exchange between home office and affiliates is not readily quantifiable as it bypasses the market, but being an intra-firm relationship it is a closer and more intimate person-to-person relationship than the typical arm's-length relationship between independent agents across the market and thus has a greater integrative effect on the two economies.

What effect ODI has on the trade relationship between home and host economies is less clear as it can either increase or decrease bilateral

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to combine separate national economies into larger economic regions" and takes place through the establishment of formal regional machinery such as a free trade area, a customs union, a common market, or a complete economic union (Bende-Nabende 2002, p.11). In this paper we take it also to mean increasing economic connectedness between national economies through trade, investment, and labor movement. Thus economic integration can be brought about either through deliberate attempts to create formal regional machinery or by policy changes toward freer trade and investment or technological changes that facilitate trade/investment expansion between national economies.

trade or may even have no effect at all. It will have no effect on bilateral trade if it simply creates in the host country an "export platform" for third-country markets and replaces the home-country exports to those markets with the exports from the affiliate. This kind of ODI is most likely to occur when a firm is seeking to minimize the labor cost by relocating its production site from home to a low labor-cost country. Even in that case, however, ODI will have a positive effect on bilateral trade if the affiliate imports intermediate goods from the home country.

ODI will have a positive effect on bilateral trade if it leads to "reverse importing"— the home country importing the affiliate's output and replacing what has been produced for home market with the goods from the affiliate. This will happen when the home country is losing its comparative advantage in labor-intensive industries and transfers them through ODI to another country that has a latent comparative advantage in the same industries. In this case, seeking to minimize the labor cost is obviously the main motive for ODI. This kind of ODI took place in Japan in the 1970s (Kojima 1996, Lee 1994) and also in Korea since the mid-1980s, as will be shown below.

ODI will also have a positive effect on bilateral trade if it is for exploiting natural resources that the home country lacks. Its imports of natural resources from the host country may displace its imports of the same from a third country, but this "trade diversion" is likely to be welfare-improving for both countries since for the home country it is from a more costly to a less costly supplier of natural resources and for the host country it expands the market for its natural resources.

ODI will have a negative effect on bilateral trade if it leads to a partial or full displacement of home country's exports to the host country with locally produced goods. This will occur if the motive for ODI is to serve the host-country market regardless of whether it is to jump a tariff wall or to reduce the cost of serving the market such as the cost of transportation. But even in this case ODI will not completely displace bilateral trade if the affiliates import intermediate products from their parent companies or home-country suppliers, which appears to generally happen.

It is clear from the above discussion on the relationship between ODI and bilateral trade that we can infer the effect of ODI on bilateral trade from its motive. If the motive for ODI is to take advantage of low-cost labor in the host country or exploit its natural resources it is likely to have a positive effect on bilateral trade whereas if the motive is to exploit the host-country market it is likely to have a negative effect (although negligible or even positive if intermediate inputs are supplied from home country).

The discussion so far of the effect of ODI on bilateral trade is based on the assumption that in the economic relationship between two countries trade precedes ODI. It is quite possible, however, as

happened in China after the Four Modernizations that foreign investment comes in first to manufacture products in the host country, which then are exported. Such investment will have a positive effect on bilateral trade as it generally leads to importing intermediate products from the home country and possibly to exporting final products to the home country.

These investment-trade linkages are a direct effect of ODI on bilateral trade between home and host countries and do not take into account any indirect effect that ODI may have on bilateral trade through its effect on economic growth. As is well documented in the literature (e.g., Bende-Nabende 2002, Graham and Wada 2001, Henley, Kirkpatrick, and Wilde 2002, OECD 2000, Tseng and Zebregs 2002), ODI generally has a positive effect on the economic growth of the host country, and definitely in the case of China, as it brings in capital, advanced technology, and managerial know-how and expands employment while increasing competitive pressure on local enterprises and thus enhancing their efficiency. It is also likely to have a long-run positive effect on the home-country economy by transferring abroad the industries in which it is losing its comparative advantage and thus facilitating structural adjustment in accordance with changing comparative advantage. These changes in both home and host countries will have a positive effect on bilateral trade, provided that it is positively related to economic growth.

If this indirect positive effect of ODI is taken into account, ODI motivated by low-cost labor will have a positive effect on bilateral trade whereas the effect of ODI motivated by host-country market will remain ambiguous, its sign depending on the relative magnitude of direct and indirect effects.[3]

In addition to the ODI-trade linkages there is another reason why ODI will have a positive effect on regional economic integration, and that is the backward linkages created by ODI in the host country. To the extent that the affiliates purchase locally produced intermediate goods the local suppliers participate in the production network that runs across national boundaries and become indirectly linked with the affiliates' parent companies. This inclusion into parent companies' production network will have as strong an effect on regional economic integration as bilateral trade, as demonstrated in the case of Southeast Asia and the coastal areas of China where foreign direct investment has been instrumental in promoting economic growth. As will be shown below, Korea's ODI in China has led to extensive local procurement and thus to the inclusion of local Chinese firms into Korean firms' production networks.

[3] If ODI is tariff-hopping and goes into an import-substitute sector it may have a negative effect on economic growth and thus a negative indirect effect on bilateral trade.

III. Motives for Korea's ODI in China and Its Effect on Bilateral Trade

In investigating the effect of Korea's ODI in China on the two countries' bilateral trade we rely on the results of two recent surveys on Korea's ODI, one carried out by the Korea Institute for Industrial Economics and Trade (KIET) and the other by the Korean Export-Import Bank (KEXIM). The KIET survey, conducted by two KIET researchers, Ha and Hong (1998), was based on a sample of 615 Korean companies (216 large firms and 399 small and medium-sized enterprises) and their 952 offshore affiliates. It contains information on the motives for overseas investment, the patterns of sales and procurement, and other activities of offshore affiliates, as reported by their parent companies registered officially as overseas investors in 1996.

The KEXIM survey was based on a smaller sample of 290 large offshore affiliates with an outstanding investment of at least US$10 million at the end of 1998. Of these affiliates, 191 (66 percent) were the affiliates of the top 5 *chaebols* and 29 (10 percent) the affiliates of the next 25 largest *chaebols*. Given that small and medium-sized enterprises (SMEs) are not included in the KEXIM survey, we hope to draw some inference about ODI by Korea's SMEs and its effect on economic integration by comparing the results of this survey with those of the KIET survey.

1. Motives for Investing in China

Table 1 reports the results of the KIET survey on the motives for Korea's ODI in general. The survey asked the firms to pick the two most important from a number of motives for investing overseas—natural resource or raw materials, low-cost labor, market access, high technology, and "others." Out of 305 firms with investment in China, 179 firms (58.7 percent) reported low-cost labor and 66 firms (21.6 percent) market access as the most important motive for investing in China. These motives are quite different from those for investing in North America and Europe, which, according to the survey, are market access, "others" and high technology in a descending order of importance (Table 1).[4]

Table 2, based on the KEXIM survey on the motives for Korea's ODI, shows that export expansion from Korea was chosen by 34.3

[4] This difference in motives between ODI in China and that in North America and Europe may to a certain extent be due to the fact that China has SEZs and others do not. Some of the Korean ODI in China is likely to be in SEZs but with no access to China's internal markets. Due to lack of data we are unable to verify this possibility.

<Table 1> KIET Survey on Motives for Korea's ODI by Region (As of 1996)

(Unit: %)

	Natural resource or Raw materials	Low-cost labour	Market Access	High technology	Others	Total (number of sample)
Asia	10.1	52.5	27.7	0.8	8.9	100 (651)
China	12.8	58.7	21.6	0.0	6.9	100 (305)
North America	6.5	8.7	58.7	9.4	16.7	100 (138)
Europe	3.2	4.8	73.0	7.9	11.1	100 (63)
Latin America	29.5	23.0	34.4	0.0	13.1	100 (61)
All regions	11.3	39.6	36.3	2.5	10.3	100 (938)

Note: The figures are the shares of the firms indicating the most important motive for investing abroad in total number of surveyed firms.
Source: Ha and Hong (1998).

<Table 2> KEXIM Survey on Motives for Korea's ODI by Region (As of 1998)

(Unit: %)

	Natural resource or Raw materials	Low-cost labour	Export Expansion	High technology	Others	Total (number of sample)
Asia	12.4	11.7	37.2	0.7	37.9	100 (145)
China	1.5	16.4	34.3	0.0	47.7	100 (67)
North America	29.8	1.8	42.1	0.0	26.4	100 (57)
Europe	20.0	1.7	51.7	0.0	26.7	100 (60)
Latin America	26.6	0.0	53.3	0.0	20.0	100 (15)
All regions	19.3	6.6	41.7	0.3	32.1	100 (290)

Note: The figures are the shares of the firms indicating the most important motive for investing abroad in total number of surveyed firms.
Data Source: KEXIM.

percent of the respondents as the most important reason for investing in China whereas low-cost labor was chosen by only 16.4 percent. This is significantly less than the 58.7 percent of the respondents in the KIET survey that reported low-cost labor as the most important motive for investing in China. Given that the KEXIM survey covers only the affiliates of large firms whereas the KIET survey covers the affiliates of large firms as well as SMEs, we take the difference in the reported percentage as an indication that the motives for investing in China differ between large firms and SMEs. That is, for large firms the access to markets in China is the most important reason for investing in China whereas for SMEs China's low-cost labor is the most important one.[5]

The two surveys also report the motives for ODI by industry, which are summarized in Tables 3 and 4. It is clear that, as to be expected, low-cost labor was the most important motive for Korea's ODI in labor-intensive industries.[6] According to the KIET survey (Table 3), for a majority of firms in the textiles and apparel and the footwear and leather industries, which are all labor-intensive, low-cost labor was the most important motive for investing overseas (72.8 percent and 66.7 percent of the respondents, respectively). According to the KEXIM survey (Table 4), which breaks down the responses by region/country as well, 46.2 percent of the respondents in the textiles and apparel industry and 100 percent of the respondents in the footwear and leather industry that had invested in Asia regard low-cost labor as the most important motive for ODI. The corresponding figures for China are 100 percent for the two groups of industries.

The textiles and apparel and the leather and footwear industries had been two of Korea's major export industries until it began losing its comparative advantage in labor-intensive industries in the mid-1980s, owing in part to rapid wage increases. Korean firms in those industries had already established highly developed international marketing networks and thus could continue to utilize them in marketing the products of their affiliates in China and other low-cost labor countries. In the case of those two industries it is reasonable to conclude that the exports from the Korean affiliates in China were displacing the export of the same goods from Korea. Whether it has led to bilateral trade in intermediate goods and "reverse imports" will be addressed later in the paper.

[5] According to Tseng and Zebregs (2002), the market size is more important as a determinant of European and U.S. FDI in China than for FDI from Hong Kong and Taiwan. That is, the motive for investing in China by European and U.S. investors is similar to that of large Korean investors whereas the motive of Hong Kong and Taiwanese investors is similar to that of Korea's SME investors. See also Graham and Wada (2001).

[6] This survey results are consistent with the result of an econometric study that shows that investments from Hong Kong and Taiwan tend to use China to manufacture goods for export to industrialized countries and also tend to be concentrated in labor-intensive industries that only require low-skill labor (Fung, Iizaka, and Parker 2002).

<Table 3> KIET Survey on Motives for Korea's ODI in Manufacturing (As of 1996)

(Unit: %)

	Natural resource or Raw materials	Low-cost labour	Market Access	High technology	Others	Total (number of sample)
Manufacturing	10.8	55.5	22.8	1.5	9.4	100 (618)
Food and Beverage	26.8	31.7	36.6	0.0	4.9	100 (41)
Textiles and Apparel	8.6	72.8	11.3	0.0	7.3	100 (151)
Footwear and Leather	2.6	66.7	15.4	0.0	15.3	100 (39)
Wood	31.0	48.3	20.7	0.0	0.0	100 (29)
Paper and Printing	14.3	57.1	7.1	0.0	21.4	100 (14)
Petroleum and Chemical	14.7	35.3	38.2	4.4	7.4	100 (68)
Non-metallic metals	11.5	73.1	0.0	0.0	15.4	100 (26)
Basic metals	14.7	41.2	41.2	0.0	2.9	100 (34)
Fabricated metals	0.0	55.6	38.9	5.6	0.0	100 (18)
Machine and equipment	14.8	44.4	18.5	11.1	11.1	100 (27)
Electrical Machinery	0.0	69.0	27.6	0.0	3.4	100 (29)
Electronics and telecomm equipment	5.4	49.5	21.5	2.2	21.4	100 (93)
Motors and Freight	6.9	41.3	44.8	0.0	7.0	100 (29)

Note: The figures are the shares of the firms indicating the most important motive for investing abroad in total number of surveyed firms.
Source: Ha and Hong (1998), pp.124-125.

<Table 4> KEXIM Survey on Motives for Korea's ODI in Manufacturing by Industry and Region (As of 1998)

(Unit: %)

.		Natural resource or Raw materials	Low-cost labour	Export Expansion	High technology	Others	Total(number of sample)
Asia [China]	Manufacturing	8.9 [0.0]	18.9 [26.2]	46.7 [50.0]	0.0 [0.0]	15.6 [9.5]	100 (90) [42]
	Food and Beverage	33.3 [0.0]	0.0 [0.0]	16.7 [0.0]	0.0 [0.0]	50.0 [100]	100 (6) [3]
	Textiles and Apparel	15.4 [0.0]	46.2 [100]	15.4 [0.0]	0.0 [0.0]	15.4 [0.0]	100 (13) [2]
	Footwear and Leather	0.0 [0.0]	100 [100]	0.0 [0.0]	0.0 [0.0]	0.0 [0.0]	100 (3) [2]
	Petroleum and Chemicals	33.3 [0.0]	11.1 [25.0]	22.2 [50.0]	0.0 [0.0]	33.3 [25.0]	100 (9) [4]
	Basic Metals	0.0 [0.0]	0.0 [0.0]	75.0 [80.0]	0.0 [0.0]	0.0 [20.0]	100 (8) [5]
	Machine and Equipment	0.0 [0.0]	28.6 [33.3]	57.1 [66.7]	0.0 [0.0]	14.3 [0.0]	100 (7) [6]
	Electronics and Telecomm equipment	0.0 [0.0]	12.5 [18.8]	68.8 [62.5]	0.0 [0.0]	6.3 [18.8]	100 (32) [16]
	Motors and Freight	0.0 [0.0]	16.7 [33.3]	16.7 [66.7]	0.0 [0.0]	33.3 [0.0]	100 (6) [3]
United States	Manufacturing	9.1	0.0	63.6	0.0	18.2	100 (11)
	Machine and Equipment	0.0	0.0	100	0.0	0.0	100 (2)
	Electronics and Telecomm equipment	0.0	0.0	80.0	0.0	20.0	100 (5)
Europe	Manufacturing	15.4	3.8	50.0	0.0	19.2	100 (26)
	Electronics and Telecomm equipment	21.4	0.0	57.1	0.0	7.1	100 (14)
	Motors and Freight	0.0	14.3	57.1	0.0	14.3	100 (7)
Latin America and Africa	Manufacturing	14.3	0.0	50.0	0.0	7.1	100 (14)
	Textiles and Apparel	0.0	0.0	100	0.0	0.0	100 (2)
	Basic metals	0.0	0.0	0.0	0.0	0.0	100 (2)
	Electronics and Telecomm equipment	12.5	0.0	62.5	0.0	0.0	100 (8)
All region	Manufacturing	10.6	12.8	48.9	0.0	15.6	100 (141)

Note: 1) The figures are the shares of the firms indicating the most important motive for investing abroad in total number of surveyed firms.
2) The figures in [ ] are the share of the firms indicating the most important motive for investing in China in total number of surveyed firms.
Data Source: KEXIM.

Tables 3 and 4 also show that low-cost labor in the host country was an important factor in the decision to invest overseas for firms in capital-intensive heavy industries such as machinery and equipment, electronics and telecommunications equipment, and motors and freight. This is particularly evident in the case of Korea's ODI in China (Table 4). This apparent contradiction with the theory of comparative advantage (i.e., investment in capital-intensive industries in labor-abundant China) can be easily explained, however, once we recognize the increasingly widespread practice of intra-firm inter-process production arrangements or "international fragmentation" in production process (Jones 2001).[7]

Production processes in heavy industries involve, relative to light manufacturing industries, a large number of separable sub-processes with different requirements for technology and factor intensity — some sub-processes requiring high-tech materials and component parts and others requiring an intensive use of low-cost labor. A firm in such an industry can minimize the unit cost of producing the final output by locating some processes in countries well endowed in physical and human capital and others in countries where low-cost labor is in abundant supply. For example, it may produce high-tech components in the home country where there is a high technological capability while the assembling of components is done in China where there is an ample supply of low-cost labor. Indeed, many Korean firms in heavy industries have made such production arrangements since the late 1980s by establishing assembly plants in China. International fragmentation thus makes it possible for a developing country to become a site for producing some parts of a previously wholly integrated process and to acquire new skills and knowledge by producing them.

The Korean affiliates in heavy industries in China may be serving as an export platform for their parent companies. Even though in that case the affiliates' exports from China are displacing exports from Korea, the international fragmentation of production processes has a positive effect on bilateral trade if parts and components are shipped from parent to affiliate firms.

2. Trade Patterns of Korean Affiliates in China

As discussed in the preceding section, we are able to make some informed guesses about the effect on bilateral trade of Korea's ODI in

[7] Jones (2001) defines international fragmentation in the production process as a phenomenon that allows previously integrated production processes at one location to be separated into various component parts, some of them being "outsourced" to other countries. He adds that international fragmentation does not necessarily occur within a multinational corporation and can take place as arm's-length transactions whereby the market is utilized between firms.

China from the knowledge of its motives. In this section we try to find additional information on the ODI-trade nexus by looking into the procurement and sales patterns of affiliates as reported in the KIET and KEXIM surveys. This examination will provide us, however, only with a first approximation of the ODI-trade nexus since it does not take into account the indirect linkage effect of ODI that may take place in other sectors in the economy.

2-a. Procurement and Import Patterns

Table 5 reports the sources of procurement made by Korean offshore affiliates, as reported in the two surveys. According to the KIET survey (the top panel of the table), 60.5 percent of the total procurement of intermediate goods and materials by Korean affiliates in China came from Korea, 31.3 percent from local suppliers, and 8.2 percent from third countries. It is interesting to note that Korean affiliates outside of Asia (including China) imported a larger share of their intermediate goods and materials from Korea and procured less from local suppliers (with the exception of the affiliates in North America) in comparison with their counterparts in Asia.

According to the KEIXM survey (the bottom panel of Table 5), the procurement pattern of large-firm affiliates differs from that of all affiliates: The former imported 44.7 percent of intermediate goods and materials from Korea (78 percent of this share came directly from their parent companies or related affiliates). Local suppliers in China accounted for 39.2 percent of total procurement while third countries accounted for 16.1 percent. In other words, Korea's large-firm affiliates in China imported less from Korea, procured more locally and from third countries, implying that Korea's SME-affiliates in China relied more heavily than their large-firm counterparts on imports from Korea and less from local and third-country sources. This difference may be due to the networks of SMEs being more localized in Korea than those of large firms, which we expect to be more global in reach. Another reason might be that, relative to SMEs, large firms are concentrated in capital-intensive industries, which are internationally more fragmented in production processes than labor-intensive industries in which ODI from SMEs is concentrated.

The results of the KEXIM survey are consistent with the information obtained from the KIET survey. That is, Korean affiliates in China imported a large share of their intermediate goods and materials from Korea, albeit not as much as that by those outside of Asia (including China). They generally procured more from local suppliers, creating substantial backward linkages within China. These results lead the conclusion that as far as procurement by affiliates is concerned Korea's ODI in China has had a positive effect on bilateral trade and has

<Table 5> Sources of Procurement by Offshore Affiliates of Korean Firms by Region

(Unit: % of total procurement)

KIET Survey (As of 1996)				
	Local Procurement	Import		Total
		Korea	Third Countries	
Asia	37.4	52.3	10.3	100
China	31.3	60.5	8.2	100
North America	34.6	64.8	0.5	100
Europe	19.6	80.1	0.3	100
Latin America	12.6	85.9	1.5	100
KEXIM Survey (As of 2000)				
	Local Procurement	Import		Total
		Korea	Third Countries	
Asia	45.4 (3.8)	33.4 (30.2)	21.3 (9.3)	100
China	39.2 (3.1)	44.7 (34.8)	16.1 (8.1)	100
North America	20.1 (8.4)	58.7 (56.9)	21.2 (14.7)	100
Europe	23.0 (7.9)	48.9 (45.4)	28.1 (14.4)	100
Latin America	31.0 (14.8)	51.6 (46.4)	17.5 (8.6)	100

Note: Figures in parenthesis of KEXIM survey are the share of the related affiliates out of total procurement.
Source: Ha and Hong (1998), KEXIM.

created extensive backward linkages, thus contributing to the economic integration of the two countries.

Table 6 shows the procurement pattern of offshore affiliates by manufacturing industry, as reported in the KIET survey. For affiliates in food and beverages—natural-resource-based industries in which the motive for ODI is to obtain natural resources in the host country—the share of imports from Korea was, as to be expected, small, 7.2 and 0.9 percent, respectively. Their share of local procurement was quite large, 91.4 and 98.9 percent, respectively, indicating a strong backward linkage effect of ODI.

In a number of labor-intensive industries and in some heavy industries the share of imports from Korea was very large. In the former group are the textile and the footwear and leather industries, where the share of inputs imported from Korea was 74.8 percent and 90.8 percent, respectively. In the latter group are the fabricated metals, electrical machinery, motors and freight, and electronics and telecommunication equipment industries, where the share was 96.0, 74.5, 68.9 and 64.7 percent, respectively. For affiliates in those industries local procurement accounted for a small share of intermediate goods and materials, indicating that they are basically assemblers of imported parts utilizing low-cost labor in the host country.

Table 7 reports the procurement pattern of Korea's large-firm affiliates in China. In footwear and leather, basic metals, and machinery and equipment at least one half of intermediate goods and materials was imported from Korea. In food and beverage, apparel, non-metallic minerals, and motors and freight a significant portion of inputs was supplied locally, a sign of strong backward linkages of ODI in China by large-firm affiliates. In textiles and basic metals at least a third of inputs was imported from third countries.

For manufacturing as a whole the share of inputs imported from Korea was 45.2 percent while the share of local procurement was 38.5 percent. These high figures suggest that ODI in China by Korea's large-firm affiliates has had a positive effect on economic integration of the two countries.[8]

2-b. Sales and Export Patterns

Table 8 reports the sales and exports of Korean affiliates as reported in the two surveys. Korean affiliates in China exported 69.9 percent of their output to the rest of the world—27.9 percent to Korea and 42.0 percent to third countries (the top panel of the table). In comparison,

[8] Doner (1997) argues that foreign affiliates in developing countries initially tend to rely heavily on their parent companies for intermediate goods but subsequently reduce their reliance on them as they develop supplier networks within the host country.

<Table 6> KIET Survey on Sources of Procurement by Offshore Affiliates of Korean Firms in Manufacturing by Industry (As of 1996)

(Unit: % of total procurement)

	Local Procurement	Import		Total
		Korea	Third Countries	
Manufacturing	47.3	46.0	6.7	100
Food and Beverage	91.4	7.2	1.3	100
Textiles	21.8	74.8	3.4	100
Apparel	49.1	49.1	1.8	100
Footwear and Leather	7.0	90.8	2.2	100
Wood	32.8	51.5	15.7	100
Paper and Printing	62.0	32.6	5.4	100
Petroleum and Chemicals	30.9	33.0	36.1	100
Non-metallic metals	48.8	39.5	11.6	100
Basic metals	98.9	0.9	0.2	100
Fabricated metals	0.9	96.0	3.1	100
Machinery and equipment	68.1	27.4	4.5	100
Electrical Machinery	25.0	74.5	0.4	100
Electronics and telecomm equipment	16.7	64.7	18.6	100
Motors and Freight	31.1	68.9	0.0	100

Source: Ha and Hong (1998), pp.66-67.

<Table 7> KEXIM Survey on Sources of Procurement by Korea's Large-Firm Affiliates in China in Manufacturing by Industry (As of 2000)

(Unit: % of total procurement)

	China		
	Local Procurement	Import	
		Korea	Third Countries
Manufacturing	38.5 (3.1)	45.2 (35.1)	16.2 (8.1)
Food and Beverage	80.0 (0.0)	20.0 (0.0)	0.0 (0.0)
Textiles	29.5 (0.0)	32.2 (32.2)	38.3 (22.0)
Apparel	72.1 (0.0)	24.8 (24.8)	3.1 (0.0)
Footwear and Leather	29.9 (0.0)	68.5 (68.5)	1.5 (0.0)
Petroleum and Chemicals	44.2 (0.0)	27.9 (13.3)	27.8 (0.0)
Non-metallic Minerals	100.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Basic Metals	17.0 (0.3)	49.8 (21.5)	33.1 (26.4)
Machinery and Equipment	10.0 (0.0)	67.4 (67.4)	22.6 (0.0)
Electronics and Telecommunication Equipment	41.8 (4.8)	45.1 (37.7)	13.1 (6.8)
Motors and Freight	55.6 (0.0)	44.4 (44.4)	0.0 (0.0)

Note: 1) Figures in parenthesis are the share of related affiliates out of total procurement.
Data Source: KEXIM.

<Table 8> Sales Destination of Offshore Affiliates of Korean Firms by Region

(Unit: % of total sales)

KIET Survey (As of 1996)				
	Local Sales	Export		Total
		Korea	Third Countries	
Asia	64.5	14.2	21.3	100
China	30.2	27.9	42.0	100
North America	93.9	3.6	2.5	100
Europe	69.9	1.4	28.7	100
Latin America	58.0	10.9	31.1	100
KEXIM Survey (As of 2000)				
	Local Sales	Export		Total
		Korea	Third Countries	
Asia	49.1 (2.5)	30.0 (25.5)	20.9 (9.4)	100
China	46.7 (7.1)	24.5 (23.8)	28.8 (13.9)	100
North America	83.5 (2.2)	5.5 (3.6)	11.0 (4.2)	100
Europe	50.1 (6.2)	7.2 (4.4)	42.7 (9.8)	100
Latin America	68.5 (13.2)	20.1 (20.1)	11.4 (4.2)	100

Note: Figures in parenthesis of KEXIM survey are the share of the related affiliates out of total sales.
Source: Ha and Hong (1998), KEXIM.

its large-firm affiliates exported 53.3 percent of their output to the rest of the world—24.5 percent to Korea and 28.8 percent to third countries (the bottom panel of the table), indicating that Korea's SME affiliates in China exported a much larger share of their output. The share of local sales by the affiliates outside of China was much larger than that by the affiliates operating in China, suggesting that the latter performed largely as an export platform for Korean companies, especially for its SMEs.

Table 9 shows that the Korean manufacturing affiliates as a whole sold 66.1 percent of their output in the host countries and exported 9.4 percent to Korea and 24.5 percent to third countries. It also shows a wide industry variation in the shares of local sales and exports. In food and beverage, petroleum and chemicals, non-metallic minerals, basic metals, fabricated metals, machinery and equipment, and motors and freight more than a half of the affiliate output was sold locally. In contrast, in textiles, apparel, footwear and leather, wood, paper and printing, electrical machinery, and electronics and telecommunication equipment more than a half of the output was exported. Reverse imports—exports back to Korea—accounted for 9.4 percent of the entire manufacturing sector output and was especially large in wood (41.9 percent) and electrical machinery (44.4 percent).

The large reverse imports in wood reflect a strategy of Korean firms for developing and importing resource-based products, which are in short supply in Korea. In contrast, the large share of reverse imports of electrical machinery in total sales reflects Korea's changing comparative advantage and the displacement of home production with imports in some of the consumer durable goods markets in Korea.

Table 10 reports the sales and exports of large-firm affiliates in China, as reported in the KEXIM survey. For the entire manufacturing sector, local sales in China accounted for 45.8 percent of total sales, reverse imports 24.9 percent, and exports to third countries 29.3 percent. Reverse imports were especially large in non-metallic minerals (89.1 percent) followed by apparel (41.1 percent), textiles (38.3 percent), and electronics and telecommunication equipment (32.4 percent). As noted earlier (see Table 7), offshore affiliates in most of those industries procured much of their intermediate products from their parent companies; i.e., apparel 24.8 percent, textiles 32.2 percent, electronics and telecommunication equipment 45.1 percent. This pattern of procurement, combined with heavy reliance on reverse imports, suggests the importance of intra-firm trade for large-firm affiliates in those industries.

For large-firm affiliates in China in the footwear and leather industry, third-country markets accounted for 79.5 percent of their total sales; for those in apparel 41.8 percent; and for those in electronics and telecommunication equipment 34.7 percent.

<Table 9> KIET Survey on Sales Destination of Offshore Affiliates of Korean Firms in Manufacturing by Industry(As of 1996)

(Unit: % of total sales)

	Local Sales	Export		Total
		Korea	Third Countries	
Manufacturing	66.1	9.4	24.5	100
Food and Beverage	77.2	10.2	12.6	100
Textiles	31.7	21.0	47.3	100
Apparel	24.5	19.8	55.7	100
Footwear and Leather	26.7	21.6	51.7	100
Wood	41.8	41.9	16.3	100
Paper and Printing	2.9	23.4	73.7	100
Petroleum and Chemicals	64.3	13.5	22.1	100
Non-metallic metals	67.3	20.5	12.2	100
Basic metals	95.4	2.3	2.3	100
Fabricated metals	56.8	3.8	39.5	100
Machinery and equipment	97.5	2.4	0.1	100
Electrical Machinery	19.4	44.4	36.1	100
Electronics and telecommunication equipment	27.4	7.6	65.1	100
Motors and Freight	86.7	0.9	12.3	100

Source: Ha and Hong (1998), pp.56-57.

<Table 10> KEXIM Survey on Sales Destination of Korea's Large-Firm Affiliates in China in Manufacturing by Industry (As of 2000)

(Unit: % of total procurement)

	China		
	Local Sales	Export	
		Korea	Third Countries
Manufacturing	45.8 (7.2)	24.9 (24.2)	29.3 (14.1)
Food and Beverage	76.2 (0.0)	0.0 (0.0)	23.8 (0.0)
Textiles	36.0 (6.1)	38.3 (38.3)	25.7 (0.0)
Apparel	17.0 (0.0)	41.1 (41.1)	41.8 (0.0)
Footwear and Leather	0.2 (0.0)	20.3 (20.3)	79.5 (0.0)
Petroleum and Chemicals	75.1 (12.9)	11.4 (11.4)	13.6 (11.5)
Non-metallic Minerals	10.9 (0.0)	89.1 (89.1)	0.0 (0.0)
Basic Metals	97.8 (18.9)	0.0 (0.0)	2.2 (0.2)
Machinery and Equipment	100.0 (12.2)	0.0 (0.0)	0.0 (0.0)
Electronics and Telecommunication Equipment	33.0 (5.1)	32.4 (31.2)	34.7 (21.2)
Motors and Freight	79.6 (0.0)	20.4 (20.4)	0.0 (0.0)

Note: 1) Figures in parenthesis are the share of related affiliates of total sales.
Data Source: KEXIM.

Reverse imports resulting from ODI clearly add to bilateral trade between home and host countries and reflect a changing comparative advantage between the two countries.

What motivated Korean firms to invest in China was the rapidly increasing labor cost at home and an abundant supply of low-cost labor in China. An increasing gap in the labor cost between the two countries would have caused a contraction in labor-intensive industries in Korea and an expansion in the same in China even without the transplantation of those industries to China through ODI and would have led to Korea's importing labor-intensive products from China. What ODI has done is to bring about a more rapid response of the international division of labor to changing comparative advantage and a greater expansion of bilateral trade between Korea and China than would have been otherwise (Ogawa and Lee 1996).

IV. Sectoral and Geographical Distribution of Korea's ODI in China and Its Determinants

FDI in China is not evenly distributed throughout the country, being highly concentrated in the coastal areas (Broadman and Sun 1997, OECD 2000). Such geographical concentration implies that the effect of FDI on economic growth and integration into the world economy is not evenly distributed throughout China. If Korea's ODI follows the same pattern its effect on bilateral economic integration will be also unevenly distributed, some areas in China being more integrated with Korea than others. In this section we investigate the geographical distribution of Korea's ODI in China to find out the spatial distribution of its integrative effect in China.

As is clear on Table 11, Korea's ODI in China is, like FDI in China in general, concentrated in the coastal areas, which received 88.9 percent ($2,896 million) of total FDI from Korea in 1993-97. The inland areas and the autonomous regions received only 9.3 percent and 1.8 percent, respectively, during the same period.

Among the coastal areas the Shandong province is the most favored destination for Korean investment (28.5 percent of Korea's ODI in China), followed by the Liaoning province (11.6 percent), the Jiangsu province (11.3 percent), the city of Shanghai (11.3 percent), the city of Tianjin (10.7 percent) and the city of Beijing (7.6 percent). It is noteworthy to point out that Korea's ODI is concentrated, relative to FDI from the world, in Shandong, Liaoning, Shanghai, Tianjin and Beijing—areas that are along the Yellow Sea and nearest to Korea.

Another noteworthy point is that three provinces in China's northeastern region (Liaoning, Jilin and Heilongjiang) have received

<Table 11> Geographical Distribution of FDI in China by Region (Cumulative, US$ Million)

		From Korea (1993-1997)			From the World (1994-1997)
		Total	Large Firm	SMEs	
Coastal areas		2,896.3 (88.9%)	1,777.0 (90.7%)	1,119.3 (86.2%)	135,609.7 (85.4%)
	Shandong	927.2 (28.5%)	434.4 (22.2%)	492.8 (38.0%)	10,650.5 (6.7%)
	Jiangsu	369.1 (11.3%)	293.7 (15.0%)	75.4 (5.8%)	19,599.2 (12.3%)
	Liaoning	377.0 (11.6%)	188.1 (9.6%)	188.9 (14.6%)	6,968.9 (4.4%)
	Tianjin	348.1 (10.7%)	209.1 (10.7%)	139.0 (10.7%)	7,200.0 (4.5%)
	Shanghai	367.4 (11.3%)	304.7 (15.6%)	62.7 (4.8%)	13,532.0 (8.5%)
	Beijing	248.7 (7.6%)	181.0 (9.2%)	67.7 (5.2%)	5,597.3 (3.5%)
	Guangdong	106.0 (3.3%)	71.9 (3.7%)	34.1 (2.6%)	44,112.6 (27.8%)
	Hebei	51.9 (1.6%)	26.2 (1.3%)	25.8 (2.0%)	3,003.4 (1.9%)
	Zhejiang	72.1 (2.2%)	55.8 (2.8%)	16.3 (1.3%)	5,432.3 (3.4%)
	Fujian	19.7 (0.6%)	5.6 (0.3%)	14.1 (1.1%)	16,038.7 (10.1%)
	Hainan	9.1 (0.3%)	6.5 (0.3%)	2.6 (0.2%)	3,474.8 (2.2%)

<Table 11> continued

		From Korea (1993-1997)			From the World (1994-1997)
		Total	Large Firm	SMEs	
Inland areas		301.8 (9.3%)	128.3 (6.5%)	173.5 (13.4%)	19,611.4 (12.4%)
	Jilin	125.8 (3.9%)	51.0 (2.6%)	74.8 (5.8%)	1,503.8 (0.9%)
	Heilongjiang	108.6 (3.3%)	24.7 (1.3%)	83.9 (6.5%)	2,166.2 (1.4%)
	Hunan	29.8 (0.9%)	28.6 (1.5%)	1.2 (0.1%)	2,501.2 (1.6%)
	Hubei	14.0 (0.4%)	12.3 (0.6%)	1.7 (0.1%)	2,756.4 (1.7%)
	Anhui	4.4 (0.1%)	2.0 (0.1%)	2.4 (0.2%)	1,793.6 (1.1%)
	Henan	3.0 (0.1%)	0.0 (0.0%)	3.0 (0.2%)	2,080.9 (1.3%)
	Shanxi	2.4 (0.1%)	0.3 (0.02%)	2.2 (0.2%)	502.5 (0.3%)
	Sichuan	7.4 (0.2%)	6.4 (0.3%)	1.1 (0.1%)	2,570.7 (1.6%)
	Shaanxi	3.9 (0.1%)	2.6 (0.1%)	1.3 (0.1%)	1,517.1 (1.0%)
	Jiangxi	0.9 (0.03%)	0.0 (0.0%)	0.9 (0.1%)	1,332.9 (0.8%)
	Guizhou	0.4 (0.01%)	0.4 (0.02%)	0.0 (0.0%)	201.8 (0.1%)
	Yunnan	1.1 (0.03%)	0.0 (0.0%)	1.1 (0.1%)	393.7 (0.2%)
	Gansu	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	283.1 (0.2%)
	Qinghai	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	7.5 (0.004%)
Autonomous Regions		59.3 (1.8%)	54.0 (2.8%)	5.3 (0.4%)	3,516.1 (2.2%)
Total		3,257.4 (100%)	1,959.3 (100%)	1,298.1 (100%)	158,737.2 (100%)

Data Source: KEXIM, www.koreaexim.go.kr/oeis/index.hml, National Bureau of Statistics of China, www.stats.gov.cn

significant amounts of FDI from Korea, particularly from its SMEs, when the same provinces have received relatively negligible amounts from other countries. We explain this difference as due to the fact that those three provinces have the highest concentration of ethnic Koreans in China:[9] The common language and some commonality in culture would have the effect of reducing the transactions cost in investing overseas, such cost reduction being more important for SMEs than large-firm affiliates.

Table 12 reports the distribution of Korea's ODI in China by province and by sector. In 1993-97 Korea's ODI in manufacturing in China amounted to $2,649 million, about 81 percent of Korea's total ODI in China. Within the manufacturing sector, electronics and telecommunication equipment registered the largest share (18.8 percent), followed by textiles and apparel (17.2 percent), machinery and equipment (10.4 percent), and petroleum and chemicals (9.4 percent). Investment by SMEs was concentrated in light industries such as textile and apparel, footwear and leather, and wood and furniture, whereas investment by large firms was concentrated in heavy and chemical industries such as electronics and telecommunication equipment, motors and freight, non-metallic minerals, and basic metals.

The city of Tianjin was the largest recipient of Korean investment in electronics and telecommunication equipment whereas the provinces of Shandong, Liaoning and Jiangsu were the largest recipients of investment in textiles and apparel, machinery and equipment, and basic metal, respectively.

In order to find out the factors that determine the geographical distribution of Korea's ODI in China we carry out a regression analysis of the following location choice model of FDI that includes variables representing the level of economic development and foreign investment policies of different regions. The model is applied to two different sets of FDI data, one for large-firms and the other for SMEs.

$$ODI_i = \beta_1 + \beta_2 Y_i + \beta_3 W_i + \beta_4 E_i + \beta_5 I_i + \beta_6 DP_i + \beta_7 DK_i + \varepsilon_i$$

where

ODI_i = log of Korea's net cumulative direct investment in a manufacturing industry in region i in 1993-97,

Y_i = log of nominal GDP of region i in 1995,

W_i = log of nominal annual average wage for staff and workers in region i in 1995,

E_i = ratio of the number of students enrolled in higher education to population in region i in 1995,

[9] According to the 1990 China Census Data, ethnic Koreans in China numbered 1.92 million with 97 percent (1.86 million) residing in the three provinces in northeastern region (1.18 million in Jilin, 0.45 million in Heilongjiang, and 0.23 million in Liaoning).

<Table 12> Korea's Net Outward Manufacturing Investment in China (Cumulative, 1993-97): By Sector and Region

(Unit: US$ thousand, %)

	(1) FB	(2) TA	(3) FL	(4) WF	(5) PP	(6) PC	(7) NM	(8) BM	(9) FM	(10) ME	(11) ET	(12) MF	(13) OT	Total
Shandong	43,296	219,325	80,888	9,242	9,568	48,536	123,016	8,187	20,511	58,437	85,949	119,975	66,699	893,629 [33.7]
Jiangsu	11,798	65,824	6,824	1,556	580	72,128	8,710	87,067	1,196	25,816	70,377	1,680	4,949	358,505 [13.5]
Liaoning	9,281	39,926	27,692	14,290	11,076	16,089	28,907	17,818	9,143	73,104	26,710	19,478	11,391	304,905,[11.5]
Tianjin	4,423	38,997	9,860	1,016	1,214	33,818	3,210	6,102	14,154	11,975	146,740	3,722	59,462	334,693 [12.6]
Shanghai	8,366	17,846	1,214	2,151	21,678	1,608	6,487	300	5,795	8,171	42,506	14,610	8,695	139,427 [5.3]
Beijing	22,709	7,259	2,204	309	680	14,116	18,059	1,190	5,013	18,443	39,092	4,743	5,273	139,090 [5.3]
Guangdong	3,500	3,094	1,760	3,508	308	9,298	150	12,387	2,984	7,657	47,541	8,500	3,986	104,673 [4.0]
Hebei	17,321	8,389	1,204	1,108	86	1,119	2,014	2,824	1,469	8,440	100	141	2,767	46,982 [1.8]
Zhejiang	3,498	8,675	825	797	1,361	28,120	730	521	84	591	220	150	2,169	47,741 [1.8]
Fujian	0	1,256	0	0	0	3,780	280	2,191	52	1,220	888	7,131	2,811	19,609 [0.7]
Hainan	0	0	0	20	0	200	1,800	6,456	0	0	0	0	0	8,476 [0.3]
Jilin	11,906	34,158	643	8,320	2,571	10,663	4,713	3,302	2,890	4,387	6,200	1,894	1,912	93,559 [3.5]
Heilongjiang	6,257	4,725	951	3,090	1,773	2,880	1,167	2,031	898	54,873	1,840	1,048	-2,073	79,460 [3.0]
Hunan	0	100	0	0	0	0	0	0	0	0	28,618	0	1,100	29,818 [1.1]
Hubei	391	5,480	0	70	0	300	0	0	0	50	0	6,900	0	13,191 [0.5]
Anhui	1,000	0	0	0	0	1,254	0	0	0	0	2,000	25	70	4,349 [0.2]

<Table 12> continued

(Unit: US$ thousand, %)

	(1) FB	(2) TA	(3) FL	(4) WF	(5) PP	(6) PC	(7) NM	(8) BM	(9) FM	(10) ME	(11) ET	(12) MF	(13) OT	Total
Henan	906	0	0	0	0	902	64	0	0	526	80	0	50	2,528 [0.1]
Shanxi	0	0	0	0	0	0	1,120	0	0	0	0	0	0	1,120 [0.04]
Sichuan	0	781	0	0	0	0	0	0	0	0	156	0	0	937 [0.04]
Shaanxi	315	0	0	0	0	12	0	0	0	0	200	0	211	738 [0.03]
Jiangxi	0	146	0	0	22	0	0	0	0	139	0	0	0	307 [0.01]
Guizhou	0	0	0	0	0	0	0	0	0	0	0	414	0	414 [0.02]
Yunnan	0	0	0	0	0	0	0	0	0	0	0	0	0	0 [0.0]
Gansu	0	0	0	0	0	0	0	0	0	0	0	0	0	0 [0.0]
Qinghai	0	0	0	0	0	0	0	0	0	0	0	0	0	0 [0.0]
Total	145,636 (5.5)	456,191 (17.2)	134,065 (5.1)	45,477 (1.7)	50,942 (1.9)	249,050 (9.4)	201,837 (7.6)	150,376 (5.7)	64,189 (2.4)	276,076 (10.4)	499,217 (18.8)	205,926 (7.8)	169,544 (6.4)	2,648,526 [100] (100)
Large	80,282 <55.1>	185,955 <40.8>	29,850 <22.3>	7,973 <17.5>	22,893 <44.9>	131,212 <52.7>	149,353 <74.0>	125,341 <83.4>	14,393 <22.4>	136,074 <49.3>	376,661 <75.5>	149,078 <72.4>	57,510 <33.9>	1,466,575 <55.4>
SMEs	65,354 <44.9>	270,236 <59.2>	104,215 <77.7>	37,504 <82.5>	28,049 <55.1>	117,838 <47.3>	52,484 <26.0>	25,035 <16.6>	49,796 <77.6>	140,002 <50.3>	122,556 <24.5>	56,848 <27.6>	112,034 <66.1>	1,181,951 <44.6>

Note: (1) Food and Beverage (FB), (2) Textiles and Apparel (TA), (3) Footwear and Leather (FL), (4) Wood and Furniture (WF), (5) Paper and Printing (PP), (6) Petroleum and Chemicals (PC), (7) Non-Metallic Minerals (NM), (8) Basic Metals (BM), (9) Fabricated Metals (FM), (10) Machinery and Equipment (ME), (11) Electronics and Telecommunication Equipment (ET), (12) Motors and Freight (MF), (13) Others (OT)
Data Source: KEXIM, www.koreaexim.go.kr/oeis/index.hml

I_i = total length of road in region i per square kilometer of land in 1995,
DP_i = dummy variable for Special Economic Zones and Open Coastal Cities,
DK_i = dummy variable for provinces where ethnic Koreans constitute a major minority group,
E = stochastic disturbance term

Y, GDP, represents the market size of a region and is expected to have a positive coefficient and the variable W, with a negative expected coefficient, is to capture low-cost labor as a motive for Korea's ODI in China. The variable E is to capture the importance of the availability of skilled labor as a motive for ODI and is expected to have a positive coefficient. It is well recognized in the literature that the availability of infrastructure is an important factor in the decision on where to locate FDI and various indicators have been used as a measure of infrastructure availability. In our regression we use the total length of road within a region (I), normalized by its geographical size, as a measure of infrastructure availability.

The regression model also includes a dummy variable for preferential policies for FDI inflows. As is well known, China has a number of open economic zones such as Special Economic Zones (SEZs) and Open Coastal Cities (OCCs), which offer special tax incentives and maintain a liberal trade and investment regime but are separated from China's internal markets. The policy dummy variable (DP) is assigned value 1 for Guangdong, Fujian, Hainan, Liaoning, Hebei, Tianjin, Shandong, Jiangsu, Zhejiang, areas designated as either SEZ or OCC, and value 0 for other areas. The expected sign for DP is positive. Another dummy variable (DK) is included in the model to find out whether common culture/language mattered in locational decisions of Korean investors. It is assigned value 1 for the three provinces of Jilin, Heilongjiang, and Liaoning where ethnic Koreans constitute a major minority group and value 0 for other provinces.

The dependent variable employed in the model is the net cumulative manufacturing investment for 1993-97. For estimation we apply the canonical censored regression model, given that the dependent variable is left censored at zero. All the data for the independent variables are for 1995, a midpoint in the 1993-97 period.[10]

We have shown in the preceding sections that there is a significant difference in the motives for ODI as well as in the sales and procurement patterns between large firms and SMEs. Those differences imply that the large-firm affiliates would be much more sensitive to the

[10] Data for the variables used in the regression analysis are from the following sources: ODI from KEXIM (www.koreaexim.go.kr/oeis/index.hml), variables Y, W, E, and I from National Bureau of Statistics of China (NBS) (www.stats.gov.cn).

size of local market and less sensitive to labor cost and would produce more of their output for local markets than SMEs. They also imply a larger regression coefficient of the local market size (Y) for large-firm affiliates than for SMEs and a smaller absolute value of the negative coefficient of labor cost (W) for large-firm affiliates than for SMEs.

Two sets of regression results are reported on Table 13. The first set (Model I), which includes all the independent variables discussed above, shows that in the case of SMEs all the explanatory variables are statistically significant and have the correct signs whereas in the case of the large-firm affiliates only the market size (Y) and the policy dummy variable (DP) are significant and have the correct signs. Model I, however, suffers from multi-collinearity as the infrastructure variable (I) is highly correlated with wage (W) and education (E).[11]

The second set of regression results (Model II), which excludes infrastructure as an independent variable, shows that the estimate of the market size (Y) is positive and statistically significant for both large-firm affiliates and SMEs and is larger for the former than the latter, a result consistent with the survey results discussed in a preceding section.

The estimate of the wage-rate coefficient is negative for both large firms and SMEs, as expected, but is statistically significant only in the case of SMEs. This result is consistent with the survey result that low-cost labor is the most important motive for SMEs but not for large-firm affiliates. There is also a notable difference between large-firm affiliates and SMEs with respect to the effect of labor quality (E) on Korea's ODI in China. The coefficient of this variable is much larger for large-firm affiliates than for SMEs.

These results are consistent with the observation made earlier that investments in China by SMEs are concentrated in low-skilled labor-intensive industries such as textiles and apparel, footwear and leather, and wood and furniture whereas investments by large firms are concentrated in capital- and technology-intensive industries such as electronics and telecommunication equipment, and motors and freight that require more skilled labor. For the first group of investments, low-cost labor is a more important factor in determining where to locate than the quality of labor and conversely for the second.

The dummy variable for preferential policies has a positive and statistically significant coefficient for both large-firm affiliates and

[11] <Correlation Matrix for the Explanatory Variables>

	Y	W	E	I	DP	DK
Y	1.00					
W	0.14	1.00				
E	0.04	0.63	1.00			
I	0.34	0.73	0.70	1.00		
DP	0.35	0.33	-0.08	0.35	1.00	
DK	0.05	-0.30	0.06	-0.23	-0.02	1.00

<Table 13> Locational Determinants of Korean Firms' Manufacturing Investment in China (1993-97)

	Model I		Model II	
	Large firms	SMEs	Large firms	SMEs
GDP	1.94 * (1.9)	1.88 *** (4.5)	2.13 ** (2.0)	2.08 *** (3.8)
Wage	-4.83 (-0.8)	-7.03 *** (-2.73)	-2.12 (-0.4)	-5.01 * (-1.9)
Labour Quality	6.45 (1.6)	4.02 ** (2.0)	9.4 *** (2.9)	6.89 *** (4.1)
Infrastructure	11.62 (1.1)	11.02 ** (2.5)	-	-
Dummy: Government policy	5.70 *** (3.0)	3.15 *** (3.6)	6.6 *** (3.6)	3.87 *** (4.2)
Dummy: Korean People	3.92 (1.5)	3.96 *** (3.3)	3.02 (1.2)	2.67 ** (2.2)
Constant	30.20 (0.6)	52.76 ** (2.5)	8.1 (0.2)	36.5 * (1.7)
Adjusted R^2	0.55	0.77	0.56	0.73

Note: 1) t-values are in parenthesis. ***, ** and * indicate that the coefficient is significantly different from zero at 1, 5 and 10 percent levels respectively.

SMEs with the effect being stronger on investments from large-firms than those from SMEs. Finally, the estimate of the coefficient of the dummy variable for common culture/language is positive and statistically significant for SMEs but not significant for large-firm affiliates, as expected.

V. Concluding Remarks

No single motive drives a country's ODI and Korea's case is no exception: Some firms have invested in China to take advantage of its cheap labor and others have invested in China for market access or to secure its natural resources. In spite of such diverse motives the data presented in this paper suggest that Korea's ODI in China as a whole has had a positive effect on the two countries' bilateral trade. We also have found out that Korea's ODI in China is not evenly distributed throughout China, being limited mostly to the coastal areas and the areas with a high concentration of ethnic Koreans.

If by economic integration we mean that capital, labor, and goods and services can move between countries more freely than otherwise, Korea's ODI in China certainly has had and will continue to have a positive effect on the economic integration of the two countries. It will further the integrative process by promoting information and personnel exchange between the two countries and by inducing them to abide by contracts and accept property rights and the rule of law and to realize the importance of cross-border harmonization of rules and regulations on trade and investment. These are the effects of ODI that are rarely quantified and seldom discussed in the literature but perhaps are more important for regional integration in the long run.

Recently, at a meeting in Beijing a group of Korean business leaders proposed that China, Japan and Korea establish a joint policy coordination body with the aim of creating a Northeast Asian free trade area (*Digital Korea Herald*, Friday June 7, 2002).[12] Creating such an area would be a difficult task in the short run because there are a number of economic, historical and political factors unique to the region that many argue hinder its immediate establishment (Lee, forthcoming; Schott and Goodrich 2001, Seliger 2002). Those factors should not be, however, a barrier to the establishment of a joint policy coordination body, which

[12] A similar proposal for establishing a regional economic cooperation body, the Council for Northeast Asian Economic Cooperation, was made by Lee (2001) in August 2001. His rationale for the proposal is that although establishing a free trade area of China, Japan, and Korea in the near future is unlikely a cooperation body can perform some useful functions such as strengthening the voice of the three countries in the international arena and pave the way to future formal economic integration in the region.

can carry out the task of promoting trade and investment among them and contributing to the creation of a strong regional identity. That way it will pave the way toward building formal regional machinery in Northeast Asia.

References

Bende-Nabende, Anthony, *Globalisation, FDI, Regional Integration and Sustainable Development: Theory, Evidence and Policy*, Ashgate Publishing Ltd., Aldershot, England, 2002.

Broadman, Harry G. and Xiaolun Sun. "The Distribution of Foreign Direct Investment in China," Policy Research Working Paper 1720, World Bank, Washington, D.C., February 1997.

China Statistical Press, *China Statistical Yearbook 1999* (Tables 17-15), 1999.

Crespo-Cuaresma, Jesú's et al., "Growth, Convergence and EU Membership," Working Paper 62, Austrian Nationalbank, Vienna, 2002.

Doner, Richard, "Japan in East Asia: Institutions and Regional Leadership," in P. Kazenstein and T. Shiraishi (eds.), *Network Power: Japan and Asia*, Cornell University Press, Ithaca, New York, 1997.

Fung, K.C., Hitomi Iizaka, and Stephen Parker, "Determinants of U.S. and Japanese Direct Investment in China," mimeo, University of California, Santa Cruz, March 2002.

Graham, Edward M. and Erika Wada, "Foreign Direct Investment in China: Effects on Growth and Economic Performance," in P. Drysdale (ed.), *Achieving High Growth: Experience of Transitional Economies in East Asia*, Oxford University Press, 2001.

Ha, Byung-Ki and Seock-Il Hong, *An Analysis of the Actual Management Conditions of Korean Investors Overseas*, Korea Institute for Industrial Economics and Trade, Seoul, 1998. (in Korean)

Henley, John, Colin Kirkpatrick, and Georgina Wilde, "Foreign Direct Investment (FDI) in China: Recent Trends and Current Policy Issues," 1998. http://idpm.man.ac.uk

ICSEAD, *East Asian Economic Perspectives: Recent Trends and Prospects for Major Asian Economies*, Vol. 13, Kitakyushu, Japan, February 2002.

Jones, Ronald W., "Globalization and the Fragmentation of Production," *Seoul Journal of Economics*, Vol.14, No.1, Spring 2001, pp.1-13.

Kojima, Kiyoshi, "A Macroeconomic Approach to Foreign Direct Investment," in K. Kojima, *Trade, Investment and Pacific Economic Integration*, Bunshindo, Tokyo, 1996.

Korea Export-Import Bank (KEXIM), *Analysis of Business Activities of Korea's Overseas Affiliates*, KEXIM, Seoul, March 2000. (in Korean)

Lee, Chang-Jae, "Rationale for Institutionalizing Northeast Asian Economic Cooperation and Some Possible Options," a paper presented at the 2001 KIEP/NEAEF conference on "Strengthening Economic Cooperation in Northeast Asia," Honolulu, Hawaii, 16-17 August 2001.

Lee, Chung H., "Korea's Direct Foreign Investment in Southeast Asia," *ASEAN Economic Bulletin*, Vol.10, No.3, March 1994.

_____, "Toward Economic Cooperation in East Asia," in Lee-Jay Cho, Yoon Hyung Kim, and Chung H. Lee (eds.), *A Vision for Economic Cooperation in East Asia*, Korea Development Institute and East-West Center, 2003.

Organization for Economic Co-operation and Development (OECD), "Main Determinants and Impacts of Foreign Direct Investment on China's Economy," Working Paper on International Investment, No.2000/4, Paris, December 2000.

Ogawa, Kazuo and Chung H. Lee, "Changing Comparative Advantage and Direct Foreign Investment: The Case of Six Japanese Industries," in Richard Hooley, Anwar Nasution, Mari Pangestu, and Jan Dutta (eds.), *Asia- Pacific Economic Cooperation: Theory and Practice*, Vol. 7, part B, JAI Press, Greenwich, 1996, pp.279-296.

Schott, Jeffrey J. and Ben Goodrich, "Reflections on Economic Integration in Northeast Asia," a paper presented at the 2001 KIEP/NEAEF conference on "Strengthening Economic Cooperation in Northeast Asia," Honolulu, Hawaii, 16-17 August 2001.

Seliger, Bernhard, "Korea's Role in East Asian Regional Cooperation and Integration," *Korea's Economy 2002*, Vol.18, Korea Economic Institute, Washington, D.C., 2002.

Tseng, Wanda and Harm Zebregs, "Foreign Direct Investment in China: Some Lessons for Other Countries," IMF Policy Discussion Paper (PDP/02/3), International Monetary Fund, Washington, D.C., February 2002.

<Appendix> Summary Statistics for Explanatory Variables (1995)

	GDP (billion yuan)	Average Wage (yuan)	Education (%)	Infrastructure	SEZs/OCCs
Beijing	139	8,144	1.46	0.69	-
Tianjin	92	6,501	0.72	0.38	OCC
Hebei	285	4,839	0.20	0.27	OCC
Shanxi	109	4,721	0.22	0.22	-
Liaoning	279	4,911	0.44	0.30	OCC
Jilin	113	4,430	0.39	0.17	-
Heilongjiang	201	4,145	0.31	0.11	-
Shanghai	246	9,279	1.02	0.60	-
Jiangsu	516	5,943	0.30	0.25	OCC
Zhejiang	352	6,619	0.21	0.33	OCC
Anhui	200	4,609	0.14	0.25	-
Fujian	216	5,857	0.22	0.38	SEZ, OCC
Jiangxi	121	4,211	0.20	0.21	-
Shandong	500	5,145	0.18	0.35	OCC
Henan	300	4,344	0.13	0.30	-
Hubei	239	4,685	0.32	0.26	-

<Appendix> continued

	GDP (billion yuan)	Average Wage (yuan)	Education (%)	Infrastructure	SEZs/OCCs
Hunan	220	4,797	0.20	0.28	-
Guangdong	538	8,250	0.22	0.48	SEZ, OCC
Hainan	36	5,340	0.17	0.44	SEZ
Sichuan	353	4,645	0.18	0.18	-
Guizhou	63	4,475	0.10	0.18	-
Yunnan	121	5,149	0.13	0.17	-
Shaanxi	100	4,396	0.37	0.19	-
Gansu	55	5,493	0.19	0.08	-
Qinghai	17	5,753	0.15	0.02	-
Average	217	5,467	0.33	0.28	NA

Note: 1) Education: ratio of the number of students enrolled in higher education to population in 1995.
2) Infrastructure: total length of road in 1995 per square kilometer of land.
Data source: National Bureau of Statistics of China, www.stats.gov.cn