

EXPANSION STRATEGIES OF SOUTH KOREAN MULTINATIONALS

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***ABSTRACT** The purpose of this paper was to consider the motivations of South Korean foreign direct investment. Using recent, detailed data on South Korean multinational firms, I examine two types of foreign activities of South Korean multinationals, the use of export platforms and global outsourcing. The results presented in this paper suggest that vertical FDI according to the factor proportion hypothesis plays an important role in explaining the pattern of Korean outward FDI. This implies that Korean FDI in low-income countries is consistent with the notion that one of the determinants of this FDI is to exploit the cheap labor of these countries. The evidence for Korean FDI also produces that Korean firms establish their affiliate production facilities at least to evade high-income countries' trade restrictions that are recently on the rise. In this sense, it also supports the hypothesis that trade barriers is an important determinant of the location of Korean outward investment. This result is consistent with recent empirical literatures.*

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I. Introduction

What circumstances lead a firm to serve a foreign market by exports versus foreign production? Why might the firm choose direct investment versus some type of alternative entry?

Among economists there has been wide agreement that foreign direct investment (FDI) plays a key role in the current process of globalization and brings a benefit to host and home country firms². Such investments were thought to raise the productivity of those firms receiving FDI and those local firms in the same industries or geographic location as the firms that received FDI. Given these direct implications, it is not surprising that FDI has gained attention among international economists.

Although the general role of FDI has been well recognized, what seems less noted is that these firms display a wide range of expansion strategies. Recently there has been a growing literature suggesting that the bulk of FDI is horizontal direct investment among countries with similar per capita incomes, similar relative factor endowments: that is, market seeking FDI pattern is more common (Markusen (1992) and Brainard (1993))³. We, however, also saw that FDI flowed from developed to the developing world as both the source and destination markets, and so a traditional wisdom appears increasingly at odds with observed pattern of FDI and multinational activities⁴.

² The World Bank (1993) notes that FDI brings with considerable benefit: technology transfer, management know-how, and export marketing access. Many developing countries will need to be more effective in attracting FDI flows if they are to close the technology gap with high-income countries, upgrade managerial skills, and develop their export markets.

³ Markusen (1995) reports that in 1985 the developed countries were the source of 97 percent of direct investment flows and the recipient of 75 percent. And also, he notes that the share of all direct investment outflows generated by G-5 countries absorbed by other G-5 countries has been rising and amounted to 70 percent by 1988.

⁴ In 1980 the developing countries were the source of only 3.1% of outward FDI in the world, but outward FDI originating in these countries was 11.9% in 2000. And also, the outward FDI as a share of gross

In this paper, I employ a unique firm-level dataset for South Korea to study the question of why multinationals go abroad. I test two types of foreign activities of South Korean multinationals, the use of export platforms and global outsourcing. Most study has focused on two answers: to gain access to host country markets, or to exploit factor price differences between countries. And this empirical research finds that market seeking FDI is more common than FDI motivated by factor price differentials.

A growing body of literature in modeling multinational firms in general equilibrium focuses on either horizontal or vertical FDI. The horizontal FDI model is that multinational activities will arise because of to avoid trade barriers. This model predicts that firms are more likely to expand production horizontally across borders the higher are transport costs and trade barriers. When trade costs are low, a firm produces all output in domestic firms and serves foreign markets through exports. When trade cost are high, a firm becomes multinational by building production firms at both home and abroad. Brainard (1997) and Markusen (1998) test this hypothesis using U.S. outward and inward multinational data, and finds that the share of affiliate sales is increasing in trade barriers and transport costs,⁵ ⁶ and that U.S. outward FDI appears to be attracted to large developed countries supporting a market access motivation to FDI but not a comparative advantage motivation.

domestic product in these countries reached 10.1% in 2000 while this share was only 0.9% and 2.6% in 1980 and in 1990 respectively. In particular, since 1980 outward FDI of Asian developing countries (such as South Korea, Taiwan, Hong Kong, Singapore, and China) rises dramatically. See Table 1 for detail.

⁵ The evidence also suggests that rising per-worker income differentials reduce affiliate sales both absolutely and relative to trade. These findings are inconsistent with explanations of multinational activity that depend on factor-proportions differences.

⁶ Brainard (1997) contributes a more accurate measure of transport costs and a different estimation approach. The estimates avoid the simultaneity problems between affiliate production and exports encountered in earlier work by using an instrumental-variables specification for estimating the levels. In particular, it is the first to use a direct product- and country-specific measure of transport costs as well as disaggregate data on tariffs.

On the other hand, the vertical FDI model is that multinationals arise to take advantage of factor price differences associated with internationally different relative factor supplies. When factor prices are differ across countries, firms become multinational by locating production in countries where manual-labor costs are low and headquarters in countries where skilled-labor costs are low. In this model, all varieties of a final good produced by a foreign affiliate should be exported back to the headquarters market, while the horizontal FDI predicts that multinationals will substitute overseas production for trade in final goods⁷.

The empirical literatures so far provided little evidence that foreign direct investment is related to differences in factor endowments across countries. Markusen (1995) and Lipsey (1999, 2001) show that most FDI flowed from large, rich countries to other similar countries. These findings are consistent with explanations of multinational activity that depend on market access than factor-proportions differences. In addition, Brainard (1997) and Car, Markusen and Maskus (2001) find that U.S. total volumes of affiliate sales are strongly increasing in trade tariffs and transport costs. This finding suggests that a substantial part of multinational activities is motivated by jumping trade barriers rather than differences in factor proportions and incomes. That is, these results provide only weak evidence of factor proportion motivations for multinational activity in outward and inward of the U.S. in the late 1980s.

In contrast that most recent empirical works provide evidences of horizontal FDI, Helpman (1984) and Helpman and Krugman (1985) show how FDI in the theory should be motivated by factor endowment differences between countries by differentiated-

products model of trade⁸. Hanson et.al (2001) also revisit this hypothesis using recent and detailed data on U.S. multinational firms, and find a clear evidence of vertical FDI than previous research suggests. In particular, Yeaple (2001) presents a model in which factor endowment differences between countries play a role in the pattern of FDI at the level of the industry rather than in the aggregate. A basic prediction of this model is that low skill human capital countries should receive more FDI in low sectors, whereas high human capital countries should receive more FDI in high sectors. That is, comparative advantage is an important fact to explain the pattern of FDI.

The purpose of this paper is to extend some recent works in order to explain expansion strategies of South Korean multinational firms. Using a unique firm-level dataset for South Korea, it examines the relative importance of horizontal and vertical FDI. Moreover, this paper investigates how host-country market conditions shape these various strategies and tests the relationship between firm characteristics and expansion strategies. Since the locational decision also depends on other conditions, it is not intended as a full study of all the determinants of outward direct investments.

The main novelty of this paper is timing. South Korea is no longer only a recipient of foreign direct investment. It is also emerging, steadily and rapidly as a source. South Korean firms have increasingly used outward FDI as a strategic tool for strengthening their international competitiveness in the more recent period. This transformation has been prompted by recent trends of rapidly rising nominal wages and more frequent labor-management conflicts in the country. Firms have responded by moving production

⁷ In addition, Helpman (1984) and Markusen (1984) note that the factor proportions explanation for the location of multinational activity focuses on vertical expansion characteristic of North-South flows.

abroad to maintain their international competitiveness. South Korean government also recognized the strategic role of outward FDI in strengthening competitiveness abroad by liberalizing the policy regimes as well as providing financing and other incentives.

The findings indicate that Korean FDI in low-income countries is consistent with vertical FDI according to factor proportions hypothesis that one of the determinants of FDI is to exploit the cheap labor of these countries. On the other hand, in high-income countries, horizontal FDI is more common than vertical. These results are perfectly consistent with recent empirical works.

The rest of this paper is organized as follows. Section 2 reviews the general pattern of outward foreign direct investment for South Korea. In section 3, I examine the use of foreign affiliates as export platforms. In section 4, I address outsourcing by Korean parents to their foreign affiliates. Section 5 contains a summary of the major findings.

II. The Pattern of Outward FDI: An Initial Look

Korea is no longer only a recipient of foreign direct investment (FDI). It is also emerging, steadily and rapidly, as a source. Korean FDI has been rapidly growing over the past two decades.⁹ Figure 1 shows the flows of outward FDI for South Korea. Korean firms considerably stepped up their outward FDI in the middle of the 1980s and from

⁸ See also Feenstra and Hanson (1995) for vertical motivation for FDI. And Feenstra and Hanson (2001) related this view to models of foreign outsourcing.

⁹ This can be explained by several reasons. First, Korea liberalized its policy governing outward FDI by domestic firms in 1980s. Second, since 1989, investment up to \$ 2 million does not require approval. Third, Korean Export-Import Bank gives subsidized loans for overseas investments financing up to 80% of the investment. Finally, the government offers tax incentives such as the reserve for losses incurred by FDI. It also offers avoidance of double taxation and Korean firms can subtract the corporate tax paid abroad from their domestic corporate tax liabilities. See Lee (2003) for details.

then on FDI continued to grow up rapidly to 1990s¹⁰. The total number of affiliates established by Korean firms was 9,414 and their total volume of direct investment was \$22.4 billion as the end of 1999. At the same time, a major part of Korean FDI shifted from natural resources industries to manufacturing ones and from investment in developed countries to investment in other developing countries. In particular, Korean firms made FDI in other developing countries, primarily to enter the local markets, as well as to establish supply bases serving markets in other countries including Korea, that is, to supply goods to the world markets by taking advantage of cheap labor in developing countries.

Table 1 shows the distribution of affiliates, outstanding investment, sales, capital stock and employees for Korean affiliates across countries, for selected year, 1999. In 1999, 32 percent of outstanding investment and 40.6 percent of sales were concentrated on North America and 40.3 percent of outstanding investment and 34.5 percent of sales occurred in other Asia countries. This pattern shows that Korean multinationals engage in both low-income and high-income countries.

In addition, based on the employees at the end of 1999, the Asian region makes up the largest share, with 64.7 percent of total employees. This share in North America, however, is only 7.6 percent while the share of total sales makes up the largest share. This suggests that the supply of cheap labor of low-income countries has been regarded as one of their comparative advantages in international trade in certain products. Korean firms investing in labor-intensive industries of low-income countries have more

¹⁰ When Korea was greatly affected by the financial crisis, outward FDI fell. That is, the number of affiliates in 1998 is only half of that in 1996 and the total volume of direct investment was decreased by 26 percent in 1999 as compared to pre-crisis level.

incentives to exploit cheap wages in the region than other firms producing non-labor-intensive products do. This result could be contrast with most recent empirical works on FDI that finds most real world FDI is horizontal, not vertical.

The recently growing of Korean FDI into the low-income countries can be explained by following reason. The Korean production workers hourly wages had doubled between 1978 and 1987.¹¹ This increasing of real wages affects Korean international competitiveness. And also the export competitiveness was further eroded by the currency appreciation in the mid-1980s.¹² Korean firms attempted to make up for these developments by relocation labor-intensive production in Asian and Latin American countries to take advantage of low cost labor.

On the other hand, Korean exports to the industrialized countries have also been adversely affected by the rising in non-tariff trade barriers in developed countries.¹³ Furthermore the formation of a regional trading bloc (EC and NAFTA etc.) has brought a wide spread perception of treat of discriminative against extra-regional suppliers. Exporters from Japan and the US have responded to this threat by investing within the EU and claim the access to the Single Market as an insider. Korean chaebols that have dominated Korean FDI have also responded to it in the same manner.¹⁴ This Korean affiliate activity could be consistent with horizontal FDI because of to avoid trade barriers.

¹¹ See World Bank (1989).

¹² Due to rising current account surpluses since the mid-1980s, Korea has appreciated its currency.

¹³ For example, most Korean electronic exports to Europe such as VCRs, TVs, CD players, and video tapes are currently subject to anti-dumping charges by the EC. For more detail, see Finger and Nogues (1986).

¹⁴ Top 5 conglomerates account for 70.0% of total investments and 89.5% of total sales. And 30

conglomerates account for 81.3% of total investments and 95.5% of total sales in 1999.

I next examine the sectoral distribution of Korean affiliate operations. The early Korean FDI were concentrated in the extractive sector designed to supplement natural resources for their local production. The sectoral distribution of Korean FDI has changed considerably over time. The outward FDI for Korea shown in Figure 2 is supportive of this. The primary industry (such as mining, agriculture & fishing, and forestry) shows a steady decrease from 32.4 percent in 1980 to 9.2 percent at the end of 1999 while the share of investments into manufacturing sector increases from 24.6 percent in 1980 to 57.2 percent in 1999. And also, Korean outward FDI into service sector shows a steady increase.

To study in more detail, Table 2 shows the distribution of total affiliate activities by industry in 1999. The manufacturing industry is the largest single industry, accounting for 57.2 percent of the total amount of investment and 90.7 percent of total employment as of the end of 1999. In particular, electronics and transport equipment have higher share of all factors in manufacturing. It is also noteworthy that 61.2 percent of total sales by Korean affiliates are in wholesale and retail trade. That wholesale and retail trade sectors are high fraction of affiliate sales by Korean multinationals are consistent with the recent global trend of FDI showing a faster increase of investment on service sector.

To study how change of Korean FDI on manufacturing over time, Table 3 reports share of each sector in manufacturing for Korean FDI during 1980-1999. It is interesting to compare the traditional industries with high- tech industries in manufacturing. In manufacturing, traditional industries, such as food & beverages, textiles & apparel, and leather & footwear decreased gradually. The high- tech industries (mainly electronics & communication equipment), however, increased dramatically.

In sum, the changing sectoral and geographical distribution of Korean FDI reflects an increasing tendency of Korean firms to use FDI as a tool to strengthen their international competitiveness. I then explore this pattern in more detail.

III. Foreign Affiliates as Export Platforms

As discussed in previous section, multinationals have often located production to low wage countries to take advantage of factor price differences associated with different relative factor supplies.¹⁵ Korean firms have been losing comparative advantage to produce labor-intensive products since nominal wages have been rapidly rising.¹⁶ As a result, many Korean firms established production facilities in low wage countries.

On the other hand, the threats of rising trade barriers in the NAFTA and the EC have induced major Korean firms to set up production facilities in North America and Europe because of to overcome these trade barriers. This type of FDI is called horizontal. This model predicts that when transport costs and trade barriers are high, firms are more likely to expand production horizontally across borders (Markusen 1984, Brainard 1993, 1997, Markusen and Venables 1998).

In this section, I present empirical evidence that foreign affiliates are oriented mainly towards selling into their host countries. I first document that many foreign affiliates act as export platforms serving regional and international markets. I then

¹⁵ This can be called factor proportion hypothesis, and the model predicts that vertical multinationals which geographically fragment the production process into a headquarters and a final production activity will arise to exploit potential factor cost differentials. See Helpman (1984), Helpman and Krugman (1985), Hanson et al (2001) and Yoffie (1993) for a discussion.

¹⁶ In 1988, when we make the Korean average wage equal to 100, Thailand is 31.6, Malaysia 24.0, Indonesia 13.4, and Philippines 34.7. See World Bank (1989).

investigate how host-country market condition and firm characteristic affects South Korean affiliate activities between local sales and exports.

III-1. Affiliate Exports and Local Sales

Table 4 shows the each ratio of total sales for South Korean affiliates by region. As shown on Table 4, the geographical distribution of sales is very fluctuating across regions. This variation seems to be due to strategy of Korean multinationals, and trade and investment policy by host governments.

Local sales are a higher fraction of total sales in North America, Latin America, and Europe. This suggests that the threat of rising trade barriers in the wake of NAFTA and the single market in the EC have induced major Korean firms to set up manufacturing bases in these countries. This Korean affiliate activity could be consistent with horizontal FDI.

On the other hand, the ratio of export to Korea in total sales in Oceania (e.g. Australia) and Asia (such as Vietnam, Philippines, Japan and China) is higher than that in all other regions. This seems to be due to investments by Korean firms in the Oceania region for the purpose of natural resource acquisition, and for taking advantage of factor price differences in the Asia (except Japan). That is, because FDI can be viewed as an attempt by profit-maximizing firms to minimize their costs of production, the export to sales ratio will be high fraction in low-production cost countries.

Table 5 shows sales ratio across industry. Local sales as a share of total sales are higher in service sectors than in manufacturing. The distribution of sales, however, has very different features within manufacturing. Within manufacturing, so-called high-tech

industries (such as transport equipment (93.3%), metals (90.2%), and electronics & communication equipment (50.8%)) have highest shares in local sales, while traditional industries (such as footwear (99.8%), apparel (98.3%) and textiles (72.5%)) have concentrated in exports to Korea or 3rd countries.¹⁷ This is because rising wage costs in Korea and scarcity of labor forced Korean firms to look for locations for labor intensive manufacturing abroad.

To summarize, the evidence in Tables 4 and 5 shows more distinct features in Korean affiliates. For manufacturing, most sales are for local market in relative capital-intensive industries (such as, motor vehicles, metal, and electronics & communication) and in countries that North America and European countries. But most sales are for export to Korea or 3rd countries in relative labor-intensive industries (such as, footwear, apparel and textiles) and in countries that are labor abundant countries (such as Vietnam, Philippines and China).

It is interesting to note here that even though Japan is not labor abundant country, Japan makes up highest share of export to Korea in total sales, with 47.0 percent of total sales. This is because relative scarcity of high-tech and skilled forced Korean firms to look for locations for high-tech and skilled-intensive sectors in Japan. That is, Japan that had high-tech skill proved an attractive location for the relocation of production by Korean firms in some industries. I now examine what factors determine affiliate exports versus affiliate local sales in South Korean multinationals.

¹⁷ Some Korean overseas manufacturing projects have been primarily involved in exports to third countries. In these cases, it is obviously the ability of these firms to market the merchandise in international markets

III-2. The Export versus Local Sales Decision

The recent empirical works provide evidence that affiliate sales are increasing in country GDP, per capita GDP, tariffs, and industry skill intensity, and decreasing in average firm size.¹⁸ Using U.S. outward and inward multinational data, Brainard (1997) explains that FDI is higher where markets are larger, trade costs are higher, and scale economies at the plant are weaker, and this is consistent with theories of horizontal FDI.

It is interesting that, here, most literature on multinationals treats all output by foreign affiliates as destined for the local market and then tests which country and industry characteristics are correlated with affiliate total sales. I use the standard estimating procedure in the literature to estimate how country and industry characteristics influence affiliate exports relative to affiliate local sales rather than total affiliate sales. I run the following regression using data at the country and industry level for foreign affiliates of South Korean multinationals.

$$\ln AEX_{ijt} - \ln ALS_{ijt} = \alpha + \beta_1 \ln GDP_{jt} + \beta_2 \ln PGDP_{jt} + \beta_3 ASIA + \beta_4 \ln DST_j + \beta_5 \ln SCL_{it} + \beta_6 SKL_{it} + \beta_7 SCALE_{ft} + \beta_8 LPROD_{ft} + \beta_9 \ln TAR_{ijt} + \beta_{10} NTB_{ijt} + \varepsilon_{ijt}$$

In this specification (1), AEX is exports by affiliates; ALS is local sales by affiliates. GDP and PGDP are host-country's GDP and per capita GDP; ASIA is dummy variable for primarily Asia countries; DST is country distance to South Korea; SCL is average employment for the industry in South Korea; SKL is the ratio of capital to labor for the industry in South Korea; SCALE is average employment for the parent firm; LPROD is labor productivity (measured by value added over total employments) for the parent firm;

that facilitated their entry in the host countries.

TAR is the average tariff rate for the country and industry; and NTB is a dummy indicating the presence of non-tariff barriers in the country and industry.

In this specification, we should distinguish between affiliate exports and affiliate local sales and capture the differential impact of country, industry and parent firm characteristics on affiliate exports relative to affiliate local sales. Estimates for equation (1) are reported in Table 7. The first three columns exclude tariffs and non-tariff barriers because of data availability.

The first column reports the results using log affiliate exports as the dependent variable rather than the dependent variable shown in equation (1). As the estimates in column (1) of Table 6 indicate, affiliate exports are higher in countries that have higher per capita GDP, an Asian region, and closer proximity to the Korea. Affiliate exports are also positively and significantly correlated with parent firm characteristics. That is, Affiliate exports are higher in larger and more productive parent firm. Column (2) using log affiliate local sales as dependent variable shows similar results. These results are broadly consistent with findings of recent empirical literatures on affiliate total sales in other countries.

Interestingly, affiliate exports are negative correlated with market size while affiliate local sales are higher in countries that have larger markets. This indicates that local sales are more attractive in larger markets, but affiliates are oriented towards exports more than local sales in smaller markets. This result is confirmed again in column (3). Since dependent variable is the log difference between affiliate exports and affiliate local sales in column (3), that the coefficient on GDP is negative means that affiliate exports are more attractive in smaller markets. The per capita GDP is still positive and

¹⁸ See Brainard (1997), Yeaple (2000), Carr, Markusen and Maskus (2001).

significant. This indicates that high income of host-country induces affiliates to become export platforms. Distance and Asia dummy are not significant. Proximity to Korea does not induce affiliates to become export platforms.

Table 6 offers additional evidence for the industry and parent firm characteristics on affiliate exports relative to affiliate local sales. The coefficient on industry capital-labor ratio is negative in column (3), whereas it is positive in columns (1) and (2). This indicates that overall affiliate activity may be higher in capital intensive industries, but that export platforms concentrate in less capital-intensive industries. There is a strong positive correlation between industry scale and overall affiliate activity as shown in columns (1) and (2), but it is a weak correlation in export platforms in column (3).

Focusing on parent firm characteristics, I find that parent firm size has positive effect on total affiliate exports in column (1). But there is a negative correlation between parent firm size and the ratio of affiliate exports to affiliate local sales in column (3). This indicates that overall affiliate activity is higher in larger parent firms, but the export platforms concentrate in smaller parent firms. In South Korea, capital-intensive firms are normally larger than labor-intensive firms, and so this result is very consistent with evidence of industry characteristics as above: e.g., export platforms concentrate in less capital-intensive industries. There is also evidence that higher productive parent firms are associated with higher affiliate exports and local sales.

Contrary to results in the literature,¹⁹ columns (4) and (5) show that tariffs and non-tariffs are negatively correlated with affiliate exports both in absolute terms and relative to local sales. This result suggests that South Korean affiliate activity is

¹⁹ Recent empirical studies find a positive correlation between trade barriers and affiliate activity. See Brainard (1997) and Yeaple (2000) for more details.

inconsistent with tariff-jumping motivation for export platforms. This is because higher trade barriers provide affiliates with a captive local market, making local sales relatively attractive.

IV. Outsourcing and Vertical FDI

As discussed on previous section, South Korean FDI is both vertical and horizontal. That is, the share of export to Korea in total sales is higher in industries like footwear, apparel, and textile product while local sales in higher in industries like motor vehicles, metal, and electronics & communication. I present evidence of this picture in more detail.

Table 7 and 8 reports the ratio of export to Korea in total sales and export-to-sales ratio from parent to affiliate by industry and by region respectively. In 1999, the share of imports from parent in total sales is 48.8 percent in footwear, and 42 percent in apparel and 25.7 percent in textiles showing higher share of affiliate sales going export to Korea, with 48.8 percent, 27.5 percent, and 25 percent respectively. This result is direct evidence that Korean FDI is primarily vertical associated with outsourcing than horizontal in some sectors.

Looking across countries, the share of import in total sales and share of total sales to Korea vary across countries. Here, affiliate activities in Asian low-income countries (such as Vietnam, Philippines and China) showed more distinct features compared to other countries. Asian countries (Vietnam, Philippines, Japan, and China) have a higher

share of total sales back to Korea while that of other countries have relative higher fraction in local sales.²⁰

The important feature that we can find in these tables is that rapidly rising wages or high wage costs since 1987 make Korean firms lose international competitiveness relative to other developing countries, and so firms want to locate labor-intensive products in labor-abundant countries. In other words, the magnitude of outsourcing to other Asian countries (Vietnam, Philippines, and China) may reflect the low-wage and low transport costs. It is clear evidence of outsourcing by Korean multinationals, consistent with vertical FDI. That Korean multinationals appear to outsource most common where low-wage and average incomes are relatively low is consistent with Hanson et. al (2001). They find that outsourcing to foreign affiliates is higher in countries that have lower average labor productivity, smaller markets, and that are closer to the United States.

For Korean firms, Japan has an overwhelming position as a host of Korean investment. Even though Japan has not lower average labor productivity and not smaller markets, it makes up highest share of total sales to Korea, with 47 percent of total sales. This is because at least two reasons. One is that since outsourcing requires back-and forth movements between parents and affiliates, the distance from Korea to affiliates is very important. More important reason is that Korean firms want to learn and to locate for high-tech manufacturing abroad (such as motor vehicles, and electronics & communication equipment).

²⁰ There are only 2 exceptions: electronics & communication in Germany and office & other general machinery in Netherlands. But these two countries have higher share of export to 3rd countries, with 56.6% and 92.2% respectively.

To understand in more detail global outsourcing by Korean multinationals, I estimate a regression similar to equation (1). I only changed dependent variable to either log affiliate imports from parent firms or the ratio of affiliate imports to affiliate total sales. Regression results are reported in Table 9. The results indicate that affiliate imports are higher in countries that have higher average incomes, are closer to Korea. Affiliate imports are positively correlated with industries that have a larger scale and more capital intensive. In addition, they are also higher in parent firms that are larger. The similar patterns hold for affiliate total sales.

Here, it is interesting that there is a negative correlation between market size (GDP) and affiliate imports in columns (1). This result indicates that vertical FDI is greater in countries that are smaller. This is confirmed using dependent variable as the log difference between affiliate imports and affiliate total sales in column (3). This may be because smaller countries have small markets and thus may make horizontal production for the local market less attractive and so outsourcing more attractive.

Using dependent variable as the ratio of affiliate imports to affiliate total sales, I find that the coefficient on capital-labor ratio is now negative and significant in column (3), while it is positive in columns (1) and (2). This suggests that outsourcing is more attractive in labor-intensive industries in Korean multinationals. The coefficient on distance from South Korea is still negative. This result is consistent with outsourcing requiring substantial back-and forth movements of inputs between parents and their foreign affiliates.

It is also interesting evidence in columns (4) and (5) that tariffs and non-tariffs are positively correlated with affiliate imports although not significant. This suggests that

vertical FDI (measured by imports from parent firms) is not more sensitive to trade barriers than other multinational activities.

V. Conclusion

Recent literature contains that there are at least two explanations for the motivations of FDI, one involving trade barriers (horizontal-FDI) and the other factor proportions hypothesis (vertical-FDI). The first view is that multinationals arise because to overcome trade barrier, and the second view is that multinationals arise to take advantage of international factor price differences. These are not competing explanations, and both could surely be important at the same time.

The purpose of this paper was to consider the motivations of South Korean foreign direct investment. I studies in this paper why multinationals go abroad using a unique firm level dataset for South Korea. I analyze two types of multinational activities, the use of export platforms and global outsourcing.

Recent empirical study has stressed that total affiliate sales are greater in countries that are larger markets, higher per capita GDP, and higher trade barriers. Even though there are many studies about this issue, existing researches attribute their findings to horizontal FDI and focuses on only a few countries (such as United States and Japan).

The results presented in this paper suggest that vertical FDI according to the factor proportion hypothesis plays an important role in explaining the pattern of South Korean outward FDI. This implies that Korean FDI in low-income countries is consistent with the notion that one of the determinants of this FDI is to exploit the cheap labor of these

countries: e.g. the wage differentials between Korea and other developing countries have been addressed to by relocation of production to countries with lower wages.

The evidence for Korean FDI also produces that Korean firms establish their affiliate production facilities at least to evade high-income countries' trade restrictions which are recently on the rise. In this sense, it also supports the hypothesis that trade barriers is an important determinant of the location of Korean outward investment. This result is consistent with recent empirical literatures.

In sum, Korean MNCs have relocated production to low-wage countries to internalize the international factor price differences, and Korean outward FDI is also used to protect existing markets in the face of tariff or non-tariff barriers in developed countries.

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Data Appendix

The analysis of this paper was conducted using Korean firm level investment in country-by-industry level. Export-Import Bank of Korea publishes data on FDI outflows in the *Overseas Direct Investment Statistics Yearbook*. The same data are also available in the *Ministry of Finance and Economy* (www.mofe.go.kr). Data are available annually from 1980 to 2000, but this data includes only an amount of outward investments for a variety of sectors and countries at approximately the 3-digit level of industrial classification.

Datasets for multinational sales and other information about multinationals with both across country and across industry are hard to obtain. The data are drawn from the unpublished sources of the Export-Import Bank of Korea. The database provides information about Korean multinationals (such as the number of affiliates, sales, capital stock, and employees etc.) by country and by industry. Affiliate activities are classified 3-digit Korean Standard Industry Classification (KSIC) codes that are closely related to 3-digit ISIC codes. The data used in this paper includes multinational sales for 46 major host countries, and 31 industries shown in Appendix table. Unfortunately, this data is available only recent years, 1999 and 2000. The data on multinational sales in manufacturing probably understates the true value because some proportion is allocated to wholesale and retail trade.

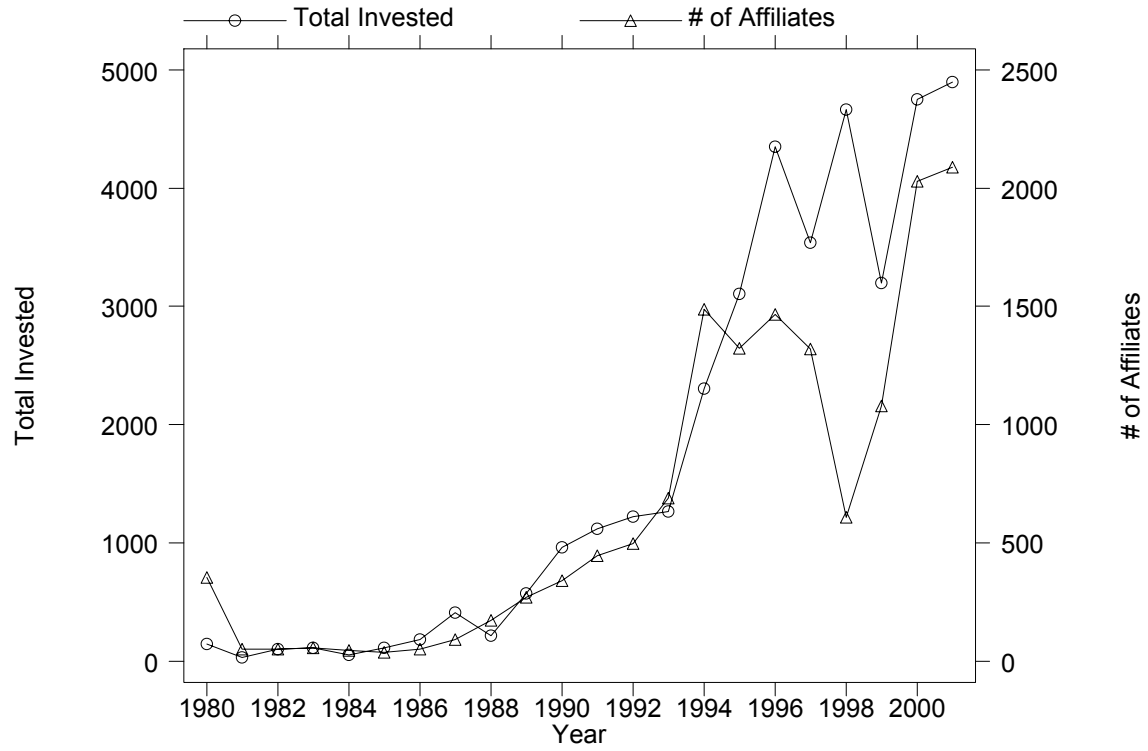
Foreign Direct Investment (FDI) used in Korean Acts is defined as an investment involving a long-term relationship and reflecting a lasting interest and control of a foreign direct investor or parent firm. That is, FDI implies that the investor exerts a significant

degree of influence on the management of the firm in the other economy. FDI may be undertaken by individuals as well as business entities.

According to Korean Foreign Exchange Transactions Acts, A *foreign affiliate* is an incorporated or unincorporated enterprise in which an investor owns more than a 10 per cent equity stake or in which the parent enterprise directly owns more than a half of the shareholder's voting power and has the right to appoint or remove a majority of the members of the administrative, management or supervisory body.

Figure 1

Outward FDI for South Korea, 1980 – 2000



Note: (1) The reports of 1980 are cumulative statistics from 1968 to 1980.

(2) Units are millions of dollars and number of affiliates.

Figure 2
Outward FDI for South Korea, by Industry

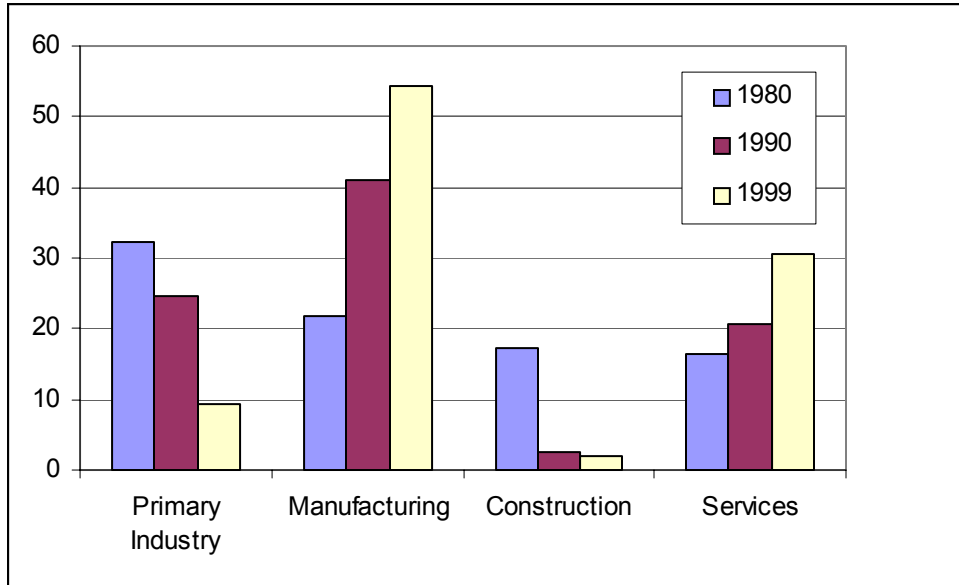


Table 1
Levels of Korean Foreign-Affiliate Activity, by Region

	World	Asia		North America		Europe		Latin America		Oceania		Africa	
	Level	Level	Share	Level	Share	Level	Share	Level	Share	Level	Share	Level	Share
Affiliates	318	161	50.6	69	21.7	55	17.3	18	5.7	9	2.8	6	1.9
Outstanding Investment	16,394.8	6,602.0	40.3	5,247.8	32.0	3,401.7	20.7	656.6	4.0	318.4	1.9	168.2	1.0
Sales	70,562.5	24,314.6	34.5	28,629.3	40.6	15,317.6	21.7	1,812.4	2.6	373.0	0.5	115.6	0.2
Capital Stock	9,400.8	3,808.9	40.5	2,125.1	22.6	2,607.5	27.7	455.9	4.8	233.2	2.5	170.3	1.8
Employees	238.3	154.1	64.7	18.1	7.6	54.1	22.7	8.6	3.6	0.5	0.2	2.9	1.2

Note: Units for these entries are number for affiliates; millions of dollars for outstanding investment, sales, capital stock; and thousands for employees.

Table 2
Levels of Korean Foreign-Affiliate Activity, by Industry

	Affiliates		Outstanding Investment		Sales		Capital Stock		Employees	
	Level	Share	Level	Share	Level	Share	Level	Share	Level	Share
Manufacturing	159	50.0	9,382.2	57.2	24,431.6	34.6	5,972.0	63.5	216.2	90.7
Textiles & Apparel	22	6.9	804.8	4.9	784.2	1.1	287.2	3.1	38.8	16.3
Transport Equipment	14	4.4	2,100.5	12.8	3,601.8	5.1	1,777.2	18.9	52.2	21.9
Electronic & Comm. Equipment	59	18.6	3,764.4	23.0	15,444.2	21.9	1,626.2	17.3	74.5	31.3
Metals	12	3.8	764.1	4.7	1,049.5	1.5	494.7	5.3	4.0	1.7
Rubber & Plastic Products	6	1.9	291.0	1.8	130.9	0.2	137.8	1.5	6.1	2.6
Other Manufacturing	46	14.5	1,657.4	10.1	3,421.0	4.8	1,648.9	17.5	40.4	17.0
Mining	15	4.7	648.9	4.0	628.5	0.9	445.2	4.7	1.6	0.7
Wholesale & retail trade	90	28.3	4,432.7	27.0	43,190.3	61.2	850.1	9.0	13.8	5.8
Transport, Storage & Communication	5	1.6	118.5	0.7	9.2	0.0	1,084.5	11.5	0.2	0.1
Hotel & Restaurants	10	3.1	444.0	2.7	172.2	0.2	260.2	2.8	4.5	1.9
Real Estate	21	6.6	610.3	3.7	142.3	0.2	445.9	4.7	0.4	0.2
Other Industries	18	5.7	757.7	4.6	1,988.5	2.8	342.8	3.6	1.4	0.6
Total	318	100.0	16,394.8	100.0	70,562.5	100.0	9,400.8	100.0	238.3	100.0

Note: Units for these entries are number for affiliates; millions of dollars for outstanding investment, sales, capital stock; and thousands for employees.

Table 3
FDI in Manufacturing

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Food & Beverages	11.2	9.5	8.0	5.1	4.4	5.4	2.9	1.5	2.2	2.7	6.7	4.9	5.3	4.9	4.0	3.9	4.2	3.9	3.3	3.6
Textiles & Apparel	4.6	5.5	4.9	3.4	3.8	4.2	4.6	6.4	9.3	13.1	15.2	15.6	17.9	19.0	17.7	15.6	14.2	13.2	12.3	12.3
Leather & Footwear	5.8	5.0	5.0	3.0	3.1	2.5	1.4	0.9	2.3	4.0	4.2	3.8	3.6	3.9	4.3	4.1	3.6	3.3	2.9	2.8
Wood & Furniture	1.0	4.4	16.0	10.9	9.0	7.6	4.3	2.4	3.2	2.6	2.5	3.9	4.1	3.8	2.8	2.5	2.0	1.8	1.6	1.5
Paper & Printing	5.6	4.8	3.9	2.2	1.8	1.4	0.0	0.1	3.8	3.4	3.8	3.5	3.3	3.4	2.8	2.1	1.9	2.0	2.0	2.0
Petroleum & Chemical	31.2	31.0	25.5	14.5	16.1	19.8	14.7	8.8	8.0	7.6	10.5	10.1	9.3	8.9	7.4	7.1	7.4	7.3	7.3	7.8
Non-Metallic Minerals	9.9	10.8	9.7	28.3	27.5	31.1	17.3	9.2	7.8	5.9	3.8	5.9	5.1	5.0	5.8	6.3	5.1	4.2	3.3	3.2
Metals	13.8	12.8	10.7	6.4	5.8	5.0	15.5	48.0	39.4	34.1	23.3	16.6	17.9	15.1	11.0	8.9	8.0	9.2	8.0	7.4
Fabricated Metals	0.0	0.0	0.0	6.6	12.3	9.6	16.3	8.4	7.6	5.5	3.3	3.9	3.4	3.2	6.4	4.8	2.1	1.9	1.4	1.3
Industrial apparatus Electronic & Comm Equipment	0.0	0.0	0.7	0.6	0.5	0.4	1.9	1.1	0.8	1.1	1.2	2.3	2.4	4.3	4.2	6.1	6.3	8.3	7.9	9.6
Transport Equipmnet	0.0	0.0	0.0	0.0	0.0	0.0	12.0	6.4	5.5	8.6	14.3	13.6	10.3	9.3	10.9	11.2	10.3	11.3	14.2	13.5
Others	17.0	14.5	13.3	9.2	7.7	6.3	3.5	2.3	2.4	3.9	4.1	4.4	5.0	5.3	5.2	5.3	4.8	4.7	4.0	3.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 4
Share of Affiliate Total Sales, by Region

	Local Sales	Export to Korea	Export to 3rd countries
Asia	38.2	28.1	33.7
China	44.5	24.1	31.5
Hong Kong	38.9	21.8	39.3
Japan	39.1	47.0	13.9
Malaysia	25.0	9.2	65.9
Philippines	28.6	48.2	23.3
Singapore	11.7	23.3	65.0
Thailand	44.5	14.8	40.7
Vietnam	31.9	48.9	19.2
North America	82.1	5.2	12.8
Europe	49.4	9.5	41.1
Latin America	60.1	12.5	27.4
Oceania	42.4	39.9	17.7
Africa	86.6	1.0	12.4
Total	59.1	14.3	26.6

Table 5
Share of Affiliate Total Sales, by Industry

	Local Sales	Export to Korea	Export to 3rd countries
Manufacturing	57.3	12.0	30.7
Food & Beverage	34.0	3.9	62.1
Textiles	27.5	25.6	46.9
Apparel	1.8	27.5	70.8
Footwear	0.2	48.8	51.0
Rubber & Plastic products	41.2	6.9	51.9
Metals	90.2	5.5	4.3
Fabricated metal	100.0	0.0	0.0
Non-metal mineral products	49.7	4.8	45.5
Machinery and equipment	60.3	6.0	33.7
Transport Equipment	93.3	0.4	6.3
Electrical apparatus	100.0	0.0	0.0
Electronics & Comm. equipment	50.8	15.3	33.9
Medical	97.1	0.8	2.1
Mining	33.7	45.4	20.9
Wholesale & retail trade	62.3	15.2	22.5
Transport & Storage	17.1	12.9	70.0
Hotel & Restaurants	100.0	-	-
Real Estate	83.5	16.5	-
Total	59.1	14.3	26.6

Table 6
Regression Results: Affiliate Exports versus Local Sales

	(1)	(2)	(3)	(4)	(5)
Dependent variable	Exports	Local Sales	Exports/ Local Sales	Exports	Exports/ Local Sales
GDP	-0.2080 (-1.68)*	0.0789 (1.77)**	-0.2782 (-2.65)***	-0.7512 (-0.89)***	-0.8607 (-3.12)***
PGDP	0.5497 (3.11)***	0.3296 (2.30)**	0.4742 (1.93)**	0.5153 (1.94)*	0.8532 (2.26)**
Distance	-0.0857 (-0.24)	-0.5478 (-1.79)*	-0.6581 (-1.34)	-0.1961 (-0.56)	-1.0419 (-2.05)**
Asia	0.9217 (1.25)	0.6979 (1.14)	0.0081 (0.01)	-0.6290 (-0.70)	-0.7290 (-0.56)
Average Ind. Employ	0.4964 (2.60)***	0.5632 (4.48)***	0.3635 (1.36)	0.2316 (1.25)	0.0717 (0.26)
Ind. Capital Labor Ratio	0.1742 (0.65)	0.4240 (2.09)**	-0.3448 (-0.92)	0.4397 (1.67)*	-0.0740 (-0.19)
Average Firm Empoly	0.1334 (1.26)	0.5260 (5.76)***	-0.3299 (-2.18)**	0.1055 (0.96)	-0.3916 (-2.37)**
Ave. Firm Value added	0.5061 (3.24)***	0.1315 (1.21)	0.3943 (1.82)*	0.4091 (2.61)***	0.3447 (1.52)
Tariffs				-0.0233 (-0.77)	-0.2114 (-0.44)
NTBs				-0.2020 (-3.54)***	-0.3478 (-1.48)
Observations	129	170	117	114	114
R-Squared	0.41	0.36	0.19	0.38	0.21

Notes: t-statistics are in parentheses.

***, ** and * denote significance at the 1%, 5% and 10% respectively.

All regressions include time and sectoral dummy variables.

Table 7
Transactions between Affiliates and Parent firm, by Industry

	Local Sales	Imports from Parents	Exports to Parents
Manufacturing	57.3	12.0	34.3
Food & Beverage	34.0	3.9	11.7
Textiles	27.5	25.0	25.7
Apparel	1.8	27.5	42.0
Footwear	0.2	48.8	48.8
Rubber & Plastic products	41.2	6.9	32.1
Metals	90.2	5.5	23.4
Fabricated metal	100.0	0.0	0.0
Non-metal mineral products	49.7	4.8	2.8
Machinery and equipment	60.3	6.0	28.9
Transport Equipment	93.3	0.4	40.9
Electrical apparatus	100.0	0.0	11.0
Electronics & Comm. equipment	50.8	15.3	35.1
Medical	97.1	0.8	60.6
Mining	33.7	45.4	2.7
Wholesale & retail trade	62.3	15.2	40.2
Transport & Storage	17.1	12.9	0.0
Hotel & Restaurants	100.0	-	-
Real Estate	83.5	16.5	-
Total	59.1	40.9	36.8

Table 8
Transactions between Affiliates and Parent firm, by Region

	Local Sales	Imports from Parents	Exports to Parents
Asia	38.2	28.1	24.3
China	44.5	24.1	25.8
Hong Kong	38.9	21.8	34.9
Japan	39.1	47.0	12.0
Malaysia	25.0	9.2	10.7
Philippines	28.6	48.2	28.6
Singapore	11.7	23.3	35.3
Thailand	44.5	14.8	43.0
Vietnam	31.9	48.9	39.8
North America	82.2	5.2	44.2
USA	82.1	5.1	44.3
Canada	82.3	17.0	36.1
Europe	49.4	9.5	41.2
France	68.7	17.7	3.9
Germany	24.7	18.7	27.2
Netherlands	7.0	0.1	31.6
Poland	91.3	5.2	43.4
Romania	59.0	0.0	59.6
UK	60.4	5.5	53.8
Uzbekistan	82.9	7.5	44.5
Latin America	60.1	12.5	45.6
Brazil	72.6	13.0	56.2
Mexico	43.5	15.2	3.6
Oceania	42.4	39.9	28.1
Africa	86.6	1.0	44.1
Total	59.1	40.9	36.8

Table 9
Regression Results: Affiliate Imports

	(1)	(2)	(3)	(4)	(5)
Dependent variable	Imports	Total Sales	Imports/ Total Sales	Imports	Imports/ Total Sales
GDP	-0.0981 (-1.00)	0.0217 (0.24)	-0.0348 (-0.44)	-0.2289 (-1.27)	-0.0531 (-0.39)
PGDP	0.4255 (3.05)***	0.5937 (5.11)***	0.0285 (0.25)	0.3816 (1.59)	0.0741 (0.40)
Distance	-0.0682 (-0.24)	-0.5471 (-2.19)**	-0.3622 (-1.58)	-0.0012 (-0.01)	-0.4189 (-1.80)*
Asia	-0.3213 (-0.53)	1.2044 (2.36)***	-1.1857 (-2.47)***	-1.1628 (-1.43)	-1.3741 (-2.30)**
Average Ind. Employ	0.0986 (0.65)	0.7022 (6.76)***	-0.1031 (-0.85)	0.0104 (0.77)	-0.0980 (-0.79)
Ind. Capital Labor Ratio	0.2424 (0.94)	0.3319 (1.99)**	-0.0254 (-2.13)***	0.2998 (1.04)	-0.0165 (-0.08)
Average Firm Empoly	0.3882 (4.59)***	0.4666 (6.46)***	0.1504 (0.22)	0.3660 (3.94)***	0.0054 (0.08)
Ave. Firm Value added	-0.0816 (-0.66)	0.3141 (3.46)***	-0.3287 (-3.33)***	-0.1190 (-0.87)	-0.2552 (-2.40)**
Tariffs				0.1326 (0.43)	0.0935 (0.40)
NTBs				0.7767 (1.46)	-0.0488 (-0.12)
Observations	141	182	139	126	124
R-Squared	0.29	0.44	0.16	0.33	0.15

Notes: t-statistics are in parentheses.

***, ** and * denote significance at the 1%, 5% and 10% respectively.

All regressions include time and sectoral dummy variables.

Appendix Table

Region	Countries
Asia	Bangladesh, China, Guam, Hong Kong, India, Indonesia, Iran, Japan, Malaysia, Philippines, Raos, Singapore, Sri Lanka, Thailand, Vietnam.
North America	Canada, USA.
Europe	Belgium, Bolivia, France, Germany, Hungary, Iceland, Italy, Netherlands, Poland, Romania, Spain, Tajikistan, Turkey, UK, Ukraine, USSR, Uzbekistan.
Latin America	Argentina, Brazil, Chile, Morocco, Panama, Venezuela, Virgin Islands.
Oceania	Australia, Cayman Islands.
Africa	South Africa, Sudan.

Sector	Industries
Agriculture and fishing	
Mining	
Manufacturing	Food and beverage, Apparel, Textiles, Leather and footwear, Wood and furniture, Pulp and paper, Rubber and plastic, Printing and publishing, Petroleum and chemicals, Office and other general machinery, Non-metal mineral products, Metals, Non-metal mineral products, Metals, Fabricated metals, Machinery and equipment, Transport equipment, Electrical apparatus, Electronics and communication equipment, Electronics and communication equipment, Medical products, Other manufacturing.
Construction	
Wholesale and retail trade	
Transport and storage	
Communications	
Financing and insurance	
Hotels and restaurants	
Real estate and services	

