Asian Financial Crisis and Impacts of FDI*

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Contents

Chapter I. Introduction

1) One's mistake, at times, is the opportunity for others. It happens on the golf course for a friendly game on Sunday. It can also happen in business. However, as for the Asian crisis, it may not be the case. There is possibility that the Asian financial crisis can become contagious to the industrialized countries. The Asian crisis demonstrated the powerful impacts of the global capital flows and the global capitalism.

2) Prior to the Asian financial crisis in 1997, developing countries actively participated in the international capital market. The bond issues were increased and new financing schemes were developed to attract overseas investors. The active engagement of the developing countries in the international capital market has been encouraged at the international arenas of dialogues such as in the Uruguay Round and the WTO. Many developing countries have been led to throw themselves in the new wave of liberalization and privatization.

3) Flows of foreign direct investment (FDI) constitute the largest portion of overseas financing to the developing countries in recent years. The FDIs in developing countries quadrupled during the 1990s, amounted to $120bn in 1997. The share increased from 21 % in 1991 to 36% in 1997.(World Bank, 1998)

4) Asian countries had been attractive to host TNCs in the 1990s. Especially those newly industrialized countries, ASEAN-4 (Malaysia, Thailand, Indonesia and the Philippines) and China, attracted FDI more than any developing region in the world. However, in 1997, the reversal of the upward trend occurred in East Asia and Pacific region which experienced declining in the gross flows of capital from the third quarter of 1997.(World Bank ,1998, p.11)

5) The newly industrializing Asia countries, especially ASEAN-4, recorded the extraordinary high growth rate during the last few decades.

6) The economic performance in the region had been paralleled with the massive inbound FDI to this region. Studies indicate a strong and positive correlation between the rapid growth and FDI inflows.[1] It was the good time for Asia. It was the time of growth and prosperity.

7) Dramatic performance of those Asian countries has been displayed eloquently in the urban centers and their peripheries in those countries. An infrequent visitor to those cities gasps to see the splendors of the fashionably designed and well built offices and hotels, some of which are owned or managed by the TNCs. The physical changes of the cities followed by their economic performance were dazzling. But there have been other changes in those cities. The mode of urban life in the Asian cities has been changing. Especially along with the inflows of capital, the influx of telecommunication and news media service from the industrialized countries have been evidently influencing Asian life in style and quality.

8) Since 1997, however, all of those Asian countries, the older tigers and ASEAN-4, have been in depression of varying degrees. Korea and Indonesia are in deep financial trouble with the bail out financing from IMF. Malaysia and Thailand are panting in the shortage of the foreign exchange. Economies of Japan and China seem not too far from the edge of the economic crisis. Basically all but few Southeast and Far Eastern Asian countries, Singapore and Taiwan are gasping in the economic depression.

9) Whether the roots of the problem is home grown or inflicted, incapability of the financial system in risk management, moral hazard or panic were all there in the eve of the crises in some Asian countries. The "Fire Sale" of assets in some Asian countries are now spectacular in terms of the sale prices. (Krugman, 1998) With the depreciated Asian currencies and general depression of those economies, the deflation of various assets and real estates is

1) The inbound FDI and per capita income and growth rate in the host countries has known to be important determinant of FDI, although the relation appears to have simultaneity problem in econometric findings.

phenomenal. After the end of the first quarter of 1998, in many Asian countries were recorded with minus growth rates; -3.7% in Korea, -9% in Indonesia, and -7% in Thailand (Business Week, June 1, 1998). In Korea, the asset value and labor costs are reaching roughly a half of the values prior to the IMF crisis.

10) The unemployment rates and bankruptcies are reaching the record high. The private industries and government are facing acute shortage of cash to tackle the crisis. In addition to the foreign debt service, the government is in need of money to finance the industrial restructuring and rampant unemployment compensation. The public investment plans in Asian countries are now in jeopardy due to the fiscal crunch. For the infrastructure development, the Asian governments will face difficulty in financing them domestically, either from public or private sectors. Many of those Asian countries have to turn to foreign sources to finance those debt services and infrastructure developments.

11) One of the common symptoms of the financial crisis in Asian countries is the foreign exchange shortage caused by the sudden withdrawal of the short-term loan by foreign financial institutions. To those countries, the increase in the inbound FDI seems to be a solution to the problem. With the hard-learned lessons from the dangers of the short-term loans and hot money without proper risk management and supervision, Asian countries are out to get more foreign investment.

12) The next chapter of this paper describes the background of the capital flows in developing countries with a focus on FDI in Asian countries. It highlights on the recent development of FDIs in 4-ASEAN countries along with the Asian NICs, which opened their capital markets and got the hard blow on the financial sectors and economies at large. In chapter three, financial and industrial impacts of FDI are summarized. These primary impacts of the FDI lead to chapter four that focuses on spatial and environmental implications of the FDI in the host countries in Asia.

Chapter II. FDI in Boom and Bust

2.1. Backgrounds

1) Foreign direct investment (FDI) can be defined as an investment in a foreign country and exercises a significant influence on the management of the firm.[2] FDI can be carried out in forms of equity or debt. The actual inflows of the capital are not essential in the nature of FDI. FDI is the governance of business by foreign entity. In a situation where the FDI is carried out with the loan from the third country, TNCs use its own patent rights, technology and machineries, and there is no capital outflows from the home country, but it is obviously an outbound FDI3.[3]

2) FDI investors may acquire real assets, either the whole or some proportion of the total capital investment. FDI also include international portfolio investment. The portfolio investment includes stocks with bearing influence on the management of a firm.[4] Although the criteria varies by country, generally foreign portfolio investment between 10 and 25 percent of the total capital is classified as FDI. FDI can be in the forms of sole investment, joint ventures, and mergers and acquisitions (M&A).

3) FDI incurs according to competitive advantage of industries in the source and host countries. The push factors are associated with the economic environment in the source country, whereas the pull factors are provided by the host country. The push factors include high labor cost, strong trade union activities and unfavorable business environment in the source country. With growing concern about the environment, a strict pollution control at home can be a push factor. Cheap labor cost in a host country is certainly a pull factor. Jobs can be created directly for domestic workers for management and in

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2) UN, *World Investment Repor*t, 1997.
3) Lee, 1997.
4) OECD classifies as FDI if portfolio investment exceeds 10 percent of the total capital (Kim, Kim and Wong, 1998).

production lines and indirectly in related industries in the host countries are such as supplying industrial raw materials or semi-final goods, logistics, transport, sales and supporting works.

4) A low level of technology in a source country can be a push factor in the developing countries, as it could encourage the industries to go abroad to obtain higher level of technology. It will bring backward linkage effects to the companies which improve existing technology. Forward linkage effects, however, could improve technologies in supporting parts producers and sub-contractors. Technology transfer can substitute or complement to the technology of domestic production. In either case, FDI improves the level of technology in the host country.

5) FDI certainly improves the welfare of the host country. It is possible to reduce prices of products as it enhances competition. Consumers would have more options to choose from the diversified products.

6) The inflows of foreign capital meant that increase in capital account in the balance of payment in the host country. It will ease financial constraints and help higher investment and consequently higher economic performance. It could promote exports or import substituting. In both cases, FDI could bring positive impacts on the balance of payment.[5)]

7) FDI could bring some detrimental impacts to the host country. In the case of FDI by M&A, foreign investors may reduce the number of employees when they take over and restructure the local.[6)] Foreign investors could import raw materials and semi-final goods from their source countries so that the host country would have to increase imports. In addition, FDI may involve the loyalty payment, remittance of its profits, and the repayment of foreign loans, which could increase capital outflows later.

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5) Kim, Kim and Wong, 1998.

6) Structural adjustment normally accompanies with the reduction of employees especially if participating firms are originated from developed countries.

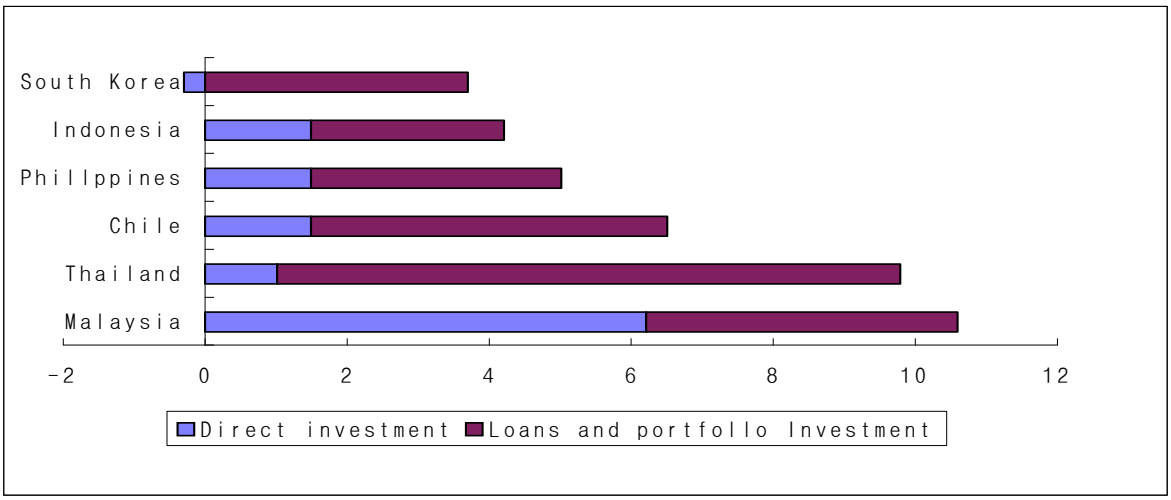
8) The pollution by the FDI projects is another adverse impact which can be created by the foreign affiliates, especially in resource development and manufacturing. However, it varies widely by the production technology of the affiliates.

2.2. FDI Trends in Asia

1) About 20 years ago, 90% of international capital flows was due to trade of real goods, and only 10% was investment. Today, it is reversed. About 90 % comes from investment, whereas 10% emanates from international trade.[7] (Amstrong, 1997)

2) In 1997 the global FDI amounted to $347bn. The FDI outflows expanded by 43% between 1990 and 1996. FDI in the developing countries was jumped to $119bn in 1996 and $120bn in 1997, which is five times the size of 1990. The FDI share in world GDP increased from 0.8% to 2.0% during 1991 to 1997. The share of FDI to the developing countries also increased from 21% in 1991 to 36% in 1997.[8] (See Figure 2.1).

Figure 2.1 Net Private Capital Inflows in Annual Average (as % of GDP)



Source : UN, *World Investment Report*, 1997.

7) Goldberg and Klein, 1997.
8) World Bank, *Global Development Finance*, 1998.

3) The FDI inflows in Asia were accounted for 2.9 percent of the Asian GDP in 1980 but increased to 12.1 percent in 1994. In 1996, Malaysia and Singapore had the highest ratios of FDI inflows of GDP, which marked 27 percent and 22 percent respectively.[9] (See Table A1 in Appendix)

4) The share of FDI inflows in the gross fixed capital formation has been increased in Asia. FDI inflows in Asia marked 3.1 percent of the gross fixed capital formation in 1990, and it increased to 7.2% in1996. (See Table A2) The most rapid increase was achieved in China from 2.6 percent to 24.5 percent in 1990 and 1996 respectively. Singapore also has relatively high FDI proportion in capital formation though its trend decreased over the period from 47.1 percent in 1990 to 23.5 percent during the same period. The proportions of FDI inflows to the gross fixed capital formation in Japan and Korea were relatively low as recorded 0.1% and 0.6%, respectively, in 1994.

5) The outflows of capital from developing countries have increased in Asia. The FDI from the developing countries increased to $51.5bn last year, up from $47bn in 1996 and $8.3bn in 1990. The share of outbound FDI from the developing countries increased from 4% in 1990 to 15% in 1996. The FDI outflows from Asia, however, were relatively small compared with inflows. As it can be seen from Table A4, Asian FDI outflows shared 5% of the total in 1990 and 15% in 1996. Asia is the principal source of FDI amounted to $46.8bn, twice larger than Japan ($23.4bn). Hong Kong is the major source of outbound FDI in Asia amounted to $27bn(58%). Singapore ($4.8bn) and Korea ($4.2 bn) are next in order followed by Taiwan ($3.1bn), China ($2.2bn), Malaysia ($1.9bn) and Thailand ($1.7bn). (See Table A3)

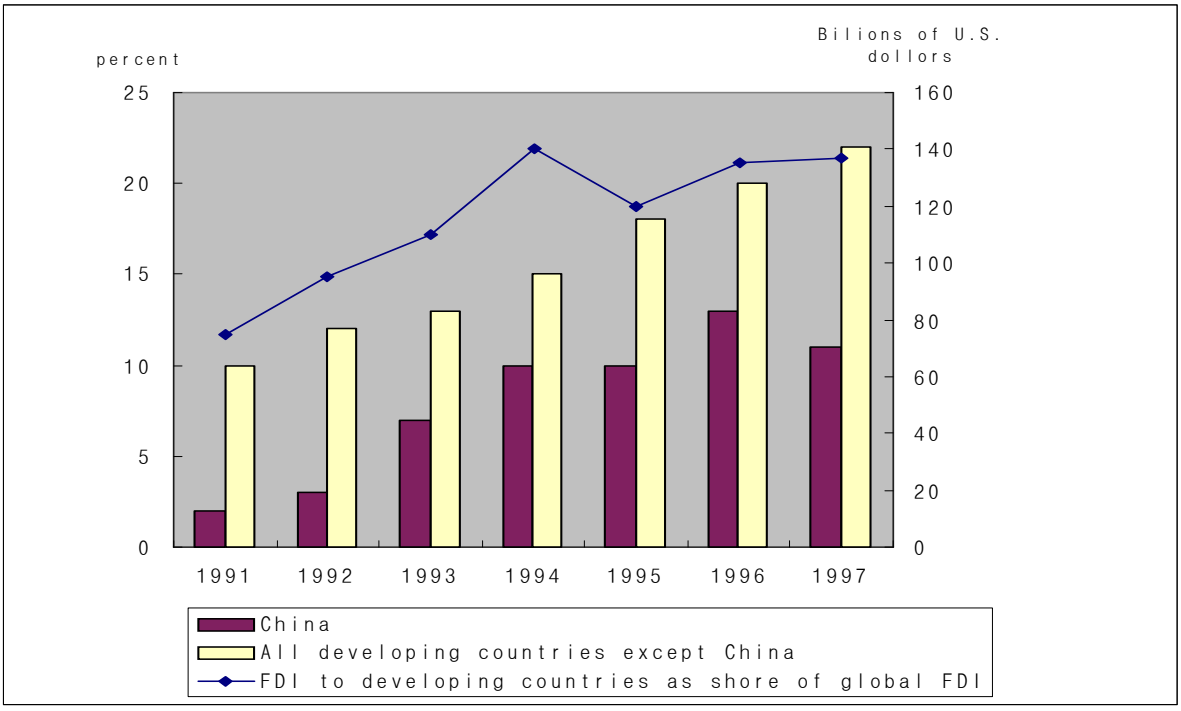
6) FDI inflows in China have been remarkable as the country alone received US$42 billion of FDI inflows in 1996, whereas Singapore had about US$10 billion in the same year.[10] The amount of FDI inflows to Asia was US$22,122 million which was less than 10 percent of the world total in 1990, and

9) UN, *World Investment Report*, 1997, p.82.
10) ibid. p.78.

increased to US$84,283 million which was about 25 percent in 1996. (See Table A4) Nearly a half of FDI inflows in Asia was designated to China. (See Figure 2.2).

7) Japan has been having the balance of payment surpluses for a long time, which also stimulated firms to invest abroad apart from the unfavorable business environment at home. Korea, however, has been in the balance of payment deficits for a long time. Nevertheless, Korea FDI increased dramatically during the last several years. This is partly because of business environment at the home country and also due to relaxed foreign investment policies.

Figure 2.2 The Amount and the Share of Global FDI to Developing Countries, 1991-97



Source : UN, *World Investment Report*, 1997.

2.3. Financial Crisis in Asia

1) The liberal flow of capital has advocated as a mean for the prosperity. The developing countries were advised to open up their capital markets. This would give the developing economies to global savings to feed the investment for the faster growth. Even Korea where the foreign investment had been restricted by the government during the last few decades joined OECD in 1997 following Mexico. They were advised to open up their capital markets further to be the member of rich country club. Then the crash came. Now under the foreign exchange crisis, many Asian countries are in a position to promote any form of capital flows, FDI or portfolio investment.[11)]

2) In 1997, the prophesized halt of Asian miracle came about suddenly. The five countries have damaged most severely by the financial crises in Asia. They are Indonesia, Malaysia, South Korea, Thailand and the Philippines. They had net private inflows of $ 41 bn in 1994 and it jumped to $93bn in 1996. The inflow exceeded the total current account deficit, allowing the governments to accumulate $37bn in additional reserve. In the start of the crises in 1997 the net inflows turned into the net outflows of $12bn. In one-year period, the swing in the net supply of private capital was $105bn. (Wolf, 1998)

3) The foreign investor pulled money away rapidly. Then the domino started. The panic spread globally. The banks and financial institutions stacked their money away by stopping rollover for the short-term loans. The hedge fund pulled out of the Asian financial markets, which provided high interest than the U.S., Europe and Japan. The moral hazard of and the Asiatic value are under the fire of critics. The miraculous Asian economic performance halted swiftly.

4) Prior to the crises, direct equity investment in Asia has been increased in a stable manner. Capital inflows from non-bank private creditors were also

11) Krugman demonstrates that there is a little relationship between overall capital flows and FDI in the case of Mexico, even suspects the inverse correlation between the overall capital inflow and FDI.

stable, with a net inflow of $18 bn in 1996 and $14bn in 1997. Portfolio equity, however, changed drastically from $ 12bn inflow in 1996 to similar outflows in 1997. But the most radical reaction came from the commercial bank change from $24 bn in 1994 and $56bn in 1996 reversed to the net payment of $21bn in 1997. (Wolf, 1998)

5) Some of the problems are home grown. Stanley Fischer the deputy managing director of IMF in his speech summarized the home grown causes are:
   - Failure to dampen overheating, manifested in large external deficits and asset price bubbles
   - Maintenance of pegged exchange rates for too long, which stimulated excessive external borrowing
   - Lax financial regulation, which allowed a sharp deterioration in the quality of bank portfolios
   - Doubt about the authorities' commitment to the needed adjustment when the crisis was underway. (Wolf, 1998)

6) Under the current financial crises of the in Asian countries, the FDI as a mode of capital flows has a special interest. Whether the sudden attack of financial crises stemmed from the moral hazard or panic, the erosion of overseas investment was too extensive and speeds for many Asian countries to maintain economic sovereignty. As Martin Armstrong put it, the foreign capital seems to "roll like a can on the deck of a ship in a storm". (Armstrong, 1997)

7) FDI is essentially a transfer of control than movement of capital per se. (Kindleberger, 1969). If the financial crises in Asian countries are pure panic without the moral hazard, Krugman suggested that now the FDI in these countries have fire sale situation. The foreign firm with more liquidity and better management than the domestic rivals can afford to buy the ownership less than the "right" price. (Krugman, 1998. p.7)

8) Recently in the midst of the economic meltdown, Korea Exchange Bank, the second largest in Korea, announced to sell 29.7%($250Mn) of its stake to

Germany's Gmmerz Bank AG. Mr. Harald Vogt, the chief representative of the German bank explain to the reporters that their decision is based on Korea's a long term economic potential, despite of the current trouble in stock market and financial sector in large. On the same day the Hanwha Group has sold off its power generation business to the AES of the U.S. for $874 million. This is the largest deal since Korea was thrown under the rescue program of the IMF late last year. (Korea Herald, May 29, 1998). The stock market jumped to 3.5 point from 323 point on the same day. In the turmoil of financial crisis, the FDI may be the type of investment that the Korean economy needed.

9) After the collapse of Asian economy, there have been innumerable discussions about the causes and remedies to prevent such situation in the future. One of the old answers to the Asian crises is Tobin tax, which argues that cross border payment of tax on the inflows of foreign capital which may well enlighten the horizon of financing to adjust to the volatile capital movements as in the cases of Asian crisis. However, Dornbush argues that Tobin tax will not work for the Asian cases because "Asia was not brought down by short sighted round tripping" of the foreign capital. (Dornbush, 1998) He argues that under the extensive depreciation of Asian currencies reaching over 50% at times, the small amount of Tobin tax can not be effective.

10) Now many economists recommend a system of preventive capital control that limit capital inflows. In order to structure the maturity, the priority of the capital inflows is advised in a fashion; first priority is the equity investment followed by long term bonds and then the short term borrowing.

Chapter III. Effects of Capital Inflows

3.1. Real Exchange Rate and Inflation

1) In theory, the surge of capital should ease domestic money market and lower domestic interest rate. In spite of the differences in economic environment and policy, an IMF study revealed that given the credit demand of the host countries interest rate would be higher without the capital inflows. However, the actual impact of FDI will depend on the strength of credit demand of residents and policy. The credit demand without the access to the international market, and the government's sterilization policy to limit any drop of interest rate will up hold the interest rate even after the inflows of foreign capital.

2) The appreciation of real exchange rate from the large influx of foreign capital should be reflected in the demand for currency and tend to be inflationary. However, the potential dangers of the inflation were not realized in many host countries at the time and after the capital influx from abroad. (Schadler et.al., 1993) According to an empirical study, with the influx of inbound FDI, Thailand(1988) and Spain(1987) maintained inflation by 5% in the few years after the major influx of capital. In Mexico (1989), there was a short period of inflation after the inflows and then reversed within a few years. However, the impact of the influx of foreign capital on general price level of an economy depends on the government policy through foreign exchange adjustment and also the magnitude of the FDI in relation to the overall monetary aggregates of the host countries. The appreciation of the real exchange rate due to the capital inflows should increase the prices of non-tradable goods more than the price of tradable goods. But fundamentally, the inbound FDI expands both supply and demand of the economy paving the ground for the long-term growth of the industries in the host countries. Furthermore it stimulates the productivity and profitability in the tradable goods sector.

3) On the other hand, the influx of capital inflows would destabilize the foreign exchange market in the host country. The financial market could be crowding

out and more dependent upon foreign capital i.e. by foreign nationals and economic activities of other countries. In these circumstances, the domestic currency market would be more vulnerable. (World Bank, 1998)

4) An empirical study on the relationship between FDI and the real exchange rate, FDI and inflation, concludes that FDI significantly affects the real exchange rate and inflation. (Goldberg and Klein, 1997) The study finds that there is a positive coefficient between real exchange appreciation and capital inflows, and it was statistically significant in Southeast Asia, but less significant in Latin American countries.

3.2. Trade and FDI

1) The cross border movement of the commodities and capital are tied in various ways. The direct investment expands the production of host countries. The FDI projects can be put into the production of import substitution and export promotion. It also enhances the trade of intermediate products between the source and host countries by the direct linkages of the parent company and affiliates in the host country. In addition, the FDI projects geared to export to the third countries can also create indirect spill over impacts on trade in the host and source countries to the third countries.

2) In addition to the impact of FDI directly associated with production and sales of the FDI products. There is indirect linkage between trade and FDI through the real exchange rate, the common ground of the two. There are many routes which real exchange rate may affect FDI. One of them is through the depreciation of real exchange rate which reduces the costs of domestic inputs including labor. The depreciation of real exchange rate, thus, increases labor demand which, in turn, increases the return on capital.

3) Studies indicated a positive and significant relationship between the FDI and trade flows. However, the impacts of FDI on trade differ by source and host

countries. FDI from Japan to the developing countries in Asia affects their trade flows between the host and source countries, even holding the independent contribution of real exchange rate to trade constant.

4) Empirical findings reveal that relationship between the FDIs and the imports from Japan is positive and significant which is consistent with the arguments that the FDI is supported subsequently by the intermediate inputs from the source countries. (Goldberg and Klein, 1997, P17) For examples, a 10 % increase in FDI from Japan increase import from Japan by 1.5% over time, while 10% increase in FDI from the U.S. reduces Southeast Asian import from the U.S. by 3%.

5) The relationship is tighter for the Japanese FDI to Asian countries, while the statistical relationship between the FDI from Japan to Latin America and the trades between those partners are less significant. On the other hand, the relation between the U.S. and Southeast Asia is less significant. As far as the linkage goes, the capital outflow from the U.S. to Latin American countries significantly affects the trade between the two partners

6) In fact, Japanese FDI expands both export and imports linkages of the Southeast Asia and Japan. Especially, dollar pegging practices in the Southeastern Asia was important for the expansion of trade and FDI linkages in the region. However, the outbound FDI from the U.S. into Southeast Asia tends to substitute import in the host countries.

3.3. Industrial Sectors

1) One of the dominant features of FDI in the 1990s is the increase of FDI in the service sector. Some of Asia-Pacific countries attracted FDI in the service industries lately. Korea, Indonesia and Thailand are some of the countries demonstrating the rapid growth in inflows in the service sector.

2) The surge of FDI into the developing countries in the 1990s has been accelerated by the liberalization and privatization. The major source of the capital flows came from the five main sources, the U.S., Japan, Germany, U.K., and France. Notable features of the outbound FDI in the 1990s is that in addition to the industrialized countries, some developing economies, such as Korea, Singapore and Hong Kong, jumped into the capital market as source countries.

3) The industrial shares of the capital inflows are quite different from the share of domestic industries. The foreign direct investment of TNCs are generally based on firm specific element of competitiveness to overcome the extra costs of the overseas operation. The competitive advantage of overseas affiliates could be technological and organizational or marketing knowledge, good will and brand, etc. On the other hand, the market structure and contestability of the host countries also influence the TNCs' choice of industrial sector to invest. As shown in Table 3.1, the major share of inbound FDIs are in the service industry in most of the once-fast growing Asian tigers, while in the countries of ASEAN-4, the shares of FDIs in manufacturing sector are large as in Indonesia and the Philippines with an exception of Thailand.

4) If one look into disaggregated industrial sectors of FDI in manufacturing, the inflows of capital are more or less concentrated in a few manufacturing sectors under one-digit level. In Taiwan, 64% of the capital inflows are in electricity and electronics. In Indonesia, 72% of the FDIs are invested in one sector of chemicals, petroleum and rubber. Also, in Korea, 36% of the FDIs are in the food and beverage and tobacco industries. The industrial quotients in Table 3.2, indicates degree of relative concentration of FDIs, the ratio of the shares of the FDIs to the relative shares of production by domestic industries.

Table 3.1 Share of GDP and FDI Inflows by Sector in Selected Asian Countries

Country	Primary		Secondary		Tertiary	
	Primary Sector / GDP	FDI	Secondary Sector / GDP	FDI	Tertiary Sector / GDP	FDI
Korea (1997)	5.7	0.6	25.9	33.9	68.4	65.5
Taiwan (1996)	3.3	0.0	28.5	38.0	68.2	62.0
Singapore (1994)	0.2	0.8	23.8	34.8	76.0	64.4
Thailand (1996)	11.8	0.0	29.3	33.9	58.9	66.1
Indonesia (1995)	11.7[1)]	3.5	32.2[1)]	67.4	56.1[1)]	29.1
Philippines (1995)	21.70	0.0	24.0	71.5	54.3	28.4
Japan (1995)	1.9	0.0	24.9	38.2	61.8	61.8

Source : KITA, *Country Information*, 1998.1
The Economist Intelligence Unit, *Country Report,* United Kingdom, 1997

5) On the source side of the capital flows, Japanese FDI to the Asian countries are quite diversified and the sectoral distribution in Asia is somehow similar to that of the Japanese economy in the 1980s, as suggested in the "flying geese" type of development pattern. On the other hand, the FDI from the U.S. to Asian countries concentrated on a few selected industries, resource development, petroleum and electronics. (Goldberg and Klein, 1997)

6) The U.S. and Japan are the major source countries and their investment in the service sector in Asia is quite large. The FDI in the service sector accounted for 58 % of FDI from Japan and the share of service sector doubled in the stock of FDI from the U.S. in the past decade. Similar pattern can be observed from the FDIs from the other industrialized countries.

Table 3.2. Industrial Quotients (IQ)[1)]

Industries	Korea (1995)	Taiwan (1995)	Indonesia (1995)	Japan (1995)
Metal	0.07	0.15	0.11	0.02
Chemicals, Petroleum,Coal & Rubber	0.55	0.86	4.51	5.04
Non-Metallic Products	0.00	0.27	0.45	0.00
Paper, Paper Products,Printing & Publishing,Wood Products	1.69	0.03	0.76	0.00
Fabricated Metal Products, Machinery & Equipment	0.78	0.25	5.25	0.25
Electricity & Electronics,Medicine	0.82	3.34	0.00	0.45
Transport Equipment	0.93	1.00	0.00	0.02
Food, Beverage & Tobacco	3.23	0.21	0.24	0.27
Textile, Wearing Apparel & Leather	0.90	0.20	0.10	0.46
Others	0.50	0.00	0.14	1.62

1) IQ $= \frac{FDI_i}{\sum FDI_i} / \frac{X_i}{\sum X_i}$ where FDI_i : FDI_i in sector i, X_i ; output in sector i

Data Sources : UNIDO, *International Yearbook of Industrial Statistics,* 1998
JETRO, *World & Japan FDI,* 1997
Ministry of Finance and Economy, *Trends in International Investment And Technology Inducement,* Korea, 1977
The Bank of Korea, Office of National Account

7) There are several factors which contributed in the increase of FDI in the service sector. Service sectors in developing countries are lucrative markets. As demonstrated in the Uruguay Round meetings the industrialized countries have a wide competitive advantage in service sector over the developing countries. Furthermore the service sector requires the commercial presence in the market, in developing countries, because of the nature of the business. The FDI in the service sector is more attractive now that advances in telecommunication technology allow disperse service providers to capture the

cost advantage of developing countries through the a close supervision and coordination of the affiliates.

8) Deregulation and liberalization in developing countries promote FDI rush into the developing countries. In addition, along the progressive measure of privatization of services in developing countries contributed the growth of FDI in the service sector. About 40% revenue generated by privatization programs in the developing countries in the 1990s have been directed to service. In short, the wave of deregulation, privatization and the specific direction of the Uruguay Round contributed the growth of service industries in FDI in the 1990s.

Chapter IV. Spatial and Environmental Implications of FDI

4.1. Spatial Implications

1) In most of Asian countries during the last three decades, real estates in the urban areas have been one of the scarce resources in the countries. The urban centers represent built up areas with urban infrastructure which are very limited, especially in the early stage of industrialization. The rapid industrialization was paralleled with the rapid 7urbanization. The large numbers of the underemployed and unemployed work forces migrated into the urban centers where the jobs were increasing. The industrial activities moved into the urban centers to take advantage of the urban infrastructure and large labor pool created in the urban centers.

2) Industries and people have been attracted into urban centers in Asian countries in the process of industrialization where both can take advantage of the agglomeration economies of the urban centers. Consequently, the demand for housing and urban land development increased rapidly. The urban concentration has been accelerated by the governments through their investment strategy focusing on the development of urban centers by extensive infrastructure investment to accommodate the influx of industries and urban in-migrants. The industrialization and urban concentration fed each other in cumulative and circular fashion. Thus, the investment from both private enterprises and government on urban facilities, residential, production facilities and also infrastructure expanded as the economy grew.

3) It is known that the locational patterns of FDIs differ by industry and by the characteristics of economic geography in the host country. There are three major patterns of FDI location. The main stream of the locational pattern of FDIs is the concentration of FDIs activities in the capital cities and their peripheries. Second, some production sites of FDIs in material and export oriented manufacturing have been located in the provincial areas with good access to the material sources and also to the port facilities. Governments also

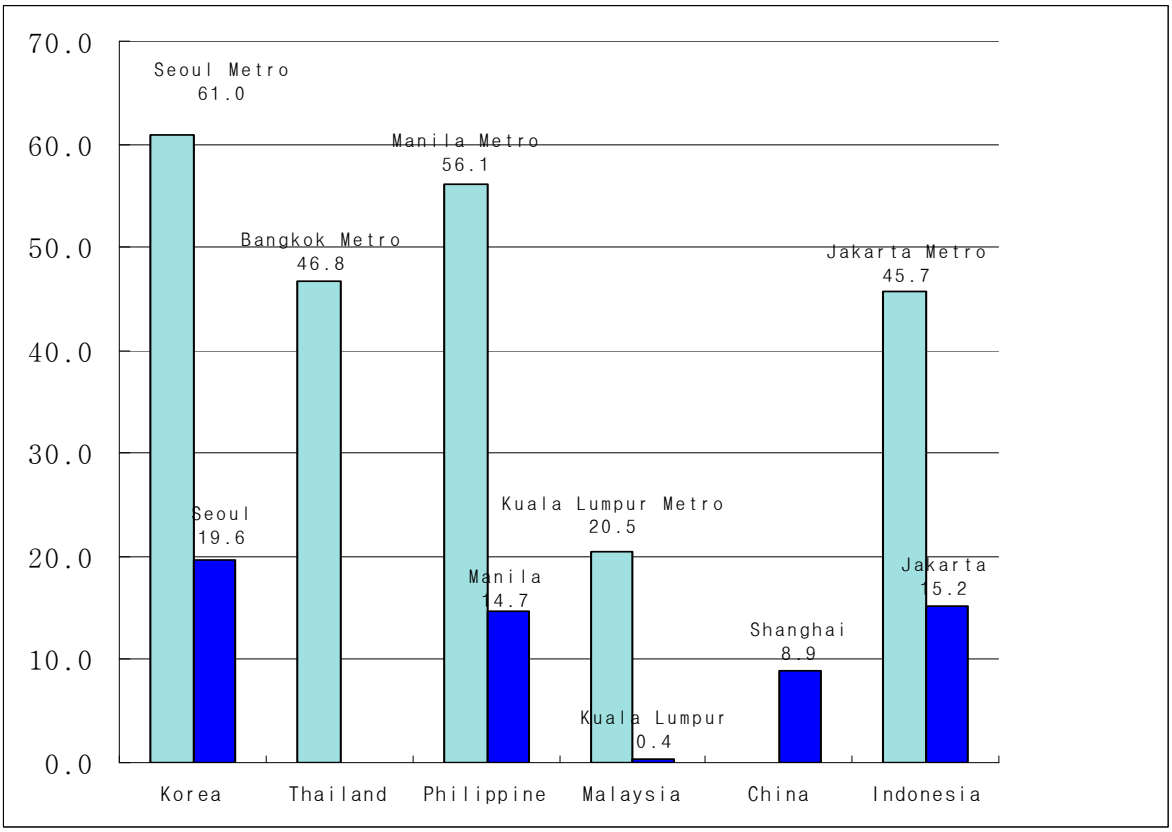
encouraged these production sites by establishing industrial estates with easy access to the port facilities. Third, the resource development industries tend to be dispersed.

4) In essence, the locational pattern of FDI in the developing countries, in general, assimilated the trend of the industries in the host countries but more intensively. Given the trend of industrial location of the host countries, they are not only located in the urban centers but the intensity of their concentration seems to be even higher in the areas of the capital cities. In Japan about 80% of the headquarters of the foreign firms are located in the Tokyo metropolitan area (JDB, p21). Also the lion's share of the nation inbound FDIs, around 50%, are located in Manila, Bangkok, Jakarta.

5) In the case of Korea, most of foreign affiliates in manufacturing tend to be located in the peripheries of urban centers in the provincial areas. On the other hand, the central offices of the affiliates are mostly located in the Seoul metropolitan region. As shown in Figures 4.1, the FDI inbound within the city boundary Seoul reached 52.5% in cases and 22.5% in terms of value. However, larger portion of FDI in manufacturing is spread into the peripheries of provincial urban centers.

6) The service and manufacturing activities of FDIs tend to locate their headquarters and branch offices at the urban centers to take advantage of the built environment of the established urban centers for the benefits of the easy access to the global information network essential to contact with their parents companies and overseas clients. Furthermore in many of Asian countries, central governments play the dominant roles for development strategies. Therefore the key agencies of the host countries have been concentrated in the major urban centers, capital and provincial capital cities. Consequently, the foreign firms also prefer such pattern of main office location at the urban centers and particularly in the capital cities of the host countries.

Figure 4.1 Locational Patterns of FDI



Source : Japan Development Bank, *JDB Research Report,* 1996, P.22, and Hong, S., W, *Building a Power House,* KRIHS, Seoul, 1997, P.293.

7) The FDI in the service sector in particular have been concentrated on the urban centers of the host countries which provide the amenities of international standards and the best accessibility to the global network essential to the businesses. The commercial presence of some of the service industries can be replaced to large extents by the electronic information network. The process will be gradual and at the beginning it will be mostly limited to the professional services on personal basis.

4.2. Infrastructure

1) The FDI in private sectors and infrastructure investment in many Asian countries can be seen as the means of the sustainability of the national economy. In the view of the individual countries in Asia, the man-made environment is important to sustain their nation's economic survival as well as their quality of life.

2) Infrastructure is the base for the man-made environment to sustain the quality of life. In the developing countries, the man-made environment is as important as natural environment for the well being of the people. In particular, the public provision of infrastructure is considered as a cost free input for the private industry, either domestic or foreign, which serves to promote economic sustainability of a society. It also enhances the quality of life in rural and urban setting. With the rapid industrialization, the Asian countries have been continuously in needs of infrastructure investment. The bottlenecks in infrastructure hamper to maintain the efficiency of the economic system and also to sustain the quality of urban life.

3) During the period of fast growth in the East Asian countries, the financial requirements for infrastructure were amounted to $1.4 trillion. (UN, 1996, p.20) For China alone it was estimated to $ 700bn. Most of these fast growing Asian economies are faced with a severe financial bottleneck in financing the infrastructure requirement from domestic saving. The involvement of TNCs in the overseas infrastructure projects has been increasing. The infrastructure financing takes various forms, of FDIs, BOO, BOT and BTO. Generally the infrastructure investments require a long-term commitment of foreign source and also the influence of their management.

4) The infrastructure investment by the overseas sources has started only recently. The legal frameworks for BOT for the infrastructure investment have been established in Vietnam since 1993, and in China in 1995. And in Korea, the overseas investment law will be revised in June of 1998 to attract overseas capital in major infrastructure investments.

5) Privatization has been another channel to attract FDIs in infrastructure projects. In developing countries, the revenue from privatization amounted to $40 bn in the period of 1988-1995, representing 37% of revenues from all privatization and FDI accounted for a half of the revenues.

6) However, because of the long gestation period and high fixed cost of the infrastructure projects as well as the regulations in host countries on price and other operation details, the overseas investors try not to make extensive equity commitment. Instead, they are inclined to relying on debt, commercial loans and bonds.

7) In spite of the restrictions, there is potential for TNCs to participate in infrastructure development projects. It is partly from the technological advancement which enabled to bind the huge infrastructure into a many separable projects which can be handled by the private investors. Since the financial constraints of the Asian governments in severe bottlenecks, more after the crisis, the governments will compete to attract the overseas financing in the near future. The deregulation and liberalization will progress much faster than other circumstances.

4.3. Technology Transfer and Sustainability

1) One of the positive impacts of the globalization of production activities led by the FDI has been technology transfer. With the operation of the overseas affiliates the production technology of the TNC from the industrialized countries has been transmitted to the local labor force through the on the job training or exchange programs between the parent companies and the affiliates. The subtle impact of technology transfer help to develop the productivity and occupational mobility of the local workers.

2) However, one can suspect that one of the major motives of dispersing the production activities by the TNC is to reduce the cost of the production by

taking advantage of the low cost of production including wage and material costs as well as the rent for the industrial site. The cost of production site includes the price paid for the rental or purchase of the real estates. Another important cost factor in deciding overseas production activities to the TNCs in the host countries is the costs of pollution abatement required under the environmental standards. As the awareness in environmental value enhances, the portion of pollution abatement costs by unit has been increasing significantly. It is more so in the industrialized countries than the developing countries. Therefore one of the important elements for the locational decision for the FDI is the pollution abatement cost and the environmental standards of the host countries.

3) Many polluting industries had been losing price competitiveness after the pollution abatement costs required to meet the environmental requirements in the industrialized countries. In the early stage of industrialization, chemical, leather and dyeing production activities were located in many developing countries, as the Masan Free industrial Estates in the 1960s in the Southern coastal region in Korea.

4) In this vein, The choice of technology by the FDI has been a controversial issue. A prior reasoning has been that the technology of the affiliates is the reflection of the source countries, often capital rich and industrialized. Some studies report that over 70 percent of technology adopted by the affiliates of TNC are technologies originated from the source countries. In cases, the difficulty of technological adaptation to the factor price of the host country is due to the technical rigidity (Marsh 1983). The impact of FDI on technology transfer has two different perspectives. One of the views, technology imported through FDI substitutes the local R&D. Another view that the imported technology needs to supplement by domestic technology. Here, the imported and domestic technology is view as complementary to each other.

5) The location of production and souring is generally subject to centralized decision making. Thus, the affiliates in developing countries undertake R&D

only when it fits in the global strategy of the headquarters in the host countries. Tough the TNC tends to decentralize the R&D function over affiliates, they are still mostly remained in the industrialized countries. Only negligible shares of R&D activities of affiliates in developing countries when the host countries provide cheap resources and infrastructure.

6) One of the important externalities of FDI is the spill over of knowledge to the local firms. The FDI also boosts competition to the local rivals in technology. The vertical integration of inter-firm linkages by the foreign firms force the domestic firm to meet standards practiced in the source countries. In the process, FDI serves as an opportunity to develop human resource. It provides on the job training opportunities for the workers in the affiliates and promotes the labor mobility.

7) In the cases of Taiwan, Korea and Singapore, studies found the exportoriented affiliates of FDI applied technology similar to the parent's company (Chung & Lee, 1980, JO, 1980). Kumar concludes that the technology adopted by the affiliates depends on the market orientation. The export oriented foreign firms employ technology which are not different from that of the local counterpart while the domestic market oriented foreign firm is more capital intensive than the local firms.

8) In the cases of Korea and Japan, recently the technology and capital import were delinked. That provided the host country to undertake their own initiative in shaping R&D. In general, one can expect that the production technology of the parent company which confirms to the environmental standards of the host country could be transmitted to the affiliates. Consequently, the practice of affiliates likely to assimilate the practice of the parent firms in the source country. The technology of the parent's firm could be transmitted to the affiliates under contractual modes, outright licensing or capital good imports. The technology of the affiliates transmitted from the parent's firm tends to be adjusted by the effort through reverse engineering. So the first generation of the plants were built by the technologies of the host countries. But the second

generation plants can be built by locally based on the knowledge of their own and reverse engineering, etc. (Westphal, 1979, Kim 1988, Amsden 1989)

4.4. Pollution of FDI

1) The environmental impact of FDI in the host country should be assessed on the dimensions of geographical space and industrial sectors. This section discusses the sectoral dimension. Important question here is whether there is difference in FDIs and domestic capital in terms of environmental degradation.

2) Resource development industries disturb natural environment and deplete non-renewable resources. If there is the need for the resource development, and a certain country provides the resource more competitively, the resource will be developed under the legal scheme of environmental regulation of the country, either by the domestic or by overseas capital. Therefore, the critical issue is the production and consumption technologies prevailing in the world, especially in the industrialized countries.

3) The impacts of the FDIs in the service industries on urban environment will be relatively mild and also not much different from the domestic counterparts. Because of the tendency of concentration in the urban centers, the FDI in the service industries may contribute additional congestion and urban problems in the cities in developing countries. However, on the other hand, it will also add the diversity of urban life which could be positive for the amenity of the city.

4) However, the overseas relocations of the pollution industries from the industrialized countries have been controversial issues. (Park, 1994) In fact, the flying geese type of Asian development model implies that the less developed countries take over the outdated industries and obsolete technologies from the advanced countries. In other words, some TNCs relocate polluting industries to overseas through FDIs, especially in manufacturing production sites.

5) In order to evaluate the environmental impacts of FDIs, a simple nummeric analysis is necessary. The two types of quotients are presented below. First type of the quotients, the proportion pollution abatement costs of industries in the total shipment of the U.S. manufacturing industries, namely pollution quotient (PQ), which indicates the level of pollution abatement cost for industry *i*. The pollution abatement costs by the industry is estimated from the data of U.S. Bureau of Census, Department of Commerce (U.S. DOC, 1992).

$PQ=(p(i)/\ p(i))/(x(i)/\ x(i))$,

Where $p(i)$ and $x(i)$ are the pollution abatement costs and the total shipment of industry *i*, respectively. The pollution quotient is shown in Table 4.1.

Table 4.1 Pollution Quotients

Units : million dollars, %

Industries	Total Value of Shipment (A)	Pollution Abatement Gross Annual Costs (B)	B/A	Pollution Quotient
Metal	132,837	2,003	1.51	2.48
Chemicals, Petroleum, Coal & Rubber	560,212	7,384	1.32	2.16
Non-Metallic Products	68,611	465	0.68	1.12
Paper, Paper Products, Printing & Publishing, Wood products	408,305	2,287	0.56	0.92
Fabricated Metal Products, Machinery & Equipment	527,715	1,697	0.32	0.52
Electricity & Electronics, Medicine	197,880	633	0.32	0.52
Transport Equipment	364,032	1,118	0.31	0.51
Food, Beverages & Tobacco	419,833	1,300	0.31	0.51
Textile, Wearing Apparel & Leather	88,706	214	0.24	0.39
Others	37,131	75	0.20	0.33
Total	2,805,262	17,176	0.61	1.00

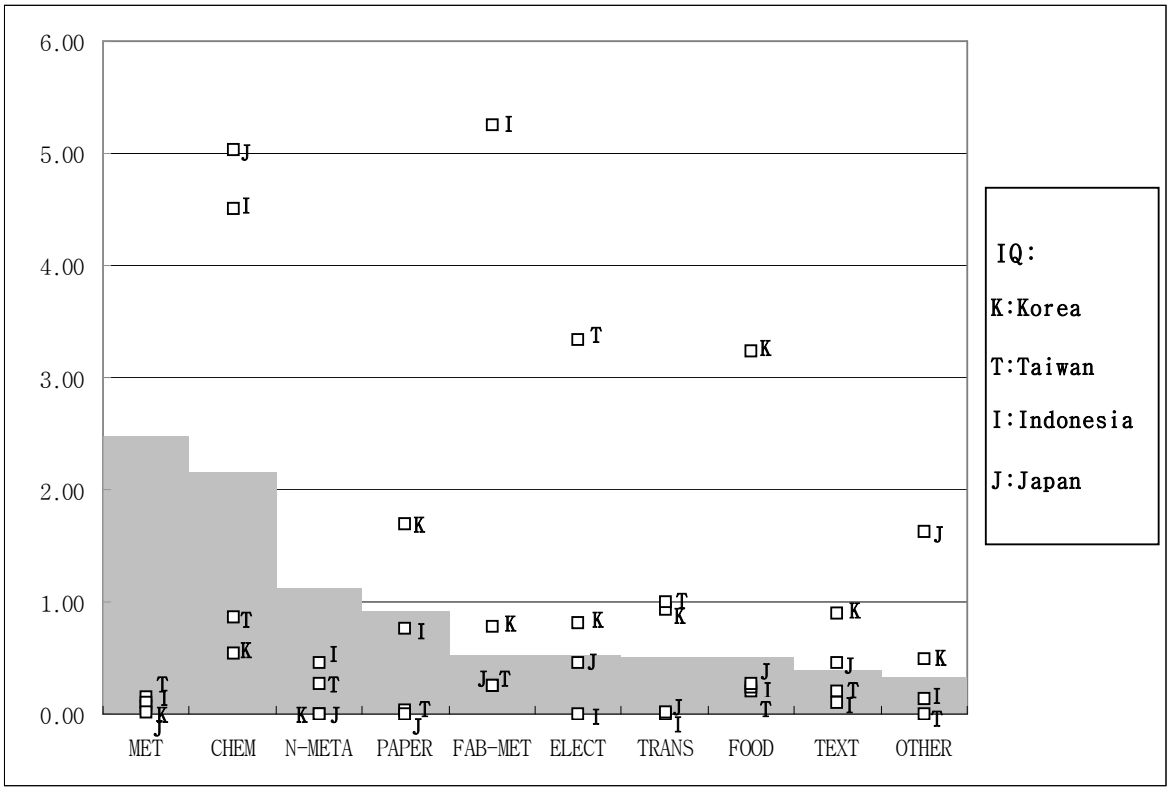
Source : Estimated from U.S.DOC, Bureau of Census, *Manufacturers, Pollution Abatement Capital Expenditures and Operating Costs,* 1992

Second type of quotients is the ratio of the industrial shares of FDIs in the total inbound FDIs to the industrial shares out of the total domestic manufacturing production which is presented in Table 4.1 namely nation's industrial quotient (*IQ*).

$$IQ=(f(i)/f(i))/(x(i)/(x(i)),$$

Where f(*i*) and x(*i*) are the FDI and industrial product of industry *i*.

Figure 4.2 Pollution and Industrial Quotients



6) Figure 4.2 demonstrates indirectly the extent of the potential of pollution assumable as a result of the FDIs in the host countries in the lights of the pollution abatement costs practiced in the U.S. The area above, the shaded area delineates the pollution quotients higher than the sectoral pollution abatement costs in the U.S.

7) As shown in the Figure, the high polluting industries are the fabricated metal machinery industry, the chemicals, petroleum, and rubber industries and the non-metal product industry in order. Most of the host countries, however, do not have the concentration of the high polluting industries through the inbound FDIs. Furthermore, the share of the inbound FDIs in the highest polluting industry, the metal industry, is the smallest in all of the selected countries evaluated in this analysis.

8) For example, in Korea, the FDI is relatively concentrated on the food, beverage and tobacco industries of which the pollution abatement costs are about a half of the average cost in the manufacturing sector. Only in Indonesia, the concentration of inflows of capital is high polluting industries such as chemicals, petroleum and rubber.

9) However, the technology of manufacturing industry on one digit level is too crude to assess the extent of the industrial pollution accurately. The one digit level manufacturing sector encompasses on non-polluting activities, such as research in the metal industry, and high polluting production process. Therefore, the pollution impact of the FDIs can only be assessed with greater details of pollution information and also with much disaggregated data in manufacturing sector.

10) In a nutshell, the impact of inbound FDIs on the environment of a nation, here, the host country, is a reflection of the environmental standard of the nation and the nation's will to keep the standards. Furthermore the environmental standard is merely a reflection of the social value of the environment. Therefore, the pollution industry can locate at the host country according to the relative value of the environment given by the society. However, in a long run, the impacts of pollution are not limited within the boundary of a nation. This is the issue which deserves a truly global cooperation.

Chapter V. Conclusion

1) With the financial crises in Asia, everyone has learned gradually the awesome power of the capital in the world of capitalism with no rival.

2) In the period of the rapid economic growth in Asia, FDI played an important role in providing extra capital for the insatiable thirst for the infrastructure development and expansion of industries in those countries. The rapid growths of some Asian countries have been, in part, sustained by the inflows of foreign capital. The rapid urbanization and concentration in the capital cities in Asia have been struggled with their urban sustainability with limited capital to invest in the urban infrastructure, housing, roads, water and the sewer systems.

3) The sustainability of cities and the environment are two double-edged knives. Cities can only be sustained by maintaining the economic viability for the present existence and for the future. On the other side, the over concentration of people and industrial activities, beyond the holding capacity, is destructive for the sustainability of cities.

4) The environment is another double-edged knife. On the one end, there is natural environment, diversity and recourses for the current and future generations. There is also man-made environment. The cities in Asia and other industrializing countries need the facility investment for the water, sewage, and road networks. If the source of the investment is not from the domestic saving, it should be from the overseas saving.

5) Under the financial crises, some of the Asian countries also discovered the dangers of ebbs and flows of the hot money in the portfolio investments, which rolled like "a can on the deck in the storm". As in the rapid growth period in Asian countries, the FDI seems to be a stable source of rescue for some of the Asian countries gasping for the debt service and foreign exchange crisis. However, people in those countries are now gradually aware of the fact

that the FDI or portfolio investment will come and go under the rule of global capital market. It does not come to rescue. It will come at its will.

6) Some of the resource developments are unavoidable to sustain the world population under given technologies. The development can be sourced from domestic or overseas capital. Is the inbound FDI more polluting than domestic industries? Not necessarily. The affiliates of inbound FDI should share the competitive advantage of the host country. Thus the types FDI project could be the very industry which enjoy the competitive advantage in the host country. However, under the crisis, such as IMF bail out, the Asian host country may be forced to take more polluting inbound FDI than the society would choose. This is the point where prudent policy decision required. Important criteria, here, is the difference in the assessed value of the environment in different countries are weighed in the global scheme of economic decision making. The participants on this decision are the TNCs, the public in the host and source countries. They collectively make their decision on the FDI, their location, and economic and environmental sustainability of the cities.

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