

Do Exchange Rates Have Any Impact on Foreign Direct Investment Flows in the Asia: Experiences of Korea

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Abstract

Theories present that exchange rate movements in imperfect capital markets cause two distinctive effects. One is the wealth effect arising from the higher value of foreign exchange compared with local currencies, and thus positively influences FDI. The other is the competitiveness effect, which makes wage costs and thus tradeable goods in the host country cheaper, having a positive effect on the inward FDI. This paper examined the link of exchange rate with FDI flows to Korea during 1985-2000 by separating the wealth effect from the competitiveness effect. The OLS results show that exchange rate level was consistently positive influence on FDI flows. The results supported neither the wealth effect hypothesis nor that inward FDI to Korea was not cheap labour oriented.

JEL Classification: F23, F31, O53

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1. Introduction

When once highly touted Asian economies¹ stumbled at the onset of the 1997 Asian financial crisis, a large number of literature appeared for diagnoses of the deep causes of the crisis. Despite a diversity of explanations for the crisis, from crony capitalism to conspiracy theory, financial fragility was pointed out as a main ingredient to the crisis. So, the crisis was structural (Frankel, 1998), which involved the following four aspects (Lane, 1999). First, many financial institutions and corporations in the countries affected by the crisis borrowed in foreign currencies without adequate hedging, thus increasing vulnerability to the currency depreciation. Second, there was a mismatch in term structure. The borrowing was in short-term while investment in assets was long-term, creating a possibility of liquidity attack. This particular mismatch reminds the importance, rather than the magnitude of current account deficit, of *how it is financed*, and *how the funds are used* (Frankel, 1998, p. 1). Third, there were speculative bubbles in equity and real estate prices, increasing the likelihood of a sharp deflation in asset prices. Fourth, credit was poorly allocated.

During the crisis period, huge amounts of foreign capital inflows during the pre-crisis period sharply turned to huge outflows. That is, private capital flows in these economies turned from more than US \$103 billion of inflows in 1996 to US\$1.1 billion of outflows in 1997. Unlike other forms of foreign capital which quickly flight out of the countries, foreign direct investment (FDI) demonstrated the most resilient form of private capital flows, even though the inflows of FDI to Asia weathered by 11 percent in 1998, compared with 1997. FDI inflows during the crisis period to Korea and Thailand have increased. In Korea, FDI inflows increased from less than \$3 billion in 1997 to \$5 billion in 1998 becoming a net FDI recipient first time in the 1990s. FDI inflows to Thailand also dramatically increased by 87 per cent in 1998. Contributing to FDI resilience was possibly that foreign investors were attracted by the opportunities of low-priced asset acquisitions, including FDI liberalisation and the still solid long-term growth prospect (UNCTAD, 1999). Rapidly increased FDI to these countries concurrently caused concerns over the fire-sale of real assets and raised question of the impact of exchange rate movements on the inward FDI, which was the most prime reason for the availability of cheap assets in these countries.

¹ Refer to such as World Bank (1993).

Is there any relationship between exchange rate and the flow of foreign direct investment? If any, how do exchange rate changes affect FDI? In order to investigate this old question, there has been a number of studies conducted (see, Caves, 1996 for a survey of literature). Theoretically, with the law of one price persisting, any deviation of exchange rates from the purchasing power parity (PPP) will disappear in the long run. Thus, there is no reason for the level of exchange rate to have any impact on capital inflows, while short-run PPP adjustments or long-run deviations may affect FDI. The competing arguments for exchange rate affecting the flows of FDI are due to the wealth effects and competitiveness effects of exchange rate. In an imperfect world capital market, imperfection arising from informational asymmetry between borrowers and lenders, depreciation of local currency boosts the wealth of foreign investors relative to domestic investors (Froot and Stein, 1991). The increased wealth leads to a higher acquisition premia by foreign investors than otherwise. That is, the exchange rate depreciation positively influences foreign direct investment flows, especially in merges and acquisitions. This line of argument is related to the wealth effect. Exchange rate is particularly effective and relevant if FDI is to acquire a foreign company with firm-specific assets, thus increasing the home company's global productivity (Blonigen, 1997). The competitiveness effect of exchange rate is associated with the firm's decision on where and how much to produce or sell, relevant for developed countries' direct investment into developing countries. If all other things equal, depreciation of local currency will decrease the relative costs of production to foreign, especially that of labour costs, and thus enhance the competitiveness of its exports. The reduction of labour costs will increase the return to capital, inducing inward FDI. This argument is particularly useful for export-oriented FDI. However, Cushman (1985) warns that since the impact on FDI of exchange rate levels or expectations depends on the investor's revenue and cost configuration, tests of the relationship between exchange rate and FDI could be indeterminate.

In this paper, I argue that with the changes in determinants of FDI in Asia-Pacific in the 1990s (Suh and Seo, 1999), the inward FDI in the region is positively related with downward movements of exchange rate. In the previous decades FDI in the Asia-Pacific region were primarily motivated by cheap labour costs, expanded by currency depreciation/devaluation, which is in line with the competitiveness effect. FDI during the 1990s tend to take advantage of market opportunities, currency depreciation will lead to increased FDI in the region, due to the

wealth effect.² I test in this paper the link of exchange rate and FDI inflows to Korea during the 1985-2000 period that has experienced the recent financial crisis accompanying plummeting currency value and a dramatically increased merges and acquisition activities by foreign investors of local assets. Nevertheless, M&As in Korea may be different from what Blonigen (1997) has noted for the Japanese acquisition of US target firms with firm-specific assets, considering that Korea's relative technological leadership is not yet distinctive, compared with the foreign investors.³

The rest of the paper is organised as follows. The next section is allocated for a literature review on the link between exchange rate and FDI flows, with a particular emphasis on the wealth and competitiveness effects. Also included in this section is the impact of exchange rate volatility, which theoretically and empirically exerts a negative influence on FDI flows. Section 3 is allocated for a brief discussion of the Asian financial crisis, highlighting a different behavioural pattern of FDI from other types of private foreign capital. Section 4 is devoted to a specification of econometric model, estimation strategy, and explanations of data sources used in the estimation. In section 5 we discuss major findings of the estimation results, while the final section concludes the paper.

2. Do Exchange Rate Affect FDI? A Literature Review of Relative Wealth and Relative Wage Effects

Theoretically, in a perfect information world, if there persists the law of one price, any deviation of exchange rates from the purchasing power parity (PPP) will disappear in the long-run, leaving no relationship between exchange rates and FDI. Therefore, there is no reason for the level of exchange rate to have any impact on capital inflows, while short-run PPP adjustments or long-run deviations may affect FDI. The exchange level may affect a decision on where and how much to produce or sell (Cushman, 1985). Cushman's 2-period model of the firm maximising future profit considers four different scenarios of production and sells, home and foreign with inputs procured locally or imported from abroad. The model shows that the impact of changes of exchange rate levels or expectations on the FDI depends on the investor's revenue and cost configuration. This result indicates that tests on the link between exchange rates and FDI could be indeterminate.

² This line of argument is particularly relevant to the first time investors so as to utilise market opportunities.

³ This type of investment can be called technology seeking upward FDI from 'less' developed countries to 'more' developed country, in a technology sense.

Froot and Stein (1991) develop a connection between exchange rates and FDI that arises when global capital market is subject to informational imperfections. Such an informational asymmetry causes a divergence between internal financing and external financing, making the latter more expensive than the former, since the lenders incur monitoring costs and thus lend less than the full value of the asset. Should foreign investors hold their wealth foreign currency denominated form, then depreciation of local currency will increase the relative wealth position of foreigners to domestic agents, leading foreign investors to bidding more aggressively for domestic assets. They regressed the ratio of FDI flows to GNP and also other types of foreign capital flows such as foreign official assets, corporate stocks and bonds and other bonds on real exchange rates and a time trend with a quarterly data of the 1973-1988 period. They found that *'FDI is the only type of capital inflow that is statistically negatively correlated with the value of dollar'* (p.1209), confirming their wealth effect hypothesis.⁴ Similarly confirming results of exchange rate effects on FDI were also found at industry level estimation, with the strongest exchange rate effects in manufacturing industries, in particular chemicals. Harris and Ravenscraft (1992) and Dwenter (1996) report that a depreciation of the US dollar leads to statistically significant higher premia in acquisitions. Blonigen (1997) confirms that depreciation of the US dollar is significantly related with the Japanese acquisition premia in the case of acquiring US firms with firm-specific assets which influence the global productivity of acquirers.

Caves (1989) found that depreciation of the US dollar would attract foreign investment and that given the exchange rate, lower prices of equity shares also attract foreign investment, favouring the Froot and Stein's wealth effect hypothesis. The wealth effects of exchange rate may be more relevant to merges and acquisitions (M&As) bid by foreigners than the greenfield investments (Goldberg and Klein, 1998, p. 83). In the investigation of the robustness of the relation between FDI and exchange rates, Dwenter (1996) utilised transaction-specific data set of foreign acquisitions of US targets from 1975-89. Dwenter found that after controlling for the overall level of investment activity and differences in relative corporate wealth levels, the absolute level of FDI is the only aggregate flows measure that shows statistically significant links to the value of the dollar. Whereas, measures of foreign relative to domestic acquisition activity showed almost no links with the exchange

⁴ The lack of statistical correlations between exchange rate and other types of foreign capital was attributed to relatively minor agency costs associated with passive investments. (Froot and Stein, 1991, p. 1209)

rate (Dwenter, 1996, p. 406).⁵ Blonigen (1997) also found that there was no significant relationship between the level of exchange rates and the foreign direct investment relative to domestic investment, after controlling for relative corporate wealth.

For outward FDI of the United States, the expected relationship between exchange rate and FDI was also found. Barrell and Pain (1996), in analysing aggregated quarterly outflows of the US FDI, report that current appreciation of the dollar causes a speed up to complete foreign investments, while expected appreciation in the next quarter postpones it. Gopinath, Pick and Vasvad (1998) investigated the effects of real exchange rate and its volatility on exports, outward FDI and foreign affiliate sales by the US food-processing industry to test the exchange rate-induced substitution hypothesis between FDI and exports. Given that *'the effect of the real exchange rate and its volatility on outward FDI was positive and significant for about half of the sampled countries'* (p. 1078), they concluded that an appreciation of the US dollar led to an increase in outward FDI and the resulting foreign affiliate sales. Their estimation results of the exchange rate effect were in accordance with the Froot and Stein's wealth effect hypothesis.

More recently, Seo (2002), in his investigation of the impacts of real exchange rate on the inward FDI to Korea with quarterly data for the 1994-1999 period, found rather ambiguous influence of the real exchange rates on the inward FDI. However, he found that a proxy for the wealth effect was highly significant, while competitiveness effect was not statistically significant. Lee and Tcha (1995) found that exchange rate variable was not the significantly influential variable on the outward FDI of Korea in the world and also in individual destination, even at a 10 percent level of significance. In fact, Stenven (1998) argued that the empirical support of Froot and Stein's finding of the significant negative relationship between depreciation and FDI flows to the United States, which disappears for the subperiods of 1973-1988 and the extended sample period to 1991.

Changes in exchange rates also affect the cost of production. A permanent real depreciation of its currency makes the host country more attractive as a site for production for export-oriented firms but less attractive as a site for assembling products for local markets. In this case, FDI is assumed as capital seeking cheap labour (Goldsbrough, 1979;

⁵ She also found that there was no significant links of acquisition activity broken out by source country with exchange rate, while there was some evidence of significant exchange rate elasticities across investment flows by target industries.

Klein and Rosengren, 1994). Cushman (1985) argues that foreign investment is attracted to a country whose currency has depreciated and concludes that given the exchange rate's level an increase in exchange rate-risk actually increases foreign investment as the host country's exports are displaced by production in the host. Cushman (1988) also found the similar influence of exchange rate's levels and variability in his investigation of inflows of FDI to the United States.

Although multinational enterprises (MNEs) have intrinsic advantage in financing by utilising imperfect capital markets (see Caves, 1996), in the case of high currency fluctuations, MNEs are more likely to rely on foreign capital markets and bring foreign exchange into local markets for financing. Quite contrary, the high volatility of exchange rate increases uncertainty associated with foreign investment, thus exerting negative influence on FDI.

Campa (1993), in his investigation of FDI in US wholesale distribution, found that exchange rate variance deterred direct investment in distribution, but also confirmed that the deterrence effect is greater, the larger is the sunk cost that investment entailed. In their testing of bilateral FDI flows between the United States and other countries, Goldberg and Kolstad (1994) found that exchange rate variability promoted locating production abroad but the covariance of exchange rates and domestic demand has no significance influence. Gopinath, Pick and Vasvad (1998) found the volatility of exchange rates hindered the outward FDI, conforming to what other studies indicated about the impact of exchange rate volatility on foreign direct investment. Lee and Tcha (1995), however, found that exchange rate volatility was not significantly influential on the Korean outward FDI.

3. Financial Crisis and Flows of Foreign Direct Investment in Korea

The Asian crisis began in July 1997 in Thailand and swept through Indonesia, the Philippines, Malaysia and in September Korea and spread over to Latin America and Eastern European countries.⁶ The Asian crisis pulled more than one third of the globe into recession during 1998.

When July 2, 1997, the Bank of Thailand stopped defending the Baht's fixed value against the US dollar, the currency lost 16 per cent of its value in one day. The crisis quickly spread to other Asian countries which were perceived by international investors to have shared the same

⁶ Kim and Haque (2002) define the Asian crisis as a recent example of twin crisis: currency crisis and bank crisis combined.

problems with Thailand. The IMF and international organisations' packages were arranged to rescue these countries out of the turmoil with reforms conditions attached to the packages.

The financial crisis in Asia brought attention to the importance of long-term capital flows. In particular, the behaviour of FDI in these economies during the Asian crisis showed a great divergence from other types of private foreign capital, such as portfolio flows and commercial lending. These five countries experienced huge inflows of foreign capitals before the crisis, which were primarily financed by private sectors. However, during the crisis these countries' foreign capital flows turned to huge outflows. That is, private capital flows in these economies turned from more than US \$103 billion of inflows in 1996 to US\$1.1 billion of outflows in 1997. At the onset of the crisis, however, FDI inflows to Thailand grew rapidly, in spite of the sharp depreciation of Baht against the US dollar. In fact, FDI inflows to Thailand also dramatically increased by 87 per cent in 1998. FDI inflows to Korea also dramatically grew, increasing from less than \$3 billion in 1997 to \$5 billion in 1998, becoming a net FDI recipient first time in the 1990s. Notable during this period is an increase of cross border M&As through acquisition of outstanding shares, ie. friendly M&As. Cross border M&As increased from 10 percent in 1997 to 14 percent of the total FDI with amount of US\$1.24 billion.⁷ If factor acquisitions or acquisitions of ongoing projects are counted in M&As, then M&As proportion further increases to 53.1 percent of total FDI in 1998. The inflows to the Philippines remained steady throughout the crisis. Malaysia experienced a drop in inflows in 1998, which was possibly due to the immediate reaction of foreign investors to the imposition of capital controls on September 1998. FDI inflows to Indonesia have been discouraged by the unstable political environment (Miyake and Thomsen, 1999). Such a remarkable behaviour of FDI in these economies were attracted by opportunities for low-priced acquisitions as a result of the crisis and the ensuring deregulation (UNCTAD, 1999), causing concerns over the fire-sale of local assets.⁸ Krugman (199b) noted *“what Asia really is cheap, ..throughout the region, assets are valued (in dollars) at anywhere from 25 percent down to 10 percent of what they were before the crisis...investing at those prices is a good bet.”*

This kind of remarks and observations strongly suggest a potential influence of exchange rate movements on FDI inflows in Korea, as well

⁷ The increasing trend of M&As continued in the 1999.

⁸ Graham and Krugman (1991) discuss this issue of fire sales at the midst of Japanese FDI in the United States during the 1980s.

as in Asia, in particular the wealth effects of exchange rate movements. We first investigate the suggested relationship graphically.

Chart 1 here

Chart 1 shows FDI inflows and exchange rate movements to Korea during the 1990s. There seemed to be relatively a strong relationship existing before the crisis, and the relationship maintained even after the crisis.⁹ In order to investigate further such a visual inspection of the relationship, I conducted non-parametric test for the correlation coefficient of the relationship. Note that correlation coefficient was calculated for real exchange rate movements and FDI in constant dollar terms. The correlation coefficient shown in Table 1 conforms to our visual inspections and interpretation. The relationship is positive and highly statistically significant at one percent level.

Although the result seems in accordance with our expectation, however, it was not controlled for wealth effect and competitiveness effect. With a view to separating these effects, we need an econometric modelling to which we turn our attention in the next section.

Table 1. Correlation Coefficients of Real Exchange Rates and FDI Inflows in Korea (1990-2000)

Korea
0.754*
(3.441)

* significant at 1% level, the number in the parenthesis is t-statistics.

⁹ Note that the chart was drawn for nominal exchange rate and FDI flows.

4. Econometric Model and Data

Following Froot and Stein (1991), Klein and Rosengren (1994), and Gopinath et al (1998), the basic model intends to look at the effect of exchange rate levels and volatility, after controlling wealth and competitiveness effect and is specified as follows:

$$\ln FDI_t = \alpha_0 + \alpha_1 \ln FX_t + \alpha_2 \ln SHAREP_t + \alpha_3 \ln VOL_t + \alpha_4 \ln WAGE_t + \varepsilon_{jt} \quad \text{----- (1)}$$

where

FX is the real exchange rate between local currency, ie. Korean Won and the US dollar; VOL measures the volatility of exchange rate. SHAREP is the share price index of a country to control for the wealth effect, while WAGE is the real wage index to control for the competitiveness effect. ε is independently identically distributed error term.

Data

Data used in the estimation were obtained from *International Financial Statistics Yearbook* (various issues), except monthly exchange rates to calculate the volatility. FDI statistics were obtained from balance of payments in *IFS Yearbook*. These FDI figures converted to 1990 value terms by using CPI index, and the converted figures used as a dependent variable.

Exchange rates are values of Korean Won against the United States dollars (period average), adjusted with the CPI index for real exchange rates. The increase in these numbers thus represents the depreciation/devaluation of the local currency against dollar. As Japan and Korea have often been in competitive position in export structure, so that they are sensitive to exchange rate movements. A relative depreciation of Japanese Yen against Korean Won increased export competitiveness, thus inducing more export oriented FDI to Korea. I use arbitrage rate for Japanese Yen by converting the US dollar exchange rates of Korean and Japanese Yen, ie. FXY. Exchange rate for Japanese Yen (FXY) represents the value of Korean Won against 100 Japanese Yen. Both exchange rates were adjusted for respective countries' CPI indices relative to Korea's CPI index, ie. $FX(j)R = XR * (P_j / P_{kor})$, j = the United States and Japan.

There is one important thing to note about exchange rate system during this time period considered in this paper. Korea's exchange rate system experienced changes three times. Multiple currency basket pegging system (MCBP) to market average rate (MAR) system in March 1990.

(Kim, 1992). After the crisis, Korea adopted independently floating exchange rate system, from December 16, 1997.¹⁰ However, the effect of exchange rate regime changes on FDI flows to Korea is expediently ignored in this paper.

Exchange rate volatility is measured as a 12-month standard deviation from the annual mean exchange rate of Korean won against the US dollar.¹¹ Monthly exchange rates for the period were obtained from the Bank of Korea's statistical website.

Wage rate index measures monthly manufacturing earnings and is used to control for competitiveness effect, adjusted by CPI index for real wage index.

I include Korea's stock price indices in the estimation in order to separate the exchange rate and wealth effects. The higher this index, there will be relatively less FDI flows to Korea than otherwise, as the higher stock value push up acquisition premia by foreigners, *ceteris paribus*. Stock price indices used in the estimation, Share Price index, were obtained from *IFS yearbook*. Also included in the model is CRISIS dummy to represent major changes in foreign direct investment policies around 1995, including those changes in the post-crisis period. The Korean government liberalised substantially foreign direct investment policies before Korea gained a seat at OECD in 1996. Thus, this dummy variable does not necessarily correspond to the financial crisis.¹²

With the above mentioned considerations and modifications, the full model to estimate is specified as follows:

$$\ln FDI_t = \alpha_0 + \alpha_1 \ln FXSR_t + \alpha_2 \ln FXYR_t + \alpha_3 \ln SHAREP_t + \alpha_4 \ln VOL_t + \alpha_5 \ln WAGER_t + \alpha_6 CRISIS + \varepsilon_t \quad \dots (2)$$

The above model is estimated by using OLS over the 1985-2000 period.¹³

¹⁰ The changes in exchange rate systems bring out the effectiveness of exchange rate regime on foreign direct investment. Aizenman (1992) argue that a fixed exchange regime is more conducive to foreign investment, as well as domestic investment. In facing real productivity and monetary shocks. However, I do not consider the effect of exchange rate regime effect in this particular paper on foreign direct investment flows due to the following reason. Such changes in exchange rate arrangements, these changes were also accompanied by almost concurrent changes in foreign direct investment policies by these countries toward more liberalisation, so that disentangling of those two mutually neutralising effects is extremely difficult, if not impossible.

¹¹ Arize (1997) discusses various aspects of measuring exchange rate volatility.

¹² For this aspect of discussion, refer to Seo (2002).

¹³ In the model estimation, we do not include a time trend term, which is highly correlated with real wage index and the crisis dummy, resulting in a highly suspicious multicollinearity.

5. Discussion of the Results

We present three different models of estimation. The first is to omit crisis dummy and real exchange rate of Korean Won against Japanese Yen (FXR). The second model is to include the Crisis dummy while excluding FXR to test if the major changes in FDI policy have impact on FDI inflows to Korea. Finally, a full version of the model, ie. model 3, is estimated with all variables included. However, we present the best performing model.¹⁴

Table 2. OLS estimation of FDI flows to Korea: Model 2

Variable	Coefficient
LFXSR	3.171908*
LSHAREP	1.297500*
LVOL	0.136268
LWAGER	-0.521871
CRISIS	0.928874**
C	-18.19800
R ²	0.895487
Adj-R ²	0.843230
S.D. dep var	0.847701
S.E. of regression	0.335641
Sum squared resid	1.126547
Log likelihood	-1.475562
F-statistic	17.13629*
AIC	-1.903432
SC	-1.613711
Durbin-Watson stat	1.495661
Breusch-Godfrey Serial Correlation LM Test:	
F-statistic	0.524310
Probability	0.487403
Ramsey RESET Test:	
One fitted term included	
F-statistic	2.484164
Probability	0.149451
Two fitted terms included	
F-statistic	1.776342
Probability	0.229947

* significant at 1 percent, ** significant at 5 percent.

¹⁴ The results of other two models are available from the authors upon request.

The results of model 2, as shown in Table 2, seem to have performed best in terms of R^2 and adjusted R^2 values and the expected signs of explanatory variables. The model explains about 90 percent of total variations in the dependent variable, while taking into account the number of independent variables model accounts for more than 84 percent of the variations, with adjusted R^2 of 0.843. In three different models, real exchange rate consistently exerts significantly positive effects on FDI inflows to Korea during the 1985-1990 period, after controlling for the wealth and competitiveness effect. The result conforms to many other people's findings, not entirely in contradicting to Seo's (2002) finding over a relatively shorter time period. Also consistently positively influencing variable was the share price index, which is highly significant at one percent level. This finding seems in contradiction to what Seo has found in his earlier study. However, a closer examination of two series in Chart 2 provides a possible explanation to this contradiction. Two series moved very closely until 1993, with the correlation coefficient of two series 0.7465. However, since 1994 two series started to diverge quite dramatically. The correlation coefficient turned during the 1994-2000 period to -0.4638 , leaving the coefficient over the entire period at 0.4156. This indicates two possibilities for the relationship. One is the nature of the fundamentally relationship between the two series might have changed since the 1994, so that they move in opposite direction. However, there is no reason to believe that this change took place. The other is that underperforming of Seoul stock market while the Korean government liberation efforts for FDI around 1994 in fact stimulated more, thus showing the two series seeming moving in different directions. This interpretation is further supported by the significantly positive influence of the crisis dummy variable, at five percent level. Note that this variable represents the major shifts in FDI policy in Korea since 1994.¹⁵

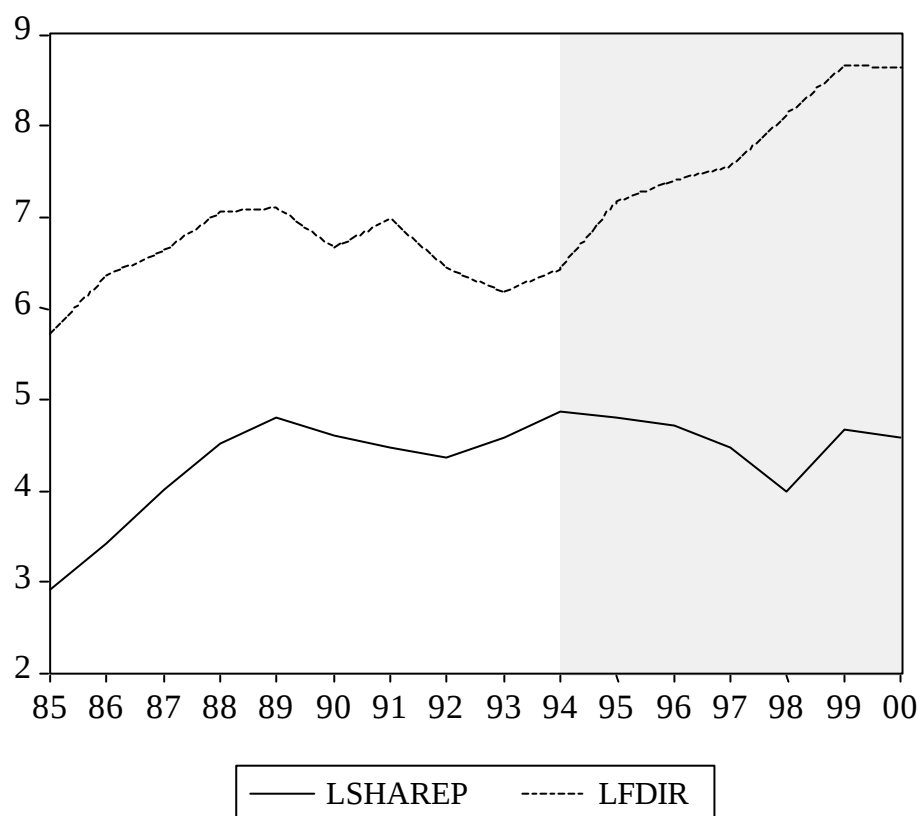
Real wage cost index appears with a negative sign but not significant, indicating that inward FDI to Korea may not utilise cheap labour but to take advantage of other opportunities such as marketing. Exchange rate volatility is, as in Lee and Tcha (1995), not significantly influential factor for FDI inflows to Korea during the period considered.

In terms of diagnostics of the model, the Durbin-Watson statistics for serial correlation was indeterminate. However, the Breusch-Pagan test

¹⁵ Another possible interpretation is that in the midst of strong performance of stock prices in Korea, foreign investors are coming to acquire with expectation that such a strong performance of the stock market may persist in future.

does not reject the no serial correlation hypothesis, while Ramsey's reset tests supports for the specification of the model.

Chart 2: FDI Inflows and Share Price Index in Korea (1985-2000)



6. Concluding Remarks

The link of exchange rate with inward FDI to Korea was investigated during the 1985-2000 period. After controlling the wealth effect and competitiveness effect, exchange rate levels strongly positively influence FDI inflows to Korea. This finding is closely in line with other people findings of the US experience (Blonigen, 1997; Dewenter, 1995; Froot and Stein, 1991). That the inward FDI to Korea is to utilise cheap labour costs is not supported, conforming to the earlier studies of Seo and Suh (1999). However, the wealth effect hypothesis is highly supported, even though it is not completely in contradictory to what theory suggested. However, we need to remember that the acquisition and merges by foreign investors of Korean real assets is not, given the status quo of Korea's technology capacity, to acquire firm-specific assets, increasing the investor's global productivity. It can only be interpreted that foreign

investors come to acquire Korean assets, despite its' increasing share price, in expectation of the even better performance of Korean companies in future. Or as some suggested, Korean share prices undervalued relative to those in industrialised countries, so that foreign investors rush to buy and expect the prices approach to the normal value, even if the share prices increases. Finally, foreign investors acquire real assets in Korea to utilise for local production and marketing. Whichever interpretation we take, it only requires further research.

References

- Arize, A.C. (1997), Conditional exchange Rate volatility and the volume of foreign trade: evidence from seven industrialised countries. Southern Journal of Economics, 64, pp. 235-264.
- Barrel, R. N. Pain (1996), An econometric analysis of US foreign direct investment, *Review of Economics and Statistics*, pp. 297-308.
- Blonigen, B. (1997), Firm-specific assets and the link between exchange rates and FDI, American Economic Review, 87, pp. 447-465.
- Caves, R. (1996), Multinational Enterprises and Economics Analysis, Cambridge University, New York.
- Cushman, D.O. (1985), Real exchange rate risk, expectations and the level of foreign direct investment, Review of Economics and Statistics, 67, pp. 297-308.
- Cushman, D.O. (1988), Real exchange rate risk and foreign direct investment in the US, Weltwirtschaftliches Archiv, 124, pp. 322-336.
- Dewenter, K.L. (1995), Do exchange rate changes drive foreign direct investment, *Journal of Business*, 68, pp. 405-433.
- Franekl, J.A. (1998), The Asian Model, The Miracle, and The Crisis and the Fund, a speech delivered at the US international Trade Commission.
- Froot, K.A. and J. C. Stein (1991), Exchange rates and foreign direct investment: An imperfect capital markets approach, Quarterly Journal of Economics, 106, pp. 1191-1127.
- Goldberge, L.S. and M. Klein (1998), Foreign direct investment, trade, and real exchange rate linkages in developing countries, in R. Glick (ed.), Managing Capital Flows and Exchange Rates: Perspectives from the Pacific Basin, Cambridge University Press, New York. (Chapter 3)
- Goldsborough, D.J. (1979), The role of foreign direct investment in the external adjustment process, IMF Staff Papers, 26, pp. 725-754.
- Gopinath, Munisamy, Daniel Pick and Utpal Vasavada (1998), Exchange rate effects on the relationship between FDI and trade in the US

- food processing industry, American Journal of Agricultural Economics, 80, pp. 1073-1079.
- Graham, E.M. and P.R. Krugman (1991), Foreign Direct Investment in the United States, The Institute for International Economics, Washington DC.
- Hsiao, C. (1986), Analysis of Panel Data, Cambridge University Press, New York.
- Kim, J.C. (1992), Korea's Recent Foreign Exchange Rate Systems: MCBP vs MAR system, KIEP, Seoul, Korea.
- Kim, S.H. and M. Haque (2002), The Asian financial crisis of 1997: causes and policy responses, Multinational Business Review, Spring, pp. 37-44.
- Klein, M.W. and E. Rosengren (1994), The real exchange rate and foreign direct investment in the United States: relative wealth vs. relative wage effects, Journal of International Economics, 36, pp. 373-389.
- Krugman, P.R. (1998a), Asia: what went wrong, Fortune, March 2, p.32.
- Krugman, P.R. (1998b), Will Asia Bounce Back?, Speech for Credit Suisse First Boston, Hong Kong.
- Lane, T. (1999), The Asian financial crisis: what have we learned?, Finance and Development, Vol. 35: 3.
- Lee, Y.I. and M.J. Tcha (1995), The political economy of Korean foreign direct investment in Southeast Asia, in K. Cao (ed.), The Changing Capital Markets of East Asia, Routledge London (ch. 7).
- Miyake, M. and S. Thomsen (1999), Recent Trends in Foreign Direct Investment, Financial Market Trends, 73, pp. 111-128
- Seo, J.S. (2002), Real exchange rate and inward FDI in the crisis-ridden Korea, in Tcha, M.J. and C.S. Suh (eds.), The Korean Economy at Crossroads, Routledge: London (forth coming).
- Seo, J.S. and C.S. Suh (1999), Location Advantage and Foreign Direct Investment in East Asia, A paper presented at the Academy of International Business, 1999 Annual Meeting, Charleston, SC, US.
- Stevens, G.V.G. (1998), Exchange rates and foreign direct investment: a note, Journal of Policy Modelling, 20, pp. 393-401.
- United Nations Conference on Trade and Development (UNCTAD, 1999), World Investment Report 1999: Foreign Direct Investment and the Challenge of Development, United Nations, New York.
- World Bank (1993), The East Asian Miracle: Economic Growth and Public Policy, Oxford University Press.

Chart 1. FDI Inflows and Exchange Rates: Korea

