DETERMINANTS OF FOREIGN DIRECT INVESTMENTS

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해외직접투자자의 결정요인

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INTRODUCTION

The most significant development in the world economy in recent decades is the increasing globalization of economic activities. The capitalist system now should be understood as global
rather than national since the major forces that are restructuring both domestic and international economic systems are globalization process. The integration of global financial markets, facilitated by regulatory changes and by technological innovations in the information economy is one of the most important factors contributing to this globalization (Ross, 1983; Obstfeld, 1986; Kane, 1988; Walter, 1989; Honeygold, 1989; O'Brien, 1992).

As a result of globalization process of financial markets, global transactions of total private capital were tripled during 1980–1990. The integration of global financial markets has been primarily promoted by increased financial market activities as well as multinational enterprises (Kim, 1994). Arguing that information technology and regulatory revolution have resulted in the integration of global financial markets, O’Brien (1992) maintains that we have reached the "end of geography." This pattern was phenomenal especially in the foreign direct investment (FDI) market. Efficiency-seeking multinational enterprises transfer capital, technology and managerial skills to the most profitable places (Hood and Young, 1979:2–3) and thus integrate the global economy (Casson, 1986; Dunning, 1988:43, 258–261). During the period of 1980–1990, the global transactions of FDI increased more than 4 times (Kim, 1994).

In this integrated world economy, the developed countries and a small number of developing countries have experienced substantial industrial growth, but other countries have experienced deep financial difficulty, widening the development gaps between the rich and poor. During 1980–1990, almost 90% of global FDI transactions were carried by 25 high income countries out of 121 countries.

The low income countries’ share of global capital transactions was about 1%. The gap between the high income countries and the rest of the world in FDI inflows became wider; the high income countries’ share of FDI inflows increased from 77% to 88% during 1980–1990 while the upper-middle income countries’ share of FDI inflows decreased from 12% to 8% during the same period (Kim, 1994). Gill and Law (1988:127) see this pattern as the "transnational stage" in the development of capitalism. Since the capitalist system in the transnational stage separates the production process over space and national boundaries, capital moves in the most efficient way seeking more profits.

What are the forces that have shaped this FDI pattern? This is the principal research question. Despite the fact that the theoretical literature on the international capital transactions has suggested the political factors as well as economic factors, the political factors have not been properly answered in the empirical analysis.

This study explores the effect of political stability and international relations on FDI flows, one of the key international capital flows. From this analysis, this study provides several policy implications for the developing countries who need external financial resources as well as for the developed countries who are experiencing capital shortage due to the massive capital outflows.
LITERATURE

International capital flows have been analyzed from three theoretical perspectives: flow theory, portfolio theory, and the monetary approach to the balance of payments. Flow theory postulates that a given interest rate differential induces international capital flows (Mundell, 1961; Flemming, 1962; Jorgenson, 1963; Bischoff, 1971; Frankel, 1989 and 1992). Portfolio theory asserts that international capital flows are dependent not only on interest rate differentials but also on risk estimates and capacity of investors (Branson, 1968; Bawa et al, 1979; Stultz, 1981; Huiainga, 1991). The monetary approach claims that a monetary policy based on the condition of balance of payments and the control of domestic credit determine international capital flow (Johnson, 1972; Mussa, 1974; Kouri and Porter, 1974; Frenkel et al, 1980). The portfolio balance model incorporates portfolio theory and monetary approach (Dornbusch, 1975; Dskill, 1981; Marwah et al, 1985).

As flow theorists suggest, Haynes and Pippenger (1979) found that interest rate differentials induce capital flows between U.S. and Canada. Frankel (1989) found that interest rate differentials between the less developed countries were relatively larger than between the developed countries. This is an important finding since the international capital transactions have been conducted mostly in the developed countries. Is this the result of the massive capital transactions among the developed countries? Then, why haven’t the capital transactions among less developed countries increased even if their interest rate differentials were large?

Empirical analyses of portfolio theory and the monetary approach partly answer the question by examining portfolio factors and monetary factors separately. Branson (1968) and Branson and Hill (1968) found that the income level of the country were significantly important in determining the international capital transactions, while Stevenson (1984) found that the risk estimation was a critical factor. Monetarists like Zcher (1976) illustrates that monetary factors like government deficit and tax policy were important in determining international capital flows. Nunnenkamp (1990) and Lesink and Vergeijk (1991) explored that the less developed countries’ foreign capital inflows were dependent on the export ability and debt condition.

The portfolio balance model has been effective in explaining both financial and monetary factors together. Kouri and Porter (1974) explained that the current account balance condition and domestic asset were important variables for determining the international capital flows. Herring and Marston (1977) found that the income level and the exchange control policy were critical. Marwah et al (1985) explored that purchasing power parity, wealth, and current account balance conditions were the critical variables in the foreign capital inflow and outflows in the separate model.

METHODOLOGY

As reviewed in the literature, most studies have neglected the impacts of domestic and
international political factors international capital flows. This study includes the financial variables that have been suggested in the previous studies as well as the political variables in the model. Most empirical studies have focused at best on small groups of countries, with the result that the determinants of international capital flows at a global level have not been illuminated. Thus, this study includes 86 countries in the empirical model and 121 countries in the descriptive analysis for the period of 1980-1990. This procedure will provide a better picture of the determinants of foreign direct investment flows.

The 3SLS (three-stage least squares) technique is applied to the FDI inflow-outflow simultaneous equation models in this study. Since our two equation systems (inflow and outflow) are simultaneous, the 2SLS (two-stage least squares) estimator can provide consistent parameter estimates. However, the 2SLS technique applies to a single equation within the system of two equations. This may yield inefficient estimates. The 2SLS technique also does not account for the cross-equation correlation among the error terms. The loss of efficiency in the 2SLS can be improved by 3SLS, which accounts for the correlation between the error terms caused by unmodeled events in the 2SLS parameters and correlation between exogenous variables of the system and error terms (Madansky, 1964: 55).

The unit of analysis of this study is country. The dependent variables, FDI inflow and outflow of a country are provided by the IMF's Balance of Payments Statistics Yearbook. All currency values are deflated as millions of 1987 U.S. dollar in the descriptive analyses. Since log-linear models are projected in the econometric analyses, the dependent variables are the natural logarithm of millions of 1987 U.S. dollar.

Utilizing the suggestions from the previous studies, this study hypothesizes that FDI flows are determined by the flow factors, the portfolio factors, and the monetary factors. In addition, this study hypothesizes that capital flows are influenced by the political factors. Thus there are four major issues regarding the empirical test: (1) purchasing power parity for the flow factors, (2) wealth for the portfolio factors, (3) current account balance condition and regulation for the monetary factors, and (4) political stability and international treaty relations for the political factors.

Since the rate of return of foreign direct investment is not directly involved with interest rates, but is involved with price level, we utilize the purchasing power parity ratio (PPPR) in the FDI flow model. The purchasing power parity ratio is calculated by \((E_i/P_i) \times P_u\), where \(E_i\) exchange rate of country i's currency to U.S. dollar, \(P_i\) country i's price index, and \(P_u\) price index of the U.S. The ratios are standardized as 1979=1. Thus PPP ratios provide the information about the purchasing power of the dollar in country i in comparison to that in the U.S., all expressed as a ratio to the relative purchasing power in 1979. If PPP ratio falls, it means that goods have become relatively more expensive in country i than in the U.S.

This study uses the international investment treaty (TREATY) as a representative variable for favored international relations in the inflow equation. This study also chooses the political stability estimate or political risk indices from Institutional Investors which have been consistent throughout the years by the same measurement method. Due to the identification problem, we select political
stability differential (POLSTBD) in the inflow equation and political stability differential change (POLSTBDC) in the outflow equation. Industrial sector products (INDSTP) as percentage of GDP is utilized in the inflow equation to test the degree of demand for foreign direct investments.

As the previous literature suggested, the wealth variable (GNYPCE: gross national income per capita) is projected in the outflow equation because it is a measurement of capital investment capacity. The current account balance (CAB) are used in the inflow and outflow equations as we assume that negative current account balance demands foreign capital while a positive current account balance induces outflow. The exchange control policy is selected only in the outflow equation since we can secure a missing variable in the inflow equation to solve the identification problem. We also assume that the exchange control policy is more effective in capital outflow when compared to capital inflow. In the model, we add tax policies on international investments: tax rate on foreigners’ corporate income (TFCORD) for both in and outflow equations.

Since we constructed a simultaneous equation model, system variables of the opposite equations are embedded: foreign direct investment outflow (FDIO) in the inflow equation and foreign direct investment inflow (FDII) in the outflow equation. Finally, we include the country dummy and time dummy variables to catch the space (country) specific effects and some specific effects. Table 1 reports the variable definitions that have been discussed.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Definitions</th>
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<tbody>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
</tr>
<tr>
<td>FDII</td>
<td>Foreign Direct Investment Inflow (Log of Millions 1987 U.S. Dollar)</td>
</tr>
<tr>
<td>FDIO</td>
<td>Foreign Direct Investment Outflow (Log of Millions 1987 U.S. Dollar)</td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
</tr>
<tr>
<td>PPPR</td>
<td>Purchasing Power Parity Ratio (Base Year 1979)</td>
</tr>
<tr>
<td>POLSTBD</td>
<td>Political Stability(0-100) Differential from the Income Group</td>
</tr>
<tr>
<td>POLSTBDC</td>
<td>Annual Change in POLSTBD</td>
</tr>
<tr>
<td>GNYPCE</td>
<td>Log of Gross National Income Per Capita</td>
</tr>
<tr>
<td>CAB</td>
<td>Current Account Balance in Billions of 1987 U.S. Dollar</td>
</tr>
<tr>
<td>EXCHCONT</td>
<td>Dummy Variable for Exchange Control (1) or Not (0)</td>
</tr>
<tr>
<td>TFCORD</td>
<td>Differential of Tax Rate on Foreign Investors’ Corporate Income</td>
</tr>
<tr>
<td>TREATY</td>
<td>Number of Countries in Investment Treaties*Amounts of Trade</td>
</tr>
<tr>
<td>INDSTP</td>
<td>Industrial Sector Products as% of GDP</td>
</tr>
</tbody>
</table>

Thus, our model for foreign direct investment in-out flow model in a simultaneous system is as below:
FDII = a1 + b1(PPPR) + b2(POLSTBD) + b3(CAB) + b4(TFINTD) + b5(TREATY)  
+ b6(CD) + b7(FDIO) + b8..b17(YEAR) + b18..b102(COUNTRY) + u1  
------------------ Inflow Equation

FDIO = a2 + c1(PPPR) + c2(POLSTBDC) + c3(GNYPC) + c4(CAB) + c5(TFINTD)  
+ c6(EXCHCONT) + c7(TELECOMM) + c8(FDII)  
+ c9..18(YEAR) + c19..c103(COUNTRY) + u2  
------------------ Outflow Equation

FDII = FDIO

That is, inflow of FDI equals to outflow of FDI by simultaneous equation definition.

EMPIRICAL FINDINGS

Table 2 presents the result of FDI in-out flow simultaneous equation model. In the outflow equation, purchasing power parity ratio (PPPR) is negative and significant. The negative coefficient of purchasing power parity ratio in the FDI outflow equation tells us that a 1 unit increase in PPPR (relatively less strong purchasing power of the dollar) decreases FDI outflows by 1.3 million dollars (decomposed log value of 0.269 is 1.31). In other words, if the currency value decreases, then FDI outflow decreases (or if currency value becomes strong, then FDI outflow increases).

The exchange control variable is negatively significant. This is a different result from the FDI gross flow model in which the exchange control variable was not significant. One possible explanation is that the less significant effect of exchange control on FDI gross flow is attributed to the less significant effect of exchange control on FDI inflow only. Exchange control policy was enforced by a small number of the high income countries in the early 1980s and by a large number of the developing countries during the entire period of the study. Since FDI is a major source of the developing countries’ external finance, the developing countries received FDI inflow regardless of their exchange control policy. On the other hand, since the developing countries provide little FDI outflow, the significant level of the exchange control variable in the outflow equation is captured.

As expected, national wealth and current account balance are positive and significant in the FDI outflow equation. However, change in political stability differential, and tax rate (TFCORD: differential between home country’s tax rate on foreigner’s corporate income and the average of the same income group’s tax rate on foreigner’s corporate income) are not significant at the 10% level, although they have the expected signs.

In the FDI inflow equation, purchasing power parity ratio is negative and significant like in the inflow equation. It tells us that relatively strong currency value compared to the currency value in 1979 increases FDI inflow. One of the reasons for the same sign in both equations is that PPPR is
<Table 2> 3SLS Simultaneous Estimation Results for Inflow & Outflows of FDI

<table>
<thead>
<tr>
<th>Equations</th>
<th>FDI Inflow</th>
<th></th>
<th></th>
<th>FDI Outflow</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dependent Var: FDI (Log of FDI Inflow)</td>
<td></td>
<td></td>
<td>Dependent Var: FDIO(Log of FDI Outflow)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Par Est</td>
<td>S.E.</td>
<td>T-Stat</td>
<td>Prob&gt;</td>
<td>T1</td>
<td>Par Est</td>
</tr>
<tr>
<td>Intercept</td>
<td>3.442720</td>
<td>0.381621</td>
<td>9.021</td>
<td>0.0001</td>
<td>-2.745033</td>
<td>1.188192</td>
</tr>
<tr>
<td>PPPR</td>
<td>-0.348012</td>
<td>0.123028</td>
<td>-2.829</td>
<td>0.0048</td>
<td>-0.269283</td>
<td>0.135031</td>
</tr>
<tr>
<td>POLSTBD</td>
<td>0.014863</td>
<td>0.004216</td>
<td>3.525</td>
<td>0.0004</td>
<td>-0.000091</td>
<td>0.008168</td>
</tr>
<tr>
<td>POLSTBDLC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.633876</td>
<td>0.144642</td>
</tr>
<tr>
<td>GNYPC</td>
<td>-0.003614</td>
<td>0.002320</td>
<td>-1.557</td>
<td>0.1197</td>
<td>0.009705</td>
<td>0.002525</td>
</tr>
<tr>
<td>CAB</td>
<td>-0.184722</td>
<td>0.186520</td>
<td>-1.875</td>
<td>0.0611</td>
<td>-0.004763</td>
<td>0.004264</td>
</tr>
<tr>
<td>EXCHCONT</td>
<td>0.005856</td>
<td>0.004186</td>
<td>1.423</td>
<td>0.1551</td>
<td>-0.004763</td>
<td>0.004264</td>
</tr>
<tr>
<td>TFCORD</td>
<td>0.001236</td>
<td>0.000444</td>
<td>2.854</td>
<td>0.0044</td>
<td>-0.004763</td>
<td>0.004264</td>
</tr>
<tr>
<td>TREATY</td>
<td>0.022101</td>
<td>0.004856</td>
<td>4.551</td>
<td>0.0001</td>
<td>0.000062</td>
<td>0.000460</td>
</tr>
<tr>
<td>INDSTP</td>
<td>0.362312</td>
<td>0.054653</td>
<td>6.640</td>
<td>0.0001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: Country and year dummy variables are not reported on this table.

not a differential value between home and foreign countries. FDI decreases in both directions when purchasing power of the dollar decreases compared the purchasing power of the dollar in 1979. In other word, when a country has higher purchasing power of the dollar (negative in PPPR), both inflow and outflow of FDI increases. The other reason for the same sign can be due to the calculation method of FDI account. Investment earnings are outflow of FDI from the FDI recipient countries’ point of view. The actual outflow of FDI, thus, includes the outflow of earnings that have been contributed by the higher purchasing power parity in the out flow equation.

A positive political stability differential is significantly induces FDI inflow. International investment treaty relations are also positive and significant to FDI inflow as an indicator of the safeguarding of FDI investment. Countries with a higher proportion of industrial sector product induce greater FDI inflow, compared to countries with a higher proportion in service sector or agricultural sector. However, current account imbalance and tax rate differential are not statistically significant in the FDI inflow equation.

The system variables (FDII and FDIO) are positively related each other, meaning that countries with greater FDI outflow induce greater FDI inflow and vice-versa. Positive coefficients of country dummy variables are found not only in several high income countries but also in developing countries in both the inflow and outflow equations. The year dummy coefficients become significant after 1987 in both the inflow and outflow equations.

This study, thus, finds that FDI outflow is determined in its own function of purchasing power parity, national wealth, and exchange control policy while FDI inflow is influenced by country political stability, international investment treaties, and hosting country’s industrial structure.
CONCLUSION & POLICY IMPLICATIONS

In summary, foreign direct investment outflows are accelerated by investment capacity variables such as gross national income and current account surplus but they are discouraged by exchange control policy. These foreign direct investment outflows are transferred as foreign direct investment inflows to the more industrialized countries where higher political stability and more international treaties. These inflow and outflow processes are accelerated by the purchasing power parity. As a result of the speculations in the foreign direct investment activities, we, thus, conclude that the developing countries have less chances to access external financial resources, while the high income countries have greatly increased their external financial resources.

One of the most important policy implications from the result of this study is that tax policy is not attractive to induce the foreign direct investment. This can be attributed to the competition of lowering tax rates for the foreign investors. It tells us that lowering tax rate without political stability and/or international investment treaties does not create a better environment for international investors. Rather, more effective means of creating a better investment environment appear to improve the political stability and to involve more international investment treaties.

Political stability can be judged by constitutional environment, quality of government, foreign policy activities, social conflict, bureaucratic corruption, and war or warlike conflicts (Krayenbuehl, 1985). A country may not adequately adjust all of these political stability factors at one time. However, the government and business leaders in the developing countries should know that foreign investors now have greater ability to reallocate their capital in response to the change of country’s political stability. Thus, the developing countries may have much more tough time to attract FDI unless they improve the quality of domestic politics. The other way of attracting the foreign investors is to safeguard the investment by providing investment treaties. The countries whose political scores are relatively low should actively provides various safeguard options via international investment treaties. This policy can be a best option to compromise the poor political condition.

REFERENCES


